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Wolves and Bears: An Interdisciplinary Activity Guide for Grades 3-5

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ABSTRACT

WOLVES AND BEARS

AN INTERDISCIPLINARY ACTIVITY GUIDE

FOR GRADES 3-5

By

Susan L. Thomas

August, 1999

A popular set of “Discovery Boxes” are used by educators across North Central Washington. These boxes are administered by the U.S. Forest Service and focus on such themes as wolves, bears, fire, plants and forests. These boxes are available to be checked out to educators for two-week periods, and reach approximately 9,000 students annually. Each box contains “hands-on” props which enhance the learning of each theme. Some of the boxes have activity guides in them to assist the educator in teaching the theme and thus using the box to its full potential. Two of the most popular boxes, the wolf and bear box, currently do not have an activity guide.

The purpose of this project was to develop activity guides for the bear and wolf boxes owned by the Leavenworth Ranger District, U.S. Forest Service. The activities developed for this project incorporated aspects of the bears and wolves of Washington State and are to be used with the bear and wolf boxes.

The activity guides were targeted for grades 3-6, the most popular grades that use the box. The guides are interdisciplinary in nature. Background information about bears and wolves were incorporated into the guides and each guide was aligned with the Washington State Essential Academic Learning Requirements. The lessons were reviewed by four North Central Washington teachers (grades 3-5), tested in the classroom for their usefulness, and modified as needed.

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CHAPTER 1

Background Of The Project

Introduction

The twenty-nine years following the first Earth Day, April 22, 1970, have seen unprecedented increases in public awareness, scientific knowledge and government actions on environmental issues. The environment has become a universal concern. In a Gallup poll for the United Nations Conference on Environment and Development, 75 percent of respondents from both developing and developed countries expressed concern about environmental problems (Riordan, Clark Kates & McGowan, 1995). "Education has been recognized as a key vehicle to educate our children and future decision makers about the environment" (Riordan et al., 1995, p.15).

"The importance of education in the development of environmental awareness cannot be overstated and should be an integral element in school curricula from primary level onwards" (European Union, 1993, p.106). Therefore, teaching students about ecology and the importance of environmental awareness is a growing concern among educators, governmental and non-governmental agencies. It is essential that the fundamental importance of Environmental Education be recognized at all levels in society within formal education, non-governmental organizations, and local and national government policy frameworks. Environmental education must be placed at the heart of policy and curriculum-development processes (Palmer, 1994). "It is now impossible for any government, business, civic, or education organization to ignore its environmental responsibility" (Riordan et al., 1995, p.15).

The Leavenworth Ranger District, Wenatchee National Forest of the United States Forest Service, has recognized their important role in providing educators with environmental education materials, curriculums and programming. Over the past six years, the Leavenworth Ranger District has developed and implemented a series of interactive "Discovery Boxes" for use by educators in North Central Washington. They were developed due to the U.S. Forest Service's recognition of the importance of environmental education and the demand by educators to meet the growing need for information on Washington State's natural resources. Forest Service personnel felt that it was more cost effective to develop self explanatory boxes that could be used repeatedly instead of responding individually to each request. Furthermore, educators stressed that the only way they would have access to the unique and sometimes costly natural resource materials were through the use of these boxes.

Each of the six boxes focus on specific themes. The themes are: (a) water, (b) wolves, (c) bears, (d) plants, (e) fire and (f) forests. Each box has special props and educational materials to support the theme. For example, the wolf box has pelts of a wolf and coyote, skulls of a wolf, coyote, and deer, scat of a dog, elk, coyote and wolf, tracks of a wolf, coyote, and elk, a wolf moveable model, videos, and books. The plant box has examples of mounted plant specimens, a slide show, a plant model, videos, books, and a curriculum. The boxes were developed for a variety of ages. Although, some are more appropriate for specific age groups. For example, the forest box is geared more towards the secondary level. The bear and wolf boxes are more popular with the elementary grades. Each box may be checked out at the Leavenworth Ranger Station for a two week period and they are free of charge. These boxes have become so popular that it is

imperative that teachers arrange for their use at least three months in advance. A variety of people use them, including teachers, student-teachers, parents, scout leaders, biologists and camp counselors. They are used in a variety of settings, including the formal classroom, summer camps, and by homeschoolers. Each box reaches approximately 1,500 students annually. Many educators have come to rely heavily on these educational resources and have integrated the use of the boxes in their annual lesson plans.

Statement of the Problem

Susan Westburg, third grade teacher, Vale Elementary, said, "My students loved the wolf box and all the neat materials in it. However, I felt a bit lost on how I should use all the great stuff and what was the best approach to teach it. Have you ever thought of providing a guide of some sort to help us?" This comment along with others is what the author has received from teachers after using the bear and wolf boxes. Teachers have commented verbally, and through the written evaluations that accompany each box, that they would better utilize the bear and wolf boxes if they contained an activity guide to lead them through the materials and props and provide basic background information about bears and wolves. The other boxes have an activity guide to facilitate teaching and teachers have commented that this is very helpful. Teachers stated that they did not have time to develop this guide themselves and asked me to do so. They have stressed that they would like the guides to be interdisciplinary and thus integrate a few subject areas. Furthermore, it was also stressed by the teachers that the activity guide be aligned with the Washington State Essential Academic Learning Requirements (EALR). The author also noticed a slight decline in the use of the bear and wolf box in the past few years and

accounts this to a lack of an activity guide. Furthermore, with the introduction of the Washington State EALR, teachers are focused on aligning curriculum to the EALR, and are mainly attracted to materials that are aligned.

These identified barriers of lack of materials, time and funding have also been cited in a survey of educators (Ham and Sewings, 1988). Their results indicated that lack of time both in terms of preparation and actually school-day time were the greatest barriers to teaching environmental education. Other barriers included lack of specific instructional materials, funding, and teachers' concern about their own competence to teach environmental education. Although most said they were positive about environmental education, the majority demonstrated little commitment to actually teach it.

Statement of the Purpose

The purpose of this project was to develop an activity guide for the bear and wolf boxes of the Leavenworth Ranger District, U.S. Forest Service. The activities developed for this project incorporated aspects of the ecology of bears and wolves of Washington State and are to be used with the bear and wolf boxes. The activity guides were targeted for grades 3-6--the most popular grades that use the box--and are interdisciplinary in nature. Background information about bears and wolves was incorporated into the guides and each guide was aligned with the Washington State EALR. The lessons were reviewed by four North Central Washington teachers (grades 3-5), tested in the classroom for their usefulness, and modified as needed. The activity guides maximize the educational opportunities of the bear and wolf box and alleviate some of the barriers that teachers and the literature have identified in teaching environmental education.

Limitations of the Project

The limitations of the study are as follows:

1. The activity guide is designed for grades three through five.
2. The activity guide is best used in conjunction with the U.S. Forest Service

bear and wolf boxes. The activity lessons are limited to certain aspects of bear and wolf biology that are emphasized in the boxes and not intended to be inclusive of all aspects of bears and wolves. These boxes are available free of charge to educators in North Central Washington. They are not shipped and must be physically obtained from the Leavenworth Ranger District, U.S. Forest Service.

3. The guides were aligned with the Washington State EALR revision from July 17, 1998. In all probability the essential learning requirements will continue to change and be modified over the next few years, requiring revision in some areas. The lessons were aligned with benchmark 1-grade 4 in that the activity guides are targeted for grades three through five.

Definition of Terms

Significant terms used in the context of this project are defined as follows:

Benchmarks. A point in time which may be used to measure student progress. Designed to help educators organize and make sense of a complex process of interaction between the student, the teacher, and the learning process (Bergeson, 1996 p.9).

Commission on Student Learning (CSL). A state body established by the Legislature to carry out the three primary goals of the state's Educational Reform Act

passed in 1993. (1. Essential Academic Learning Requirements, 2. Assessment, 3.Accountability). The commission expired on June 30, 1998 (Bergeson, 1996 p.9).

Discovery Boxes. A set of boxes that contain environmental education materials and curriculum administered by the U.S. Forest Service and available for use by educators throughout North Central Washington State.

Environment as an Integrating Context for learning (EIC). Using a school's surroundings and community as a framework within which students can construct their own learning (Lieberman & Hoody, 1998).

Environment. The sum of all external conditions affecting the life, development, and survival of an organism (Environmental Protection Agency, 1989, p.7).

Environmental Education. A process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitments, and skills to work individually and collectively toward solutions of current problems and the prevention of new ones (UNESCO, 1978).

Environmental Education Goals. Four specific goals that make up the framework for environmental education in the state of Washington.

Essential Academic Learning Requirements (EALRs). A set of statewide standards representing the specific academic skills and knowledge students will be required to know and do (Bergeson, 1996 p.8).

Integrated curriculum. A curriculum approach which synthesizes learning across traditional subject lines, and in which learning experiences are arranged in order to be mutually reinforcing (Mansifeld, 1989).

Interdisciplinary curriculum. A knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience (Jacobs, 1989, p.8).

Multidisciplinary curriculum. The juxtaposition of several disciplines focused on one problem with no direct attempt to integrate (Jacobs, 1989, p. 8).

Organization of the Remainder of the Project

Chapter Two will review research summaries and literature organized to address the history and justification for using environmental education, curriculum integration using community resources, and a hands-on approach to teaching. Chapter Three will describe the procedures undertaken to develop the current project. Chapter Four will consist of an explanation of the project and activity guides developed. Chapter Five will include a summary, recommendations and conclusion.

CHAPTER 2

Review Of Related Literature

Introduction

Teachers have identified that they lack materials, time, and funding to effectively develop and teach environmental education programs. The purpose of this project was to develop an activity guide for the bear and wolf boxes of the U.S. Forest Service. The guide will use an interdisciplinary, hands-on approach, built upon a community resource, the bear and wolf boxes. Therefore, a review of literature and research summaries was conducted to evaluate the following issues:

1. History and justification supporting the use of environmental education.
2. Justification for an interdisciplinary approach.
3. Justification for using community resources.
4. Justification for using a hands-on approach to teaching environmental education.

History and Justification for Using Environmental Education

Concern about our environment and our impact on it are covered daily in our newspapers, media and households. Gore (1992) stressed the importance of environmental awareness stating the “rescue of the environment [should be] the central organizing principle for civilization” (p.269). Environmental Protection Agency (EPA) administrator, Reilly agrees, adding that a stronger custodial relationship with the environment needs to be cultivated. Reilly suggested that environmental stewardship is required in order to ensure and protect the health of our global habitat (as cited in Environmental Protection Agency, 1992). Therefore, environmental education is critical

because complex environmental challenges require a well-trained environmental workforce and an educated public who have the knowledge and skills to fully and actively participate in solving our environmental problems. Environmental education is relevant because it can help to ensure the health and welfare of the nation by protecting human health, advancing quality education, expanding employment opportunities, promoting sustainable development, and protecting our natural heritage (National Environmental Education Advisory Council (NEEAC), 1996). In a survey conducted for World Wildlife Fund, teens ranked the environment as one of the most serious problems society will face in the year 2000 (Hart, 1994). The data from this survey indicates that environmental education programs have an important role to play in the development of sound and effective environmental practices. Therefore, the protection and improvement of the environment on behalf of present and future generations of all living things have become important educational goals. "Because education is the vehicle through which society prepares its citizens to carry out their responsibilities, education must be environmental" (Ramsey, Hungerford, & Volk, 1992, p. 53). Regarding the importance of including an environmental perspective as part of school curriculum, Harrington (1990) writes:

The child who is not taught that the abuse of land can lead to the downfall of nations has been deprived of one of the most valuable lessons that history can teach. Some knowledge of both the resilience and the fragility of the earth is as much a part of basic education as reading and writing. (p.43)

"The significance of environmental education has been widely recognized for about 25 years, though views vary as to when the words environmental and education

were first used together” (Palmer, 1997, p.3). Disinger (1983) writes that the term was used in 1948 at a meeting in Paris of the International Union for the Conservation of Nature and Natural Resource. Yet only since the late 1960s has environmental education been actively debated and promoted globally.

Two founding documents in the environmental field are the: Belgrade Charter (United Nations Educational, Scientific, and Cultural Organization-United Nations Environmental Program (UNESCO-UNEP), 1976) and the Tbilisi Declaration (United Nations Environmental Program (UNEP),1978). The Belgrade Charter was adopted by a United Nations conference and provides a widely accepted goal statement for environmental education: The goal of environmental education is to develop a world population that is aware of and concerned about the environment and its associated problems and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. (UNESCO-UNEP, 1976).

In 1980, at the world’s first intergovernmental conference on environmental education, the Tbilisi Declaration was adopted. This declaration built on the Belgrade Charter and established an agreed upon definition and three broad objectives for environmental education. This definition and the three objectives provide the foundation for much of what has been done in the field since 1980:

environmental education is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitments,

and skills to work individually and collectively toward solutions of current problems and the prevention of new ones. The objectives were:

- To foster clear awareness of and concern about economic, social, political, and ecological interdependence in urban and rural areas:
- To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment:
- To create new patterns of behavior of individuals, groups, and society as a whole towards the environment. (UNESCO, 1978)

Waves of education reform efforts are sweeping the country with various strengths and directions. Environmental education has tremendous potential for contribution to the goals of the education reform movement (NEEAC, 1996).

“Environmental education can make a powerful contribution to the renovation of the education process” (Ramsy, et al., 1992). In many states, the attention to real world problems and problem-solving skills provides an excellent niche for environmental education. A sweeping education reform movement is evident here in Washington State as stated by Judith Billings when she was the State Superintendent of Public Instruction, “The people of the State of Washington have come to expect a great deal from environmental education in Washington schools” (Laracque & Silver (Eds.), 1987). This is evidenced by the implementation of environmental education in the kindergarten through 12th grades as mandated by state law WAC 180-50-115 (as cited in Laracque & Silver (Eds.), 1987). The outcomes expected of this state law include a respect for the land and all living things, fundamental knowledge of how the environment works, a

personal and societal sense of responsibility for the stewardship of our natural resources, and the maintenance of a high level of environmental quality. Environmental education has been recognized as an important component in the public schools. It is specified by the Washington State Legislature and the State Board of Education that the environmental be included as a topic of instruction in the school curriculum. The legal authority for Washington State environmental education can be found in RCW 28A.230.020-Common school curriculum-and WAC 180-50-115-Mandatory areas of study in the common school enacted by the state legislature in 1990.

Pursuant to RCW 28A.230.020 instruction about conservation, natural resources, and the environment shall be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment. (Laracque & Silver (Eds), 1987)

A document entitled Environmental Education Goals and Guidelines for Washington Schools was developed in 1987 (Laracque & Silver (Eds), 1987). The four goals provide a framework for environmental education for teachers in Washington State and succinctly present the basis of environmental literacy. The four environmental education goals are:

1. The student will develop knowledge of the components of the environment and their interactions.
2. The student will value the environment as the basis of our physical lives, economy, and emotional well-being.

3. The student will apply personal decision-making skills to enhance environmental quality.
4. The student will develop and utilize the knowledge and skills necessary for cooperative action on behalf of the environment. (Laracque & Silver (Eds), 1987)

To these ends, the Washington State Legislature and the State Board of Education have specified that the environment be included as a topic of instruction in the curriculum of our schools. Teachers are now mandated to incorporate environmental education into their teaching.

Justification for an interdisciplinary approach to environmental education

Environmental education has been characterized as a way of teaching that makes connections between science, technology, economics, policy, people, and the environment (Disinger & Monroe, 1994). It addresses interrelationships between humans and the environment. As the third guiding principle of environmental education from the Tbilise Declaration states: "Environmental education should be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective" (UNESCO, 1978).

Sumrall and Criglow (1994) maintain many recent science and environmental education reform initiatives have called for changes in the way science is taught. These changes include developing activities that eliminate rigid boundaries between subjects. When a topic is taught across the curriculum, students can see the connections between science and other subject areas and daily life. Because of the broad-based nature of environmental problems, environmental education is most effective when taught in an interdisciplinary fashion (Iozzi, 1987). Teachers have also stressed concerns about

attempting to fit yet another subject into an already overloaded curriculum (Ham and Sewing, 1988).

According to Lewis (1990), environmental studies could be the interdisciplinary tool that many reports on school reform and many curricula specialists recommend.

When implemented appropriately, right ecological studies cut across all the disciplines.

They incorporate hands-on activities, problem solving opportunities, and even awareness of the local community. In fact, a 1993 federal interagency report on environmental education and training concluded that: “..infusing environmental education into all subject areas can lead to overall improvements in the educational system, including improvements in teaching the core subjects” (Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), 1993).

Support for the use of an interdisciplinary approach to teaching environmental education is illustrated in the Washington State Board of Education’s response to RCW28A.230.020. The Board passed WAC 180-50-115 “....instruction about conservation, natural resources, and the environment shall be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment” (Laracque & Silver (Eds.), 1987).

James A. Beane (1995) states that integration centers a curriculum on life itself rather than on the mastery of fragmented information within the boundaries of subject areas. It is rooted in a view of learning as the continuous integration of new knowledge and experience so as to deepen and broaden understanding of ourselves and our world. Its focus is on life as it is lived now rather than on preparation for some later life or later

level of schooling. It serves the young people for whom the curriculum is intended rather than the specialized interests of adults. It concerns the active construction of meanings rather than the passive assimilation of others' meanings.

Glatthorn (1994) supported the need to integrate curriculum regardless of the approach utilized. He states, "In developing a rationale to support integration, you can turn both to research and theoretical arguments. In general research supports the use of integrated curriculum" (p.92). Glatthorn observed that the majority of more than eighty normative and comparative studies concludes that students in various types of integrated programs performed as well as or better than students studying separate subjects.

Glatthorn cited four theoretical arguments in support of integrated curriculum:

1. The real world is integrated, not fragmented or compartmentalized.
2. Students learn best when learning is connected to what they know or are interested in.
3. Integrated curriculum helps to save some time during the day.

Research conducted on brain activity suggests that the brain better retains and readily recall knowledge that is patterned and holistic. (p.92)

This interdisciplinary approach is supported by Messick and Reynolds (1992), who stated, "Relevance is increased when students can, first, apply knowledge to real-life situations that by nature are themselves interdisciplinary and, second, carry out problem-solving that requires addressing content from different perspectives" (p.164). Connelly and Clandinin (1988) suggested that "when we set our imaginations free from the narrow notion that a course of study is a series of textbooks or a specific outline of

topics to be covered and objectives to be attained, broader and more meaningful notions emerge. A curriculum can become one's life course of action."

Unfortunately, the data seem to suggest that environmental education has not been infused or integrated equally within the curriculum but tends to be treated mostly as an enrichment of science program. Ham and Sewing (1988) asked teachers in western Idaho and eastern Washington to identify the curriculum areas in which environmental education should be taught. The subject named by a majority of the respondents (62.6 percent) was science. The next most frequently mentioned subject, social studies, was named by 36.3 percent of the respondents. Other subject areas named with much less frequency were health (3.3 percent), language arts (2.2 percent), and reading (2.2 percent). Similar results were found when northern Illinois teachers were asked to rate the degree to which outdoor/environmental education should be integrated into various curricular areas (Simmons 1989). Over three-quarters of the teachers felt environmental education was most appropriately integrated into the sciences. As with the data collected by Ham and Sewing, other curricular areas, including social studies, language arts, and art, were mentioned far less frequently (only 30 to 40% of the time). Still other areas, such as math and music, were named less than 20% of the time, indicating that most teachers do not believe that environmental education can or should be incorporated into these areas (as cited in Simmons, 1989). As one might expect, the degree to which environmental education is actually integrated into schools closely follows these perceptions. Ham and Sewing (1988) found that respondents most frequently use environmental education within science (79.1 percent), followed by social studies (58.2 percent), reading (18.7 percent), language arts (12.1 percent), art (6.6 percent), health

(5.5 percent), math (4.4 percent), music (1.1 percent), and physical education (1.1 percent). Clearly if new activities and curriculum are to be developed in environmental education they should address reading, language arts, art, health, math, music and physical education. As Simmons (1989) says, "By emphasizing the science in curriculum materials, many teachers who are fearful of science may be scared away".

Many elementary teachers are poorly prepared to teach science and therefore devote little time to science in their classrooms (National Research Council, 1990). Teachers must be shown that a strong science background is not a prerequisite for teaching environmental education. Simmons points out that if environmental education is committed to integration and infusion, a great variety of curriculum materials clearly needs to be developed or adapted for use within non-science subject areas.

Justification for using community resources in environmental education

As the former State Superintendent of Public Instruction Judith Billings states, "We have learned over many years that environmental education is a collaborative form of education. It requires support and cooperation from all sectors of our society to achieve its intent of environmental literacy" (Laraque & Silver (Eds.), 1987). Therefore, partnerships are being formed between natural resource agencies, private organizations and schools all devoted to the education of our young people about the environment. Many agencies have the resource specialists and the scientific expertise to provide the technical background material and information that teachers may be lacking. Some agencies have trained education coordinators to aid schools in their environmental education instruction. Many have materials free of charge such as videos, traveling boxes, and scientific equipment. A partnership with an organization to provide training,

materials and curriculum could further insure that not only environmental education flourishes in our schools but that correct scientific material is provided too. These partnerships, furthermore, alleviate barriers teachers have cited in teaching environmental education such as time, funding and lack of materials (Ham and Sewing, 1988).

Using a local community resource is not a new concept. In 1938 Dewey (1938) suggested teachers know how to use their surroundings, physical and social, and extract from them all that they have to contribute to building experiences that are worthwhile. If an education system is based upon the necessary connection of education with experience, teachers must become acquainted with local community resources. Dewey believed learning resulted from experiences which were real, life-like, and available to the learner for firsthand examination, questioning, and cognition. However, community resources are not widely used in U.S. classrooms. (Osborn, 1994). "Typically, schools function in isolation from the broader community. In fact, the curriculum rarely benefits from resources in the school's own community" (Osborn, 1994, p.8). By using community resources or developing community service projects, teachers can provide their students with two motivators: a stimulating learning environment and a greater sense of purpose. It is imperative that organizations work with educators in providing creative partnerships and begin thinking of the community as an extension of the classroom.

A recent study funded by the Pew Charitable Trust and prepared by the State Education and Environment Roundtable (Lieberman & Hoody, 1998) studied 40 schools across the United States who used the Environment as an Integrating Context (EIC) for

learning. EIC- based learning is not primarily focused on learning about the environment, nor is it limited to developing environmental awareness. It is about using a school's surroundings and community as a framework within which students can construct their own learning. The EIC schools typically incorporate community resources including parents, specialists, nature centers, zoos, and available materials generated by these people. These community resources serve as sources of technical and professional expertise, to expose students to a variety of viewpoints and, in some cases to provide students with opportunities to work and learn in authentic settings such as water districts, fish hatcheries and city administrators. Lieberman states:

Collaborative instruction helps students learn that there are diverse perspectives about the environmental and their community as well as many different ways of looking at the world around them. These methods also help students understand that the knowledge and skills they gain as they study language arts, science, social studies, math and other subjects provide them the tools for understanding the complex interplay among socio- cultural and natural systems. (p. 13)

Evidence gathered from the 40 EIC study schools indicates that students learn to read, write, and do math more effectively within an environment-based context than within a traditional education framework. Overall, the learning effects of EIC are broad ranging and include:

- better performance on standardized measures of academic achievement in reading, writing, math, science, and social studies;
- reduced discipline and classroom management problems;
- increased engagement and enthusiasm for learning; and,

- greater pride and ownership in accomplishments. (p.22)

Justification for using hands-on learning

Hands-on lessons help children understand the interdependence of our environment. Caduto and Bruchac (1981), state:

lead children to touch and understand a grasshopper, a rock, a flower, a ray of sunlight, and you begin to establish connections between the children and their surroundings. Have them look at a tree-feel it, smell it, taste its sap, study its many parts and how they work. Help them to understand how it is part of a forest, community of plants, animals, rocks, soil and water. Build on these experiences with activities that help them to develop a conservation ethic. (p.1)

Lifelong habits for environmental responsibility can be taught through a variety of hands-on lessons and activities. Whenever possible these lessons should be extended into a natural environment. Caduto (1989) agrees with this concept when he suggests that we “help children to experience the subject first hand. If the lesson is about trees take them to a tree in the backyard, forest, a park or school grounds. If you are studying water, take them to water” (p.10). If it is about bears or wolves have them study the tracks, pelt and scat of the animal. Let them experience this first hand. Students need to see it and touch it to truly understand it.

Perry and Rivkin, (1992) found that elementary teachers felt they did not have to be experts in science. When teaching new concepts, teachers felt they could learn along with the students, demonstrating, looking things up, observing, and wondering, thereby supporting the students’ curiosity. When an instructor is not knowledgeable about a course of study, it becomes easy to neglect the subject matter. However, when both the

teacher and the student are exposed to first hand exploration of a subject, they both benefit. The teacher becomes a better resource for the student and the student gains valuable information.

Bones (1994) contended, “environmental education seeks to build awareness” (p.13). Through first hand experiences, students gain an understanding of the integral relationship between nature and man. When a student is familiar with frogs and their intricate life cycles, the impact of spilling pollutants into area streams and rivers becomes more apparent. Before we can strive to preserve nature we must first be familiar with all the aspects of it, plants and animals alike. DeBuhr (1995) agreed with this view: “It is also clear than an interactive science program whereby children are actively engaging in problem identification, investigation, data collection and analysis, and synthesis is far better than passive approaches that only utilize lecture, observation, or watching” (P.5). According to Cohen and Trostle (1990), “experiences designed to increase children’s awareness of import and ecological issues must be developmentally appropriate, take place in real settings, and involve the child’s active exploration” (p. 304). Tamarkin and Bourne (1995) indicated that an integrated hands-on science curriculum can empower students. After attending an elementary science integrated project program, they declared, hands-on integrated science projects enable students of all ability levels to explore and learn. Experimental (hands on) activities can facilitate the construction of abstract concepts and can enhance meaningful learning, providing the framework for long term memorized episodes (Orion, 1993). Furthermore, “hands-on” activities are an appropriate teaching method for elementary children in the elementary children in the concrete states of cognitive development (Ripple et al. 1982). Hands-on

activities can touch on all learning styles and be integrated naturally into other subjects in the curriculum.

A growing form of a “hands-on” resource for teachers to use is a portable multi-media box, variously termed “discovery kits” and “resource trunks”. They are usually housed at educational facilities such as a nature center, museum, zoo or a local natural resource agency office. They are shipped or picked up for teachers to use for periods of a few days to a month in the classroom. Box contents, along with curriculum guides and reference materials, are designed to help classroom teachers develop comprehensive environmental education units. As cited earlier, teachers, have identified logistical barriers to teaching environmental education including either the perceived lack of time to teach and prepare quality environmental education programs or the lack of funding for environmental education materials (Ham and Sewing, 1988). Roy, Petty and Durgin (1997) conducted a nationwide study examining the use of traveling boxes as a tool for environmental education. The self-contained, portable environmental education “boxes” were suggested as a new tool to assist teachers in eliminating some of the barriers mentioned above and were found to be effective in education of environmental concepts. “Most boxes are accompanied by interdisciplinary curriculum guides which provide teachers not trained in environmental education or those who do not have time to design a comprehensive environmental education unit a means to present a focused environmental education experience with relatively little preparation” (Roy et al., 1997, p.15).

Summary

The review of research and literature in chapter two indicates that environmental education has been identified as an important component in our education system including Washington State schools. The literature reviewed suggested that environmental education concepts are well suited to an integrative teaching delivery, with an emphasis in all areas of study and not just focusing on science. In order to achieve higher standards for environmental education achievement, teachers need access to quality materials, props and activity guides to facilitate their teaching process. Many times they need to assess community resources to obtain these materials. The research supported the use of a hands-on approach to teaching environmental education and its beneficial affects on student learning. An ideal curriculum or activity guide is one that combines relevant background information with effective hands-on activities. The research indicates that traveling education trunks seem to provide an effective answer to the barriers of environmental education as studied by Ham and Sewing (1988), by eliminating much preparation time, costly expenditures by providing all supplies and equipment for hands-on lessons and providing resources for increased teacher competence in environmental education. In summary, combining a variety of academic disciplines and skills within a theme like environmental education enhances learning. In Judith Billings' (1994) words:

Environmental education teaches an understanding of how our ecosystems work and what strategies are needed to keep them healthy and productive. The process can happen anywhere...at home, in classrooms, at work, within the community and on playgrounds, parks or wilderness areas. Environmental education

integrates the sciences, language arts, mathematics, social studies, health and physical education by using the environment as a mode. It teaches the skills and creates the awareness necessary for individuals and institutions to make environmentally sound decisions. (p.2)

CHAPTER 3

Procedure

Introduction

The purpose of this project was to develop an interdisciplinary activity guide to be used with the bear and wolf boxes. The bear and wolf boxes have been used by educators for the past 5 years. However, both boxes lacked activity guides to fully utilize the learning potential and materials in the boxes.

Process Used to Develop the Project

To obtain background information on effective environmental education development a review of literature was conducted. The process used to develop this project was to locate, modify and create activities which will enhance the props and materials in the bear and wolf boxes. A draft activity guide was developed targeting grades 3-5. The guide was interdisciplinary in that it incorporated subjects in math, science, language arts and social studies. Four teachers in grades 3-5 taught the lessons in their classrooms in conjunction with the bear and wolf box. Lessons were modified, created or eliminated based on teacher and student feedback. Props and materials were added to the box to enhance some of the activities.

The lessons were aligned with the Washington State EALR for benchmark 1. In Washington State, the Commission on Student Learning adopted higher academic standards statewide in 1995, for the “basics”- reading, writing, communication, and math, in addition science, social studies (history, geography, civics, and economics), arts, and health & fitness in April of 1996. The EALR can both be found in their entirety in the Essential Academic Learning Requirements Technical Manual published in 1997 by

the Washington State Commission on Student Learning. Together the EALR and the state learning goals provide clear learning targets for students and teachers. They provide specific academic skills and knowledge that all students in the state will be required to master.

CHAPTER 4

The Project

The purpose of the project was to develop an environmental education activity guide to be used with the bear and wolf boxes. The activities developed for this project contain activities for the boxes and others can be used without the boxes. The activity guides are intended to incorporate a number of subject areas including science, math, language arts, reading and social studies. The lessons could be used individually or as an entire unit and were targeted for grades 3-5. Each guide was aligned with the Washington State EALR with benchmark one.

Each activity guide has a table of contents, directions on its use and a related bibliography. Each activity includes topic of instruction, objectives, materials needed, teacher and student worksheet used, preparation steps for the teacher, doing the activity, and background information where necessary.

It is important to note that the length of time required to implement the activities presented can vary from several days to several weeks. Learning is truly enhanced if the boxes are used with the guide. The wolf activity guide is presented in Appendix A and the bear activity guide is presented in Appendix B.

CHAPTER 5

Summary, Conclusions, and Recommendations

Summary

Literature supports a hands-on, interdisciplinary approach to teaching environmental education and the use of community resources as an extension to the classroom. Surveys confirmed that teachers have limited time, funding or resources to develop environmental education materials, let alone teach it. This project was developed to enhance the wolf and bear discovery boxes currently distributed through the Wenatchee National Forest to educators across North Central Washington. Interdisciplinary, hands-on activities, targeted for grades 3-5, were developed to enhance the props and materials that are contained in the two boxes. All activities were aligned with the Washington State EALR. The lessons were reviewed by four North Central Washington teachers (grades 3-5), tested in the classroom for their usefulness, and modified as needed. This project maximized the educational opportunities of the bear and wolf box and alleviated some of the barriers that the literature identified in teaching environmental education. This activity guide, along with the resource boxes, will perhaps serve as a model for other resource boxes developed.

Conclusions

Conclusions reached as a result of this project are:

1. Literature supports that environmental education programs have an important role to play in the development of sound and effective environmental practices. Therefore, this activity guide along with the resource boxes plays an essential role in bear and wolf conservation in

Washington State by addressing important conservation issues, such as species identification, habitat conservation and human and wildlife interactions.

2. The activity guide supports Washington's State environmental education mandate WAC 180-50-115 and assists teachers in its implementation.
3. Environmental concepts are well suited to an interdisciplinary approach across all disciplines. This activity guide supports an interdisciplinary approach by providing lessons in science, math, arts, social studies, language arts, reading and writing.
4. Environmental education is a collaborative form of education, requiring support and cooperation from community resources. This activity guide along with the resource boxes is a collaborative community effort of the U.S. Forest Service, educators and biologists working on wolf and bear conservation.
5. Environmental education is enhanced through a hands-on approach as is demonstrated in this activity guide coupled with the materials and props from the resource boxes.
6. This activity guide maximizes the educational opportunities of the bear and wolf boxes.
7. The bear and wolf resource boxes along with the activity guides are an effective tool to eliminate identified barriers to teaching and provide teachers a means to present a focused environmental education experience with little preparation.

Recommendations

As a result of this project the following recommendations have been suggested:

1. Group activities can lead to classroom management problems if they are not set-up and conducted in an organized manner. It is optimal to organize materials and activities ahead of time.
2. Assessment procedures and instruments to evaluate the effectiveness of the interdisciplinary activity guide should be created and implemented.
3. Assessment procedures and instruments to evaluate student attitude toward this interdisciplinary curriculum should be created and implemented.
4. The activity guide should be adapted as new scientific information becomes available regarding the biology and ecology of these species, and their conservation status in the North Cascades. At a minimum this activity guide should be reviewed every three years.
5. The alignment to the Washington State EARL should be reviewed on a yearly basis for revisions.
6. The boxes and activity guides should be distributed to agencies and school districts located within or close to areas affected by the bear and wolf conservation efforts in Washington State. In this manner, education could be focused on the communities that are most affected by the conservation of these species.

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GRIZZLY BEARS and WOLVES

IN
NORTH AMERICA



WENATCHEE NATIONAL FOREST



WOLVES

TEACHER INFORMATION



APPENDIX A

WOLF TEACHER WORKBOOK

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ACTIVITY

ESSENTIAL LEARNING'S

BENCH MARK 1- GRADE 4

#1- Getting Started-Wolf

Science 2. The student knows and applies the skills and processes of science and technology.

Reading

1. The student understands and uses different skills and strategies to read.

2.1 develop ability to do scientific inquiry questioning, ask questions about objects, organisms, and events in the environment.

1.2 building vocabulary through reading building reading vocabulary by interpreting context clues and using dictionaries, glossaries, and other sources.

#2- Wolf Images

Social Studies: History
3. the student understands the origin and impact of ideas and technological developments on history and social changes.

Social Studies: Geography
3. the student observes and analyzes the interaction between people, the environment, and cultures.

Reading

2. The students understand the meaning of what is read

3.2 analyze how historical conditions shaped ideas and how ideas change over time explain how historical conditions have shaped ideas.

3.3
examine cultural characteristics, transmission, diffusion, and interaction

2.3 think critically and analyze author's use of language, style, purpose, and perspective separate fact from opinion recognize different purposes and styles for writing.

Life Cycle of the Wolf

Science

1. the student understands and uses scientific concepts and principals

1.2 recognize the components, structure, and organization of systems and the interconnections within and among them molecular basis of heredity describe the life cycle of plants and animals, and recognize the differences between inherited and acquired characteristics.

ACTIVITY

ESSENTIAL LEARNING'S

BENCH MARK 1- GRADE 4

#3-Life Cycle of the Wolf
continued

Science
1. the student understands
and uses scientific concepts
and principals

1.3 understand how interac-
tions within and among sys-
tems cause changes in matter
and energy. Interdependence of
life describes how and
organism's behavior and ability
to survive is influenced by its
environment, other life forms,
and availability of food and/or
other resources

Arts
4. The student understands
how arts connect to other
subjects areas, life, and work.

4.1 use arts skills and knowl-
edge in other subjects areas
use arts forms to reflect
concepts learned in other
subjects.

#4-Where has the wolf gone?

Social Studies- geography
1. The students uses maps,
charts, and other geographic
tools to understand the spatial
arrangement of people, places,
resources, and environments on
Earth's surfaces.

1.1 use and constructs maps,
charts, and other resources.

Social Studies-geographic
3. The student observes and
analyzes the interaction
between people, the environ-
ment, and culture

3.1 identify and examine
people's interaction with and
impact on the individual de-
scribe how individual behaviors
alter the environment and how
the environment influence the
individual.

#5-All in the Family

Social Studies-geography
1. The student uses maps,
charts, and other geographic
tools to understand the spatial
arrangement of people, places,
resources, and environments on
Earth's surfaces.

1. use and construct maps,
charts, and other resources.

ACTIVITY

#5-All in the Family

ESSENTIAL LEARNING'S

Mathematics

1. The student understands and applies the concepts and procedures of mathematics.

BENCH MARK 1- GRADE 4

1.4 understand and apply concepts and procedures form probability and statistics organize and display data in numerical and graphical forms such as tables, charts, pictographs, and bar graphs.

4. The student communicates knowledge and understanding in both everyday and mathematical language.

4.1 gather information use reading, listening, and observation skills to access and extract mathematical information form a variety of classmates, oral narrative, and symbolic representation.

4.2 represent and share information express ideas using mathematical language and notation such as physical or pictorial models, tables, charts, graphs or symbols.

#6-Wolf and Coyote Pelts

Mathematics

1. The student understands and applies the concepts and procedures of mathematics.

1.2 understand and apply concepts and procedures from measurement use directly measurable attributes such as length, perimeter, to describe and compare objects.

#7-Jaws

Communication

1. The student uses listening and observation skills to gain understanding.

1.2 listen and observe to gain and interpret information identify visual information such as from a science experiment interpret visual text such as illustrations, comics, and videos.

#8-Scat

Science

1. The student understands and uses scientific concepts and principles.

1.1 use properties to identify, describe, and categorize substances, material, and objects use characterized to categorize living things. Use properties to sort natural and manufactured material and objects, for example size, weight, shape, color, texture, and hardness.

ACTIVITY**ESSENTIAL LEARNING'S****BENCH MARK 1-
GRADE 4**

#8-Scat
continued

2. The student knows and applies the skills and processes of science and technology

2.1 develop abilities necessary to do scientific inquiry use data to construct reasonable explanations.

#9-Wolf communication

Communication

1. The student uses listening and observation skills to gain understanding.

1.2 listen and observe to gain and interpret information identify visual information such as from a science experiment interpret visual texts such as illustration, comics, and videos.

Science

1. The student understands and uses scientific concepts and principles.

1.1 use properties to identify, describe, and categorize substances, material, and objects use characterized to categorize living things. Use properties to sort natural and manufactured material and objects, for example size, weight, shape, color, texture, and hardness.

2. The student knows and applies the skills and processes of science and technology.

2.1 develop abilities necessary to do scientific inquiry use data to construct reasonable explanations.

#10-Howling

Communication

1. The student uses listening and observation skills to gain understanding.

1.2 listen and observe to gain and interpret information recognize non-verbal communication interpret visual texts such illustrations, comics, and videos.

#11-Who was that?

Communication

1. The student uses listening and observation skills to gain understanding.

1.2 listen and observe to gain and interpret information recognize non-verbal communication interpret visual texts such illustrations, comics, and videos.

ACTIVITY

#12-Tracks

ESSENTIAL LEARNING'S

Mathematics

1. The student understands and applies the concepts and procedures of mathematics.

**BENCH MARK 1-
GRADE 4**

1.2 understand and apply concepts and procedures from measurement use directly measurable attributes such as length, perimeter, to describe and compare objects.

Science

1. The student understands and uses scientific concepts and principles.

1.3 use properties to identify, describe and categorize substances, materials, and objects

2. The student knows and applies the skills and processes of science and technology.

2.1 develop abilities necessary to do scientific inquiry use data to construct reasonable explanations

WOLVES IN NORTH AMERICA

Hello Teachers!

Welcome to the activity guide for wolves. By presenting interesting facts concerning this species, we hope to increase understanding of the wolf and their roles in our environment. It is the intent for this guide to be user friendly, hands on and interdisciplinary.

This guide is geared for grades 3rd through 5th grade students, but can be adapted for other grade levels. The guide includes activities in all curriculum areas. Your wolf unit will be greatly enhanced with the use of the U.S. Forest Service wolf box. The box may be checked out at the Leavenworth Ranger district by contacting the education coordinator at 509-548-6977.

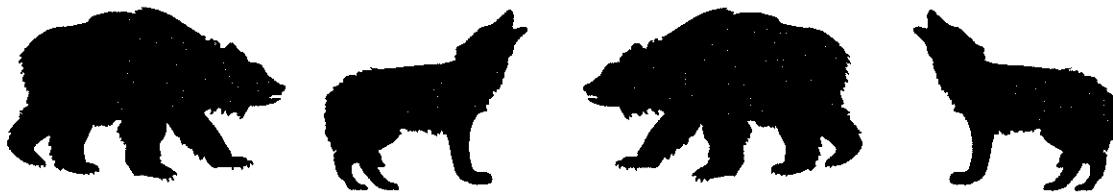
We encourage teachers to utilize other resources in the use of this guide e.g. school librarian, songs, books, and movies. Take time to review this guide and the boxes thoroughly before beginning your unit. The wolf guide is split into a teacher and student workbook. Many of the activities involve materials and props from the boxes. Each of the lessons will tell you what materials are needed. Materials that have a paw next to them indicate that they are found in the wolf box. Please understand that there is a lot of information here and you will have to decide what you can and can not cover.

All of the activities have been aligned with the Washington State Essential Academic Learning Requirements revision from July 17, 1998. They are aligned with benchmark 1 for 4th grade. This material has been tested in classrooms and resulted in an exciting learning experience for teachers, students, and parents.

This guide is by no means the exclusive source for wolves. In fact, there are many great resources and materials and we hope you will incorporate those along with this guide and the wolf box to make your unit the very best. We welcome any feedback on how this can be continually improved.

We hope you enjoy teaching these units!





Dear Parent,

Over the next two weeks, our class will be studying grizzly bears and/or wolves. They are both listed as endangered species in the lower 48 states.

In this unit we are presenting the students with the facts about bears and/or wolves - two of the most fascinating mammals in North America. Our aim is to give the students all the information we can and then let them come to their own conclusions about how man and these two species can coexist.

We encourage you to discuss this lesson with your child, check out books on bears and/or wolves from the library and be willing to carefully look at the materials your child is working on.

In this time of increasing environmental awareness, our goal is to teach the students to look at all sides of an environmental concern. They will learn to weigh the issues fairly, and come to understand all the responsibilities involved in protecting our world for future generations.

You are welcome to join us in our classroom to help us learn about bears and/or wolves. If you have any bear or wolf related items that you would like to share, please call your child's teacher and let him/her know what you have available.

Sincerely,

Activity #1-Getting Started

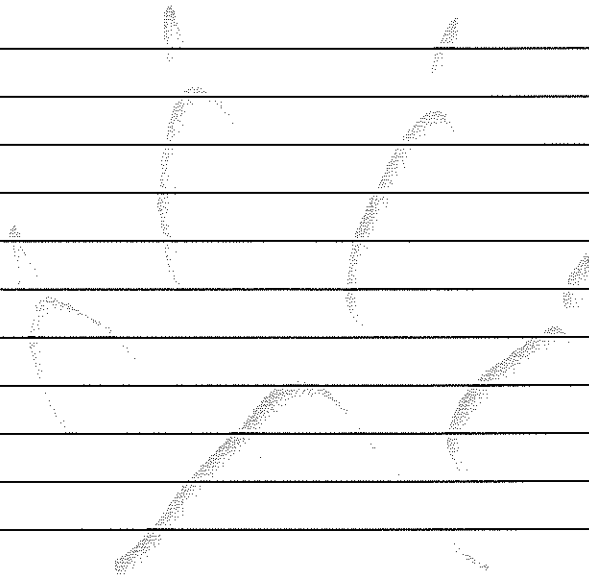
1. Check out the wolf box from the Leavenworth Ranger Station, U.S.Forest Service at 509-548-6977.
2. Review the activity guide and boxes to organize your unit. Remember you probably won't have time to do everything.
3. Please note with each of the activities in this guide that a 🐾 in the "Materials you Need" section indicates materials from the wolf box. The materials from the box are in **bold lettering**. The worksheets needed for each activity are identified throughout the guide in *italics*.
4. Contact your school librarian and other sources to obtain additional materials on wolves. **Discovering Wolves** and **The Wonder of Wolves** (both in the Wolf Box) are referred to throughout this activity guide. They too are excellent sources of materials.
5. Photocopy the student workbook located in the second half of the curriculum(decide if you will have time to use the whole workbook or certain portions) for each student.
6. Have students complete the *Knowledge Check* in the student workbook pg.1 before you begin the unit. Have students share their facts and questions about wolves with the rest of the class. Be sure at the end of the unit students complete the unit with the *Knowledge Check After the Facts* on pg. 36 of their student workbook
7. Photocopy the *blank wolf tracks* on the next page. Students should write down a question and a fact about wolves on each of the tracks. Display the question and knowledge tracks on a bulletin board or around the classroom in some creative fashion. Refer to these throughout the unit. As you and your students discover answers to the questions be sure to record those too.
8. Some of the activities include key vocabulary to review with your students. Students should complete their *key vocabulary* student worksheet on page 2 when these key words are discussed.
9. Have students look at *Wonderful Wolf Words* in their student workbook pg.3. Be sure students add new vocabulary words throughout the unit.
10. Student worksheet pgs. 27-35 do not belong to any specific activity but can be done when students have free time.
11. If you decide to do the bear activity guide along with the wolf activity guide then you might want to compare and contrast the wolf and bear activities, i.e. their lifecycles, tracks, skulls, etc.
12. Student answers are found at the end of the activity in your teacher workbook.
13. Review videos before the unit to learn more about wolves and to decide which ones are most appropriate to show your class. Be sure to rewind videos after viewing them. Thank-you!



Wolf Track Questions

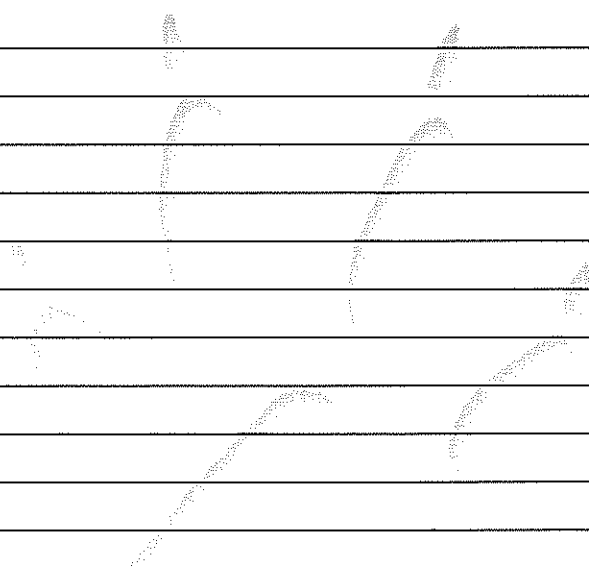
PHOTOCOPY WOLF TRACKS. HAVE STUDENTS WRITE A QUESTION THEY HAVE ABOUT WOLVES. DISPLAY THESE AROUND THE ROOM. BE SURE TO RECORD THE ANSWERS WHEN YOU FIND OUT!

MY QUESTION ABOUT WOLVES IS:



A series of horizontal lines for writing a question about wolves. A large, faint watermark of a wolf's paw print is centered over the lines.

I KNOW THIS ABOUT WOLVES:



A series of horizontal lines for writing a fact about wolves. A large, faint watermark of a wolf's paw print is centered over the lines.



Activity #2= Wolf Images

People, including your students, have different stereotypes or images of wolves. These may have developed because of a television program, a movie, what they heard someone say or a fairy tale. Different cultures have different ways of viewing the wolf. In this activity you will be discussing with your students their images of wolves and share with them other culture's perspectives.

OBJECTIVES:

Students will:

- complete a word web of wolf images.
- identify different human perceptions about wolves from different cultures.
- create their own wolf legend or myth.

MATERIALS YOU NEED:

- 🐾 Wolf Stories
 - 🐾 The Wonder of Wolves
 - 🐾 The Three Wolves and the Big Bad Pig
 - 🐾 Photo Cards #1-10
 - 🐾 Videos - "The Wolf Real or Imagined", "Return of the Gray Wolf", "World of Discovery"
- other suggested books listed below can be obtained from you library

STUDENT WORKSHEETS:

Wolf Word Web (student workbook pg.1)

Wolf Images (s.w. pg.6)

Wolves in Legends and Stories (s.w. pg.5)

TEACHER WORKSHEETS:

Wolves in Mythology (teacher workbook pg. 6)

Native American and Wolves (t.w. pgs.7-9)

Indian Legends (t.w. pgs.10-11)

KEY VOCABULARY:

legend, mythology

BEFORE THE ACTIVITY:

Gather from your library and other sources books on wolves. Some books you might want to check out from your library that depict other cultures perspectives on wolves are:

Lon Po Po- a Red Riding Hood Story from China , by Ed Young. 1989. (Calcott award for children's artwork). Publ. By Putnam Co., NY. (The Red Riding Hood story from another culture, good point to start discussions on what animal stories are really saying—are they about biology or are they a way teach us how to live in our society?)



The First Dog, by Jan Brett. 1992. Publ. By Trumpeter Club, NY. (A story set in the ice-ages. Be sure to read publishers note.)

Dream Wolf by Paul Globe. 1990. Bradbury Press, N.Y. (Illustrated Native American story about a wolf who helps two lost children.)

The True Story of the 3 Little Pigs by A. Wolf as told to Jon Scieszka. 1989. Penguin Books (The wolf's version of what really happened when he encountered the three little pigs.)

Sirko and the Wolf adapted by Eric A. Kimmel. 1997. Holiday Haus, N.Y. (A dog and a wolf help each other in time of need in this Ukranian tale.)

DOING THE ACTIVITY:

1. Discuss with your students the different images they have of wolves.
2. Have students complete the *Wolf Word Web* in their student workbook using different words that describe a wolf to them. The students do not have to fill all the bubbles at this point but can continually fill them in as they learn more about wolves. Many of your students might use words like "scary", "mean", or "dangerous" in the beginning. As they learn more about wolves you might be surprised at what words are written on their word web!
3. Discuss with your students what fairy tales they have read that have wolves in them. How is the wolf depicted in these fairy tales? How might these images influence our opinions about wolves? Are there other animals that we have stereotypes for from fairy tales? Pigs? Donkeys?
4. Read and share with students stories about wolves from other countries and their different perspectives. The following **three stories can be found in the wolf box:**

How is the wolf portrayed in each of these stories?

Wolf Stories by Susan Strauss. 1993. Beyond Words Publishing, Inc. (Or. A book of short stories sharing different myths and true-life tales from around the world.)

The Three Little Wolves and the Big Bad Pig by Eugene Trivizas and Helen Oxenbury. 1993. Macmillan Publishing Company, NY. (A role reversal from the classic fairy tale.)

The Wonder of Wolves by Sandra Chisholm. 1997. Denver Museum of Natural History, Co. "The mask of the wolf" P.4-19. (A Native American story with follow-up activities.)



5. Share *Wolves in Mythology and Native American's and Wolves* from your teacher workbook. Have them complete the student worksheet page, *Wolf images and Wolves Myths and Legends*. Have students share their myths and legends with the rest of the class. They might want to supplement their stories with pictures too.
6. Share the photo cards in the wolf box #1-#10. Which ones make you like wolves? Which wolves do you fear? Can pictures be used to present only one side of an issue? Be sure to share the information on the backside of the cards and the background information provided below.
7. Review the videos in the box to decide their age appropriateness for your students. All students may enjoy the "World of Discovery". Older students may like the videos "The Wolf Real or Imagined" and "Return of the Gray Wolf" found in the wolf box. Please be sure to rewind them when you are done.
8. Have students complete *Wolf Images* from their student worksheet. Share with the class their images and if they are based on fact or fiction.

BACKGROUND:

For thousands of years humans have lived near wolves. We have viewed the wolf in many different ways depending on the culture we grew up with, the stories, myths and movies in place, and what we heard from our role models. Some common viewpoints about wolves are:

Many hunter-gatherer societies view the wolf as a teacher who can show them how to hunt animals larger than themselves, live together cooperatively and yet still remain strong individuals. Some people view the wolf as a part of the wilderness that threatens their existence. To them civilization is good and wilderness is bad. Wilderness is beyond human control and gives humans nothing. Wolves, unlike weather, diseases, and other natural phenomenon, are something they can eliminate.

Many people, especially those in cities who are isolated from nature, view the wolf as a "noble, god-like" animal. They believe that the wolf, unlike their own industrial society, lives in harmony with nature.

For many years biologists viewed the wolf as harmful to populations of more useful species such as deer and elk. It was thought that wolves could reduce or eliminate deer and elk populations, so to increase these populations wolves needed to be eliminated. Now biologists have come to realize the valuable roles wolves play in ecosystems, such as killing the weak and sick members of prey populations, and maintaining numbers of prey population in check so they don't overgraze their habitat.

Wolves occasionally kill livestock, such as sheep or cattle. People who make their living by raising livestock can view the wolf as being very detrimental to their way of life. For years the U.S. government paid people to kill wolves in order to protect livestock. Now the government is trying to recover wolf populations. In many cases, wolves who kill livestock are moved or destroyed and the livestock owner is compensated for their losses.



WOLVES IN MYTHOLOGY

GREEK

The stories of werewolves (humans who turn into wolves at night) were thought to have originated in Europe hundreds of years ago. However, the idea of werewolves may go back even farther than that — to Ancient Greece. The following is a Greek Myth which is similar to later werewolf stories.

The great Greek God Zeus went to Earth disguised as a worker one day. On Earth was a man named Lycaon who worshipped Zeus properly. However, his sons were not so respectful of Zeus. Zeus went to check on the sons' behavior. He found they were being arrogant, boastful, rude, and disrespectful to their father. In addition, they were not worshipping properly.

Lycaon welcomed Zeus, (who was in human form) and planned to serve him a meal. Lycaon's sons convinced him to serve Zeus a meal that contained human flesh to see if the visitor was really Zeus in disguise. One of the sons was killed and his flesh mixed in with goat and lamb meat. Zeus knew immediately that there was human flesh in the stew. He was furious !

Zeus changed Lycaon and the remaining sons into wolves, and then restored the life of the son that had been killed. Then Zeus caused a great flood which drowned all men except for Deucalion, a wise and pious man who built an ark. Some other Greeks escaped the flood because they awoke in the middle of the rains to the sound of wolves' howling. The wolves then led the other Greeks to higher ground.

Lycaon's name has been preserved in the scientific name for the Eastern Timber Wolf — *Canis lupus lycaon*.

The word Lycanthropy is another modern word that comes from the Greek myth. Lycanthropy is a state of mind in which a person believes himself to be a wolf in human form (a werewolf).



NATIVE AMERICANS AND WOLVES

PLAINS INDIANS

CHEYENNE (N. Dakota, S. Dakota)

PAWNEE (Nebraska, Kansas)

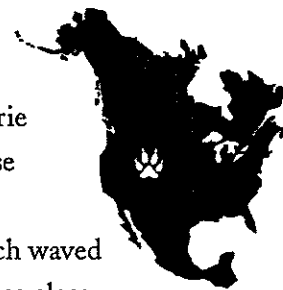
SIoux (Minnesota, N. Dakota, S. Dakota)

- 🐾 The wolf was an esteemed and honored “medicine” animal.
- 🐾 Tribes believed that what made the wolf stronger made the pack stronger, therefore what made the hunter stronger in their tribe, also made the tribe stronger.
- 🐾 These tribes used parts of the wolf as ceremonial items, and as symbols of strength.
- 🐾 Pawnee were known as the “Wolf People.” Their sign language for their tribe was the same as the sign for “wolf.”
- 🐾 The Pawnee wore wolf skins at times, both for hunting and special ceremonies.
- 🐾 Pawnee called the Wolf Star (Sirius—also known as the Dog Star) or the “Red Star of Death.” The Milky Way was called “The Wolf Road.”
- 🐾 To the Pawnee, the wolf was a symbol of renewal, as was the willow tree.
- 🐾 The Cheyenne wrapped wolf fur around sacred arrows and used it to attract curious antelope.
- 🐾 The Cheyenne had a special group of warrior/hunters called the “Wolf Soldiers.” This group was formed around the early 1800’s. They believed they were invincible in battle.



SHOSHONI — WYOMING

- 🐾 The Shoshoni observed that wolves laid low on the prairie, and wagged just the tip of their tail above the prairie grass. The purpose was to attract the curious antelope close enough for a successful kill. The Shoshoni imitated this technique by tying a piece of hide to a stick or arrow, which waved above the grass as they laid flat. This attracted the antelopes close enough for a successful arrow shot.



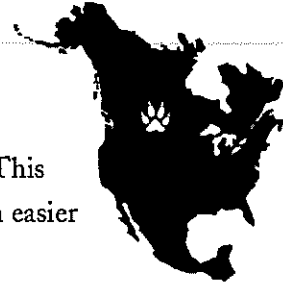
NAVAJO — NEW MEXICO

- 🐾 The Navajo tribe feared wolves as human witches in wolves' clothing. This belief was similar to the "werewolf" tales that were prevalent in Europe.
- 🐾 Navajos used the gall from a dead wolf as a powerful protective medicine.



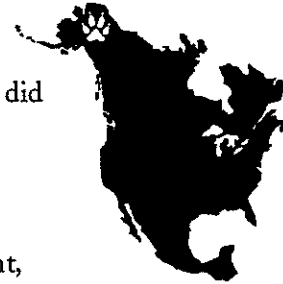
CREE — ALBERTA, CANADA

- 🐾 This tribe imitated the wolves' hunting technique by maneuvering ungulates onto slippery lake ice in winter. This caused the animals to slip and fall, and made them much easier to catch and kill.



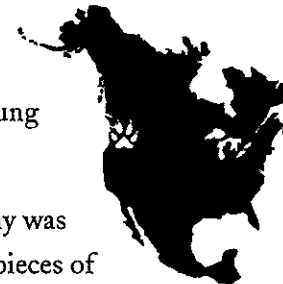
NUNAMIUT — BROOKS RANGE, ALASKA

- 🐾 Members of the Nunamiut tribe, especially hunters, identified closely with wolves as fellow hunters. The hunters did not hunt when the weather was bad, neither did the wolves.
- 🐾 Tribal members liked to play, as did the wolves.
- 🐾 All members of the tribe benefited from a successful hunt, children and old alike, just like in a wolf pack.



MAKAH, QUILLAYUTE, NOOTKA, KWAKIUTL — PACIFIC NORTHWEST COASTAL

- 🐾 Each of these tribes celebrated a wolf ritual at the beginning of winter just before a full moon. The wolf ritual was used as an initiation ceremony to welcome young people into the tribe.
- 🐾 In the Kwakiutl tribe, when a wolf was killed, a ceremony was held in which each of the hunters would eat four small pieces of meat. Then the rest of the wolf carcass was buried, and members would call the wolf their good friend.



CHEROKEE

— TENNESSEE, N. CAROLINA, S. CAROLINA

- 🐾 The Cherokee believed that to kill a wolf would bring trouble to the whole tribe.



PUEBLO — ARIZONA

- 🐾 Both Pueblo Indians and the wolves hunted deer by running them to exhaustion. This took the tribal members several days in some cases. The wolves succeeded much more quickly.



WOLF ART

Pacific Northwest Coastal Indians



INDIAN LEGENDS

The coyote, another member of the dog family played a very important role in Native American Legends. Coyotes lived all over North America, and were known to all the Indian tribes. There are very few recorded Indian legends dealing with the wolf, but hundreds of legends about the Coyote.

The Pawnee tribes of what is now Nebraska and Kansas, held the wolf in high regard, and even called themselves the "Wolf People". Their creation legend deals with the wolf.

PAWNEE CREATION LEGEND

All the animals were invited to a council, except the Wolf Star, who was the brightest star in the southern sky. He watched from above, getting more and more angry as he saw the council decide how to make the Earth. The Storm That Comes Out of the West was told to go around the Earth with a bag containing the People. Storm was to stop every night, let the People out of the bag to camp and hunt buffalo. Wolf Star sent a gray wolf down to Earth to follow Storm around. When Storm fell asleep, the wolf stole his whirlwind bag, thinking it was full of food. He ran far away with the bag. When he opened up the bag, all the People ran out and set up camp. But soon they realized that there were no buffalo there to hunt. They discovered it was Wolf that had opened the bag. They were very angry and chased Wolf, finally catching him and killing him.

When Storm finally found the People, he was sad at what they had done. He told them that by killing Wolf they had brought Death to the world, which Storm had never intended to do. He told them to skin the Wolf and make a sacred bundle. In the bundle they were to place the things that would forever remind them of what they had done. From that time on they would be known as the "Wolf People" or Skidi Pawnee.

The Wolf Star (Sirius) watched all this. The Pawnee called the star "Fools the Wolves" because it rises just before the Morning Star and tricks the wolves into howling just before first light. This is how the Wolf Star still reminds the People that he was left out when Earth was created.



CHINOOK INDIAN LEGEND

(COLUMBIA RIVER)

Although, the Coyote is an important figure in Indian legends, he rarely appears in the same story with both the Wolf and the Bear. This legend explains how both Sirius (the Dog Star constellation) and Ursa Major (the Great Bear) appeared in the sky.

Coyote (the Trickster) was out hunting in the field one night when he came upon a group of five wolves sitting with their dog. The wolves and the dog were all looking at the sky. Coyote looked up but could see nothing. He politely asked them what they were looking at. They rudely replied, "None of your business." Coyote was persistent in asking them to tell him what they were gazing at. Finally one of the Wolf brothers said, "If you must know, we see a Bear up there in the sky and we are watching it."

Coyote looked up, and sure enough, he could see the outline of a large Bear in the sky. He said, "Maybe we should all go up and take a closer look at that Bear."

At this the Wolf brothers and their dog all laughed, and made fun of Coyote. "How are we going to do that?" they howled.

"I will shoot my arrow at the Bear," replied the Coyote. He then shot first one arrow at the Bear, then another and another. After shooting many arrows, each one into the end of the previous one, there was a long chain of arrows reaching down to Earth where the Wolf brothers, the dog, and Coyote stood.

"Now we can climb up the arrows and get a closer look at the Bear," Coyote told the others. Coyote led, and soon all the animals had climbed into the sky. The Wolf brothers and their dog all sat down at various points around the Bear and began to watch him. "Don't get too close to that grizzly bear," warned Coyote, "You might make him angry."

Coyote stood a little farther off to watch. He thought the Wolf brothers, and their dog made a very nice sky picture. He decided that if he left them up there all the People on Earth would thank him for creating such a pleasing picture in the sky. So quietly and slowly, Coyote climbed down the rope of arrows, removing each one until he again reached Earth.

Since that day the Wolf brothers and their dog still sit quietly in the sky watching the Great Bear.



Activity #3-Life Cycle of the Wolf

Everything has a season in the life cycle of the wolf.

OBJECTIVE:

Students will:

create a seasonal life cycle of the wolf.

MATERIALS YOU NEED:

Life cycle story from teacher workbook

🐾 felt storyboard

STUDENT WORKSHEETS:

Timeline of a Wolf's Year (student workbook pg.7)

Life Cycle of the Wolf (s.w. pg.8)

Seasonal Art (s.w. pg.9)

TEACHER WORKSHEETS:

Wolf Story (teacher workbook pg. 13)

Our Life Cycle (t.w. pg. 16)

KEY VOCABULARY:

wolf pack, yearling, alpha male, alpha female, beta male, beta female, scapegoat, ungulates, rendezvous site

DOING THE ACTIVITY:

1. Share the *Wolf Story* on the next page with your students. You may want to read it aloud or have students take turns reading aloud. Discuss the life cycle of the wolf.
2. Use the felt story board in the wolf box and have students describe a year in a wolves life with the felt pieces.
3. Have students develop a time line to sequence what happens to the wolf in one year. A *Wolf Time Line Outline* is provided in the student workbook. Students can fill in their own answers or they can cut out the events on the next page, *Life Cycle of the Wolf*, in the student workbook and sequence them on the time line.
4. Have students complete *Seasonal Art*.

OPTIONAL

5. You can create a bulletin board time line using art work from student's *Seasonal Art* worksheet or create new pictures, stories and/or poems for the events occurring within each season.
6. Share the story Wolves by Tom Wolpert that is in the wolf box. This too talks about the life cycle of the wolf and much more.



WOLF STORY

EARLY SPRING

It was March the year she mated for the first time. She was six years old and had become the alpha female of the pack the previous autumn. The former alpha female had been killed by bounty hunters. The new female leader had mated with the alpha male, who was the pack leader. There were seven wolves in their pack, including the beta female, several yearlings, and other wolves between the ages of two and eight.

About halfway through her sixty-three day gestation period she began digging her den. She found an ideal site, on top of a hill with a stream running into a small valley below. She dug into the sandy soil underneath a large rock outcropping. From here she could see, hear, and smell any danger that might appear.

When she realized she was close to giving birth, she retreated alone into her den. She had five pups that first year. They were born blind, helpless, and covered with short dark fur. For the first five days she never left the den and the pups ate frequently. When the mother felt the need to eat, she would go to the den entrance and eat food left there for her by the other pack members.

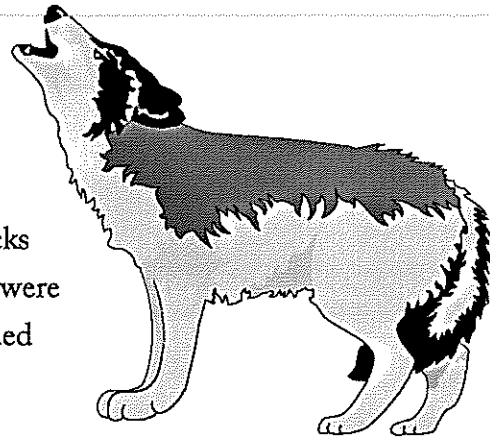
After the fifth day, she began to leave her pups in the den by themselves for short periods of time. She went out to eat, drink, relieve herself, and visit with the other pack members. She didn't allow any other wolf near the pups.

When the pups were about twelve days old their eyes finally opened. Now they were able to get around in their den more easily. At three weeks the mother started bringing them out of the den. They stayed close to the den entrance the first few times. There they met other members of the pack, who greeted them with gentle sniffs and licks. As the pups grew they spent more time out of the den wrestling and playing with the other pack members. When the rest of the pack was away hunting, at least one adult, usually the mother or the beta female, remained behind to "pup-sit."



When the pups first came out of the den, they began to eat solid food. In addition to nursing, they were becoming accustomed to eating regurgitated meat, brought back to them by the adults who had been out hunting. By the time the pups were six weeks old, their mother was weaning them. They had to depend on the pack members to supply all their food. To receive food the pups acted submissive and licked the mouths of the adult wolves. The licking caused the adults to regurgitate the partially digested meat, which the pups eagerly gobbled up.

After weaning, the pups began maturing. They practiced their hunting skills by playing tug of war and other games with bones, sticks, and pieces of hide. They also stalked insects and rodents, sometimes actually killing one. They tirelessly practiced sneak attacks on each other and resting adults. All the adults were patient with the pups, and occasionally demanded puppy submission if the play became tiresome.



SUMMER

When the pups were about nine weeks old, the pack abandoned the denning site. In June, the wolves moved toward the first of many rendezvous sites they would use that summer. At the rendezvous sites pups learned many things. While the rest of the pack went on a hunt, the pups and an adult or two waited for their return. Time was spent sleeping and playing. If the kill was nearby the pack brought food back for the pups and their caretakers. If the kill was a large one, some distance away, the pack traveled to a new rendezvous site closer to the carcass. There the pups had their first experience of tearing their own meat from the kill— after all the adults had eaten.

It is also at the rendezvous sites that the pups practiced their howling. Howling was usually started by the alpha male. Then others in the pack joined in, rose, stretched, howled, and got ready for the night's hunt. The pups blended their high voices with those of the adults.

Whenever a kill was made, the pack ate and rested until the carcass was gone. Ravens and other scavengers hover nearby, waiting to pick up the scraps. Some years game was scarce, and the wolf pack might go a week or more without eating. When this happened, the scavengers also had a tough time finding enough food. This year however, there was plenty of game, so many of the hunts were successful, and the pack ate well.

WINTER

By early winter, the pups were nearly as tall as they would get. They reached their full height at about ten months, and filled out with muscle during the following year. They started going on hunts with the pack that winter.

There was a lot to learn, but the other pack members were patient in teaching them successful hunting techniques. As always, when a kill was made, the dominant pair ate first, while other pack members waited their turn.

During the pups' first winter the snow fell often. The wolves had very little trouble traveling in the snow. The leader broke trail, with the others following in his tracks. When the leader tired, another wolf took over the trail breaking duties.

The ungulates, on the other hand, had a much harder time getting around in the snow. Their heavy bodies and small sharp feet caused them to plunge through the soft snow, and they found it tiring to try to move far. The wolves had the advantage with their large feet and well-packed trails, and they ate well that winter.

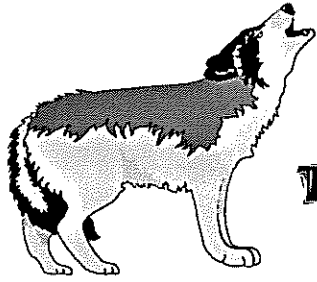
The pups' first winter had been a good one. Not all winters would treat the pack so kindly. Every year, the pack lost at least one, either to hunters, trappers, sickness caused by parasites, or old age and weakness. Lack of prey in the winter also caused death—pups or very old wolves died from starvation.

EARLY SPRING

The next spring, the alpha pair would mate again, and a new batch of pups would be born. If food had been scarce during the winter, the pair might not mate, or if they did mate, she might not become pregnant. Rarely did any other wolves in the pack mate with each other, even though they might be old enough to breed. But no matter which wolf the pups belonged to, the whole pack helped with the responsibilities of raising them.

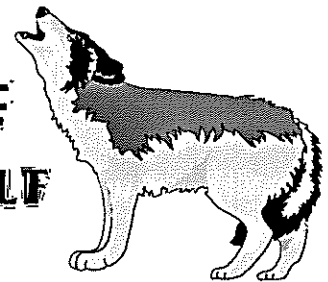
The pack would survive if it was left alone and not hunted or harassed by humans. The pack would survive if sufficient food, water, and protected areas remained available in its range.





OUR LIFE CYCLE

THE LIFE CYCLE OF A WOLF



ALPHA PAIR

This pair are the leaders of the pack. The pair make the decisions on where and when to hunt and where to rest. These two also prevent others in the pack from mating and are usually the only ones to have pups.

BETA FEMALE AND MALE

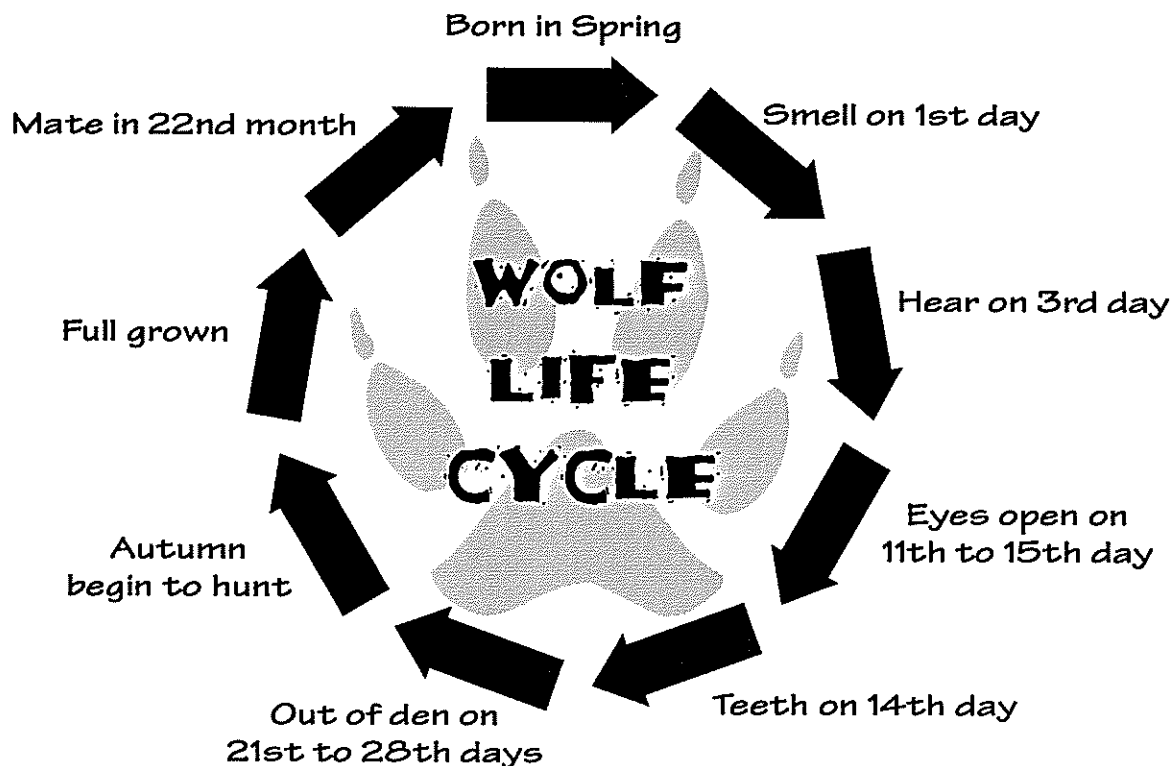
This is the second ranking pair who obey the decisions made by the alpha pair. They help with the rearing of the pups.

YEARLINGS

These are wolves that are last years pups and are continuing to strengthen their survival skills, in order to live on their own.

SCAPEGOAT

This is the lowest ranking position in the pack. This wolf is often blamed for misfortunes in the pack. This wolf is very submissive to others in the pack.



Life Cycle of the Wolf

NUMBER IN ORDER 1-11 THE SEQUENCE OF THE LIFE OF THE WOLF FROM ONE SPRING THROUGH TO THE NEXT SPRING. CUT OUT THE STRIPS AND TAPE THEM TO YOUR TIME LINE ON THE PREVIOUS PAGE.

SEQUENCE THE FOLLOWING:

- 8 PUPS PRACTICE THEIR HOWLING.
- 4 WHEN THE PUPS ARE ABOUT TWELVE DAYS OLD THEIR EYES FINALLY OPEN.
- 6 THE PUPS BEGIN TO PRACTICE THEIR HUNTING SKILLS.
- 9 BY EARLY WINTER THE PUPS ARE NEARLY AS TALL AS THEY WILL GET.
- 1 THE ALPHA FEMALE (THE LEADER) OF THE PACK DIGS HER DEN.
- 11 THE NEXT SPRING THE ALPHA PAIR WILL MATE AGAIN, AND A NEW BATCH OF PUPS WILL BE BORN.
- 2 SHE HAS FIVE PUPS THAT FIRST YEAR.
- 3 THE PUPS ARE BORN BLIND, HELPLESS, AND COVERED WITH SHORT DARK FUR.
- 5 THEY BEGIN TO EAT REGURGITATED MEAT.
- 7 THE WOLVES MOVE TO A RENDEZVOUS SITE IN THE SUMMER.
- 10 THE WOLVES HAVE THE ADVANTAGE WITH THEIR LARGE FEET AND WELL-PACKED TRAILS, AND THEY EAT WELL THAT WINTER.



Activity #4-Where has the wolf gone?

Hundreds of years ago, the wolf was one of the most widespread land mammals but today wolves are gone from much of the globe. What happened?

MATERIALS YOU NEED:

- ✦ Discovering Wolves pps. 6-7, "Disappearing Wolves"
 - ✦ Video-Return of the Gray Wolf (optional)
- overhead of *Wolf Population Map*

OBJECTIVES:

- Students will:
- identify the reasons for the decline of the wolf.
 - discuss existing locations of wolves.

TEACHER WORKSHEETS:

- Wolf Population (teacher workbook pg. 18)*
- Wolf Population Map (t.w.pg.19)*

KEY VOCABULARY:

bounty hunters, domestic livestock, Endangered Species Act

BEFORE THE ACTIVITY:

1. Make the overhead of the *Wolf Population Map* in your teacher workbook.
2. Review the video *Return of the Gray Wolf* to check it's age appropriateness for your class.

DOING THE ACTIVITY:

1. Discuss with students if they think we still have a lot of wolves? Are they common? Why not? Do they think they ever were? What happened to the wolves?
2. Share with them the information in your teacher workbook on the next page *Wolf Population*.
3. Display the overhead *Wolf Population*. Discuss the differences in wolf population from present to prior 1600. What big differences do they notice? What state has the largest population of wolves? What states used to have wolves and no longer do?
4. Conduct the activity "Disappearing wolves" on pgs. 6-7 in Discovering Wolves in the wolf box. You can either photocopy the activity for the students or make an overhead of the maps and do it as a group activity.
5. Show the video *Return of Gray Wolf* to learn more about the reintroduction of wolves in North America. Please remember to rewind to rewind the video after showing it.

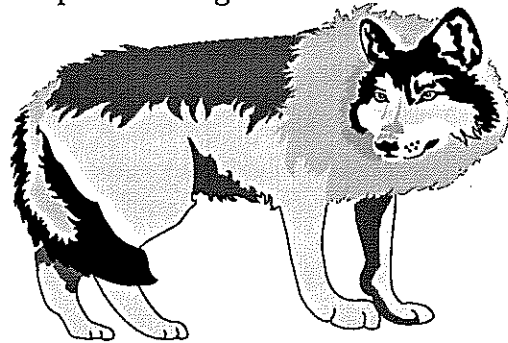


WOLF POPULATION

PRIOR TO 1600

Populations of wolves in North America began to diminish rapidly as settlers from Europe moved west. Beginning with settlements in Virginia and the New England States, settlers killed wolves to protect their **domestic livestock**. The Eastern Timber Wolf population was nearly eliminated by 1776. In the southern states, the red wolf met the same fate as settlement occurred in Tennessee, Georgia, Alabama, Mississippi, and Texas.

In 1805 the Lewis and Clark Expedition reported seeing many wolves in their travels west. The Great Plains wolves' (*Canis lupus nubilus*) were frequently observed by the explorers. These were the buffalo hunting wolves. The Great Plain wolves lives were threatened as Westward Expansion began. Trappers and hunters routinely killed the animals for their furs. They saw the wolf as a competitor in the hunt for other valuable furred animals. Settlers in the Great Plains feared wolves and killed them to protect **domestic livestock**. **Bounty hunters** killed tens of thousands of wolves all over the west.



In 1915 the U.S. government passed a law providing for the extermination of wolves on all government owned land. Hunters benefited greatly from this law. **Bounty hunters** were hired by the U.S. Government to shoot, poison, or trap all wolves on federal land.

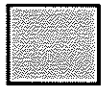
PRESENT WOLF POPULATION

Wolves once roamed freely over most of North American above 30 degree N. latitude. Now there are only a few places where wolves remain. The **Endangered Species Act** was passed in 1975 to protect animals such as wolves, who are nearing extinction.

Currently there are large populations of wolves in Alaska and Canada. Hunting wolves in those two areas is still popular and even sanctioned by government agencies. About 1,000 wolves exist in the woodlands of N.E. Minnesota. Michigan's remote upper peninsula still has a small population of wolves. On Isle Royale in Lake Superior approximately 30 wolves still exist. In the Northwestern corner of the United States a few wolves remain in Glacier National Park. Wolves are also appearing in the remote northern mountain regions of Washington and Idaho. These wolves are moving down from Canadian packs in the provinces of British Columbia, and Alberta.



WOLF POPULATION



GRAY WOLVES

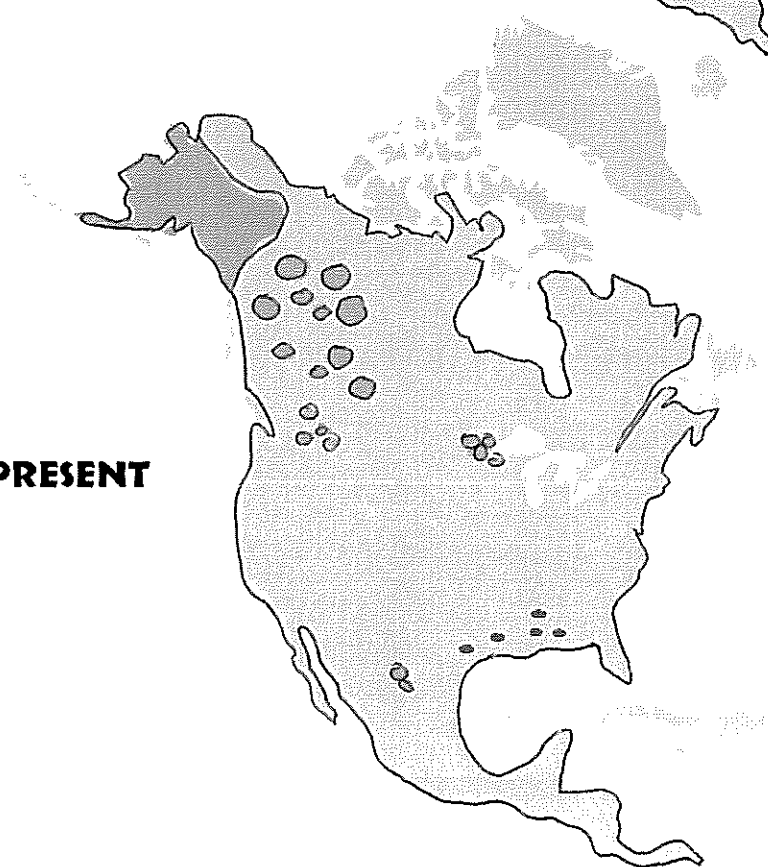


RED WOLVES

PRIOR TO 1600



PRESENT



Activity #5-All in the Family

It's no accident that many dogs you know look like wolves. Wolves are the ancestors to all dogs, from poodles to Saint Bernards. Along with coyotes and foxes, they all belong to the same Canidae family.

OBJECTIVES:

Students will:

- map the location of different wolves from around the world.
- graph the height and weights of different wolves.

MATERIALS YOU NEED:

A map or globe of the world (optional)

STUDENT WORKSHEETS:

Map our locations (student workbook pgs. 10-13)

How does the Wolf Measure up? (s.w. pg.14)

How does the Wolf Measure up? (II) (s.w. pg.15)

TEACHER WORKSHEETS:

Fact sheets for Wolves and Close Relatives (teacher workbook pg.21-25)

Map locations of wolves and close relatives (t.w. pgs.26-28)

KEY VOCABULARY:

predator

BEFORE THE ACTIVITY:

1. Decide how you want to direct this activity.
 - Option A: Photocopy the set of *fact sheets* for teams of students.
 - Option B: Post up the fact sheets on a bulletin board.Mapping exercise:
 - Option A: Use *eight individual maps* in their student workbook and have students identify the location of each canidae.
 - Option B: Use the one *map of the world* in their student workbook and have students color in the location of each wolf using a colored key to the side.
 - Option C: Do both options!

DOING THE ACTIVITY:

1. Have students locate the wolves and their close relatives using the options from above. You might want to have a bigger version of a map or globe so that students can reference locations.
2. Have the students graph the heights and weights of each of the wolves and close relatives using the worksheet *How doe the wolf measure up?* Answer the questions on *part II of How does the wolf measure up?* When graphing, have students make bar graphs. If it is a range of height or weight make lines diagonal to indicate its range.



FACT SHEETS FOR WOLVES AND CLOSE RELATIVES

TIMBER WOLF

Canis lupus

- * Seldom kill in anger
- * Usually mate for life
- * Treat youngsters with kindness, affection and humor
 - * Adopt orphaned pups and treat like own
- * Found all over the world: from equator to Arctic
 - * weigh up to 150 pounds
 - * 3 feet high
 - * 6 feet long
- * Females are usually smaller
- * Coloring is a mixture of white, gray, and black
- * Travel 15 - 20 square miles for food in summer and double that in the winter
 - * Feed on anything from mice to moose
 - * Have very strong sense of smell and sight
 - * Very intelligent
- * Communicate through whines, snarls, yelps, barks, whimpers, and howls
 - * Can communicate in high pitches

See maps for the location of wolves
and close relatives on page 12 through 14



COYOTE

Canis latrans

- * Small relatives of the wolf
- * Also known as the "brush wolf" or "prairie wolf"
- * *Canis latrans* means - barking dog

* Appearance:

- 4 ft. long
- 1½ feet high
- weigh up to 50 pounds
- larger ears than wolf and are erected
- fur is reddish with rusty feet, legs, and ears
- found throughout much of the United States and Mexico
- * Very fast can run 40 miles an hour

- * Predators include: wolves, cougars, golden eagles and the most dangerous, Man.

* Babies:

- 5- 7 babies in a litter
- born in April, May, or June
- born with fur but blind
- weaned in two weeks
- 6 weeks on their own
- father coyote stays outside den for several weeks, only job is to bring food

* Mate for life

- * Seldom run in packs, but hunt in pairs or family group

* Many tricks used in catching prey

- play dead
- Hunting with badgers

- * Communicate with family, neighbors, and for fun

- * Tracks in straight line



RED WOLF

Canis niger

* Found in the southwest, including east of Texas, west Louisiana, and Oklahoma

* Grayish in color with red overtones

* Weigh 40 - 80 pounds

* 2 feet to 30 inches high

* Frequently mistaken for a coyote

MEXICAN GRAY WOLF

Canis lupus baileyi

* Found in the southwest, including eastern Arizona, western New Mexico, Texas and through central Mexico

• Very seldom solid in color, but tend to be a mix of grays and reds

• Weigh up to a 100 pounds
females are usually smaller at 60 - 90 pounds
2½ feet high and 5½ feet long

• Feed on anything from mice to mule deer

• Usually mate for life



DINGO:

Canis dingo

* Found in Australia

* Appearance:

- 3 to 4 ft. long

1 ft. high

- weigh up to 45 pounds

- fur usually light tan, or reddish

- usually lighter underneath

- fur is soft and medium length, but can be coarse

* Live in flat areas, temperatures reach 120 degrees

* Mate for life

* Run in packs, when hunting

* Hunting is well planned and very successful

* Kill much more than they can eat

* Predators of the young pups include: eagles, snakes, and Man.

* Migrate every change of season from high, cold areas to warmer areas

* Babies:

- 5 in a litter

- leave parents in the fall



JACKALS

* A number of different kinds of Jackals:

- black-backed (South Africa)

- wolf-like (Egypt)

- side-striped (Africa)

- Indian jackal (Palestine and Arabia)

Azara (South America)

Ecuadorian wild dog (Andes of Ecuador)

round-eared dog (upper Amazon)

Chilean wild dog (Chile)

* all look like small wolves or foxes

* 50 pounds and 1½ feet tall

* Hunt alone, in pairs, or packs

* Hunt at night

* Babies:

- 4 in litter

- born blind



LOCATION MAPS OF WOLVES AND CLOSE RELATIVES

TIMBER WOLF



MEXICAN WOLF



LOCATION MAPS OF WOLVES AND CLOSE RELATIVES

RED WOLF



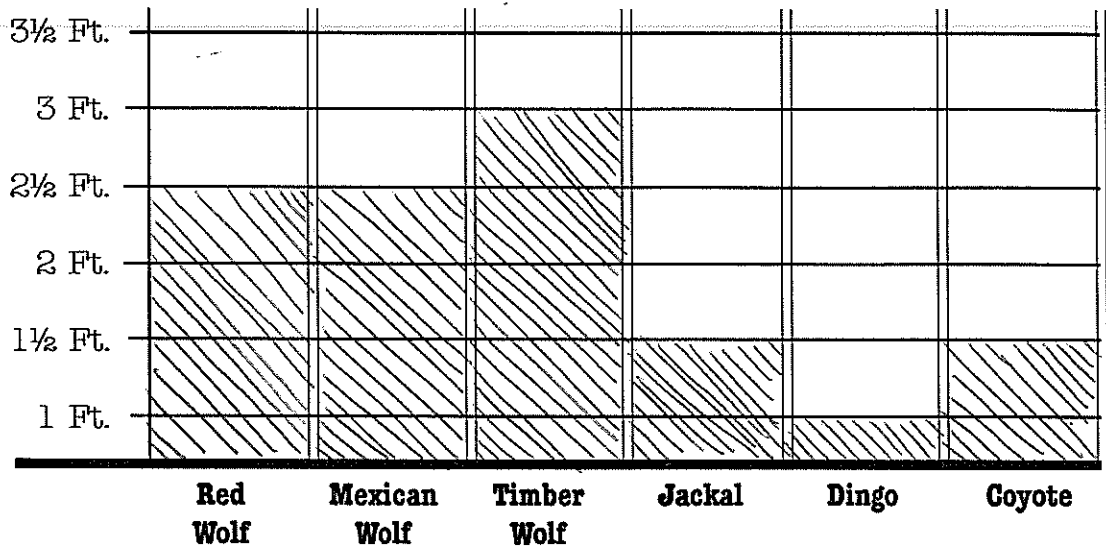
COYOTE



HOW DOES THE WOLF MEASURE UP?

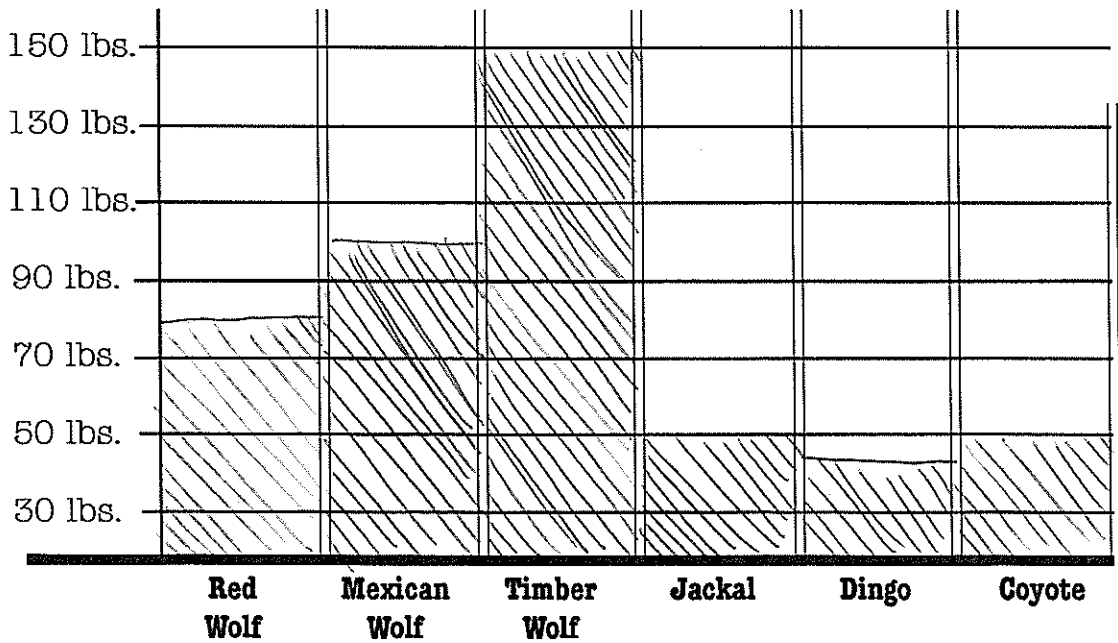
DIRECTIONS:

Use the resources available to locate the height of the six wolves and close relatives. Place their measurement on the graph.



DIRECTIONS:

Find the weight of the six wolves and close relatives and graph them accordingly.



LOCATION MAPS OF WOLVES AND CLOSE RELATIVES

JACKAL



DINGO



How Does the Wolf Measure up? (part II)

REFERRING TO YOUR GRAPHS ON THE PREVIOUS PAGE, ANSWER THE FOLLOWING QUESTIONS:

CIRCLE THE BEST ADJECTIVE:

THE RED WOLF IS TALLER OR SHORTER THAN THE JACKAL?

THE TIMBER WOLF IS LIGHTER OR HEAVIER THAN THE MEXICAN WOLF?

CREATE YOUR OWN SENTENCE USING ONE OF THE FOLLOWING ADJECTIVES: TALLER, SHORTER, HEAVIER, OR LIGHTER:

WHICH IS THE SHORTEST ANIMAL?

Dingo

HOW TALL IS THE TALLEST WOLF?

Timber wolf

WHAT 2 ANIMALS ARE CLOSEST IN HEIGHT?

Red wolf mexican wolf

WHAT IS THE LIGHTEST ANIMAL?

DINGO

WHO IS THE HEAVIEST?

timber wolf

WHAT 2 ANIMALS WEIGH THE CLOSEST?

Coyote Jackal

WHAT ANIMAL ARE YOU CLOSEST IN HEIGHT TO?

depends on child

WHAT ANIMAL ARE YOU CLOSEST TO IN WEIGHT?

depends on child



Activity #6-Wolf and Coyote Pelts

Students will take a closer look at the fur of a coyote and wolf.


OBJECTIVES:

Students will:

examine a wolf and coyote pelt.

identify the different characteristics of wolves and coyotes.

MATERIALS YOU NEED:

-  wolf and coyote pelts
- measuring tapes

The wolf and coyote pelt are located in the U.S. Forest Service's Discovery Box. Many students will immediately ask you how the animals died, who killed them, etc. Both of these animals were killed by cars and now used for educational purposes. Please have students be very gentle with the pelts when they are handling them.

STUDENT WORKSHEET:

Wolf and Coyote Pelts (student workbook pg.16)

BEFORE THE ACTIVITY:

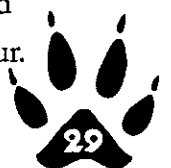
Study the background information provided here and in other resources.

DOING THE ACTIVITY:

1. Before showing the pelts to your class, lead a discussion on what they think wolves and coyotes look like. What color are they? How big are they? Who is bigger?
2. Show the two pelts and continue the discussion and questions you asked above.
3. Have students complete the student activity sheet, *Wolf and Coyote Pelts*. They will need measuring tapes to do this.

BACKGROUND:

Color...Wolves can be many colors including black, white, reddish, yellowish, tan, gray silver or brown. The colors of a wolves fur can make it hard to see the wolf in its natural habitat. The colors of the fur may blend in with background colors in the habitat and cause a wolf to "disappear"- we call this camouflage. Wolves that spend a lot of time in dark forests often have dark fur. If a wolf lives more in the high mountain areas with no trees and lots of rocks and snow then their fur will be lighter. A wolf that lives in a dark dense forest will have dark fur.



Question to students: Where do you think this wolf lived?

Hair... Explain that the hair helps keep the coyote and wolf warm just as the hair on our head does. The wolf has a double layer of hair. The underfur which is dense, soft and woolly and insulates the animal. The outer hair; or guard hair is rough and keeps the wolf dry by shedding moisture. The wolf has three “capes” of fur on their backs to further insure that water runs off its back. These are the longest hairs on the wolf.

Students will examine the different layers of hair and measure its length and record on their student worksheet.

Whiskers...Point to the whiskers on the wolves face. Explain that these hairs are very sensitive. They help the wolf feel around when it’s sniffing a trail, walking through brush, or going through small spaces.

Nose...Smell is one of the most important senses for wolves. Wolves use their noses to recognize their own territorial markings and the territorial markings of other wolves. They also use them to identify pack members and locate prey. A wolf can smell it’s prey over a mile (1.6 km) away. The eyesight of wolves is not very good, so they often smell things long before they can see them.

Paws...Wolves have huge paws with skin between their toes acting like a web which lets them travel quickly even over deep snow. Point to the spongy, calloused pads of the paws. Explain that the rough texture on the pad along with the claws helps the wolf walk and run, and give it a good grip on ice, snow, and other surfaces. Like dogs, wolves run on their toes. This lengthens their legs and makes it possible for them to run faster.

Tail...In winter, a wolf can curl its thick, furred tail around its face. This way the nose is protected down to -60F (-51C). In summer, the tail helps keep insects off the face.

Ears...A wolf has a keen sense of hearing. It can hear sounds up to six miles away (9.7 km). It can also hear some high-pitched sounds that we can not hear.

Legs...Speed and endurance help a wolf catch dinner. Long, powerful legs help the wolf chase prey for 20 miles or more. A wolf can run from 24 to 40 miles per hour.

Size.... Wolves are larger than any other wild dogs and bigger than most domestic dogs. A large male wolf can be 3 feet tall and almost 6 1/2 feet long, and it can weigh more than 100 pounds. The coyote is much smaller and more slender. Most adult coyotes stand from 20 to 24 inches tall at the shoulder and weigh from 20 to 50 pounds



The Wolf and Coyote Pelt

WE CALL THE FUR OF AN ANIMAL IT'S PELT. PLEASE BE GENTLE WITH THE PELTS WHEN YOU ARE HANDLING THEM.

WHAT ARE THE COLORS OF THE WOLF PELT?

light tan, light brown, white

(Sometimes wolves can be black, or all white, red, or a real mixture)

WHAT ARE THE COLORS OF THE COYOTE PELT?

similar to the wolf

(Coyotes are rarely black in color)

BY LOOKING AT THE COLORS WHERE DO YOU THINK THE WOLF LIVED?

this wolf was accidentally killed in Alaska. The lighter colored pelt indicates it lives in more open country

BY LOOKING AT THE COLORS WHERE DO YOU THINK THE COYOTE LIVED?

lives in lower elevations, open areas but this varies

WHERE ARE THE LONGEST HAIRS ON THE WOLF AND COYOTE?

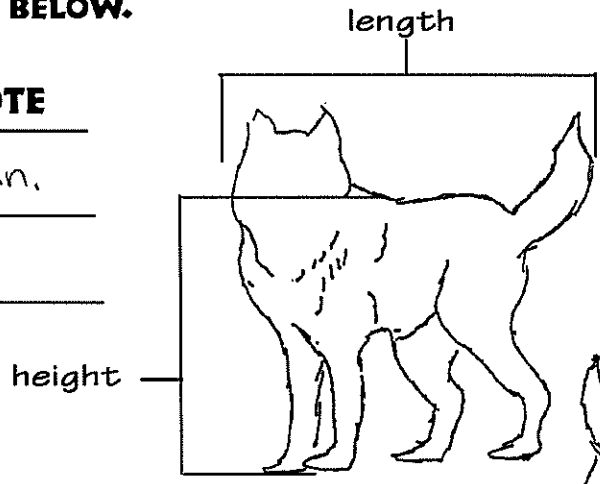
on their back

WHY DO YOU THINK THEY ARE THE LONGEST THERE?

help to keep the wolf/coyote dry shed like an umbrella

MEASURE THE HEIGHT AND LENGTH OF THE COYOTE AND WOLF. LABEL YOUR MEASUREMENTS BELOW.

	WOLF	COYOTE
height:	≈ 2ft or 24in.	≈ 19in.
length:	5ft	4ft



Activity #7-Jaws

Animal skulls can tell us a lot about an animal such as what they like to eat, if they are prey or predator, and the size of the animal.

OBJECTIVES:

Students will:

- observe different skull structures.
- identify animals as herbivore, carnivore, or omnivore.

MATERIALS YOU NEED:

- skulls from elk, coyote and wolf

STUDENT WORKSHEETS:

Jaws (student workbook pg.17)

Color My Jaws (s.w.pg.18)

TEACHER WORKSHEET:

Jaws (teacher workbook pg.33)

KEY VOCABULARY:

canines, molars, incisors, carnassials, saggital crest, herbivore, omnivore, carnivore

DOING THE ACTIVITY:

1. Have students examine the three skulls in the wolf box. Please have them handle them VERY gently because they are extremely fragile. Have them look carefully at the tooth structure. Using their *Jaws worksheet* in the student workbook have them identify the different teeth on each skull.
2. Have students examine their own teeth. Where are their canines? Molars? Incisors?
 - *Which teeth do they use to tear meat off of a chicken bone?
 - *Which teeth do they use to grind up the vegetables they eat?
 - *Do they have sharp pointed teeth?
3. Be sure to introduce the new vocabulary words: canine, incisors, carnassial, and molar. See the next page, *Jaws* for a description of each word.
4. Have students complete *Color My Jaw* worksheet.



BACKGROUND INFORMATION:

The rest of the skull tells us other clues about the animal. Where are the eye sockets located? If they are on the side of the head they denote an animal that is preyed upon by other animals. It is able to see its predators and danger coming from behind. Eye sockets toward the front of the head are important for animals that need to perceive depth and are not as worried about things sneaking up on them.

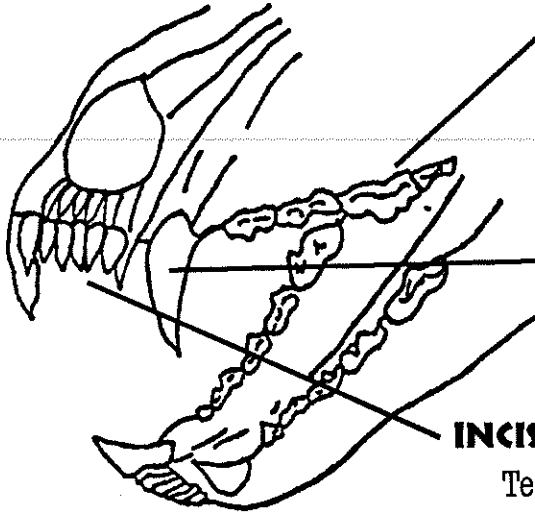
The bony ridge on top of the skull of the wolf is called the sagittal crest. It is where the lower jaw muscles attach to the skull. A large sagittal crest means an animal has very powerful jaws

Animals that eat primarily meat are called carnivores. Most carnivores have long, pointed canines that they use to grab and kill their prey. They also have carnassial teeth which are sharp cheek teeth that cut like scissors when the animal closes its jaws. Wolves have very sharp carnassials. Animals that eat plants and meat are called omnivorous. They have flatter, less scissor like carnassials. They also tend to have larger rear molars, which help grind their food. An example of an omnivore is a bear or a human. A herbivore eats only plants. It does not have sharp carnassial teeth or canines but has plenty of molars to grind plants. A good example of a herbivore is a deer.



JAWS

WOLF JAW STRUCTURE AND TEETH



CARNASSIAL (kar-nas-ee-al)

Used for chewing into smaller pieces for swallowing. How are these different from the bear's molars?

CANINE (kay-nine)

Teeth used to grab and hold onto prey.

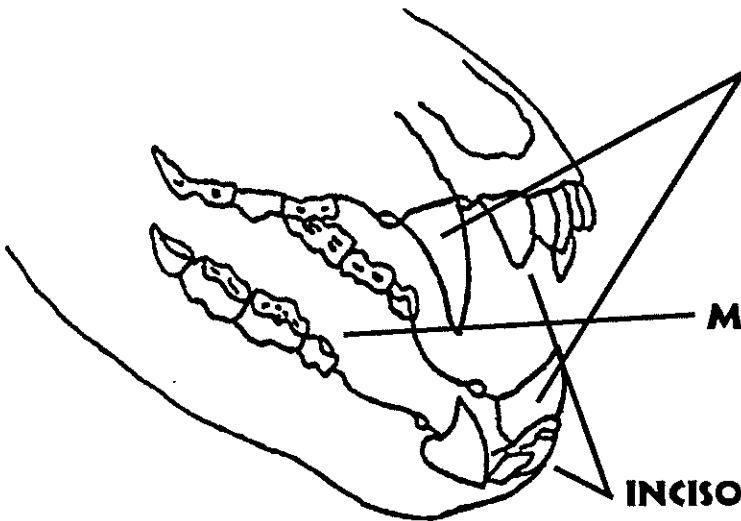
INCISORS (in-size-ors)

Teeth used to pick meat off bones. Where are your incisors? What do you use them for?

How are your teeth the same or different from wolves and bears?

We/I have molars canines and incisors
but not carnassials

GRIZZLY JAW STRUCTURE AND TEETH



CANINE (kay-nine)

Used for catching and killing prey. Also used for ripping meat from carcass.

MOLARS (mow-lers)

Used for smashing and grinding plant food.

INCISORS (in-size-ors)

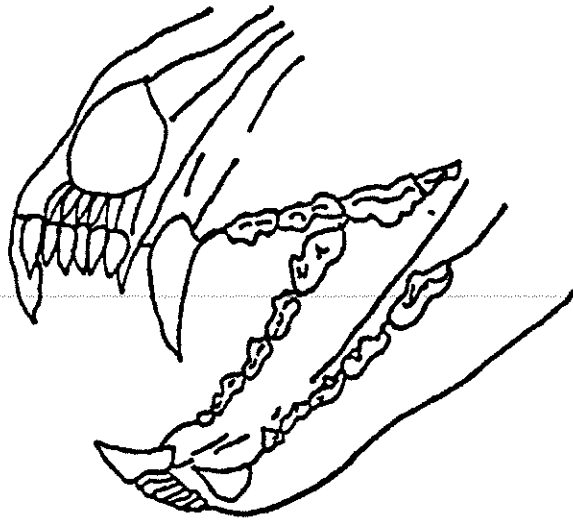
Used for catching and killing prey. Also used for ripping meat from carcass.



Color my teeth

color my molars green
color my canines orange
color my incisors blue
color my carnassials red

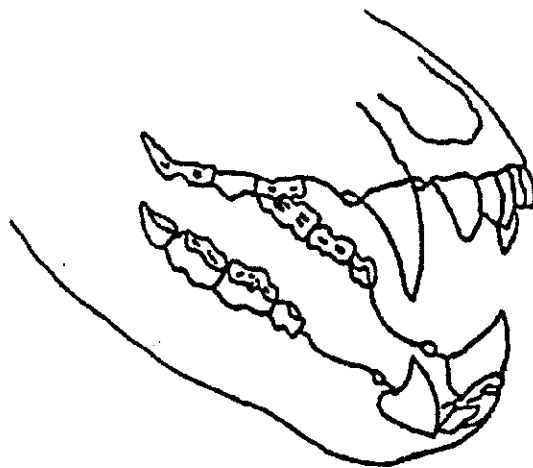
wolf jaw



With my sharp carnassials I eat mostly meat

I'm called a(n) Circle the best answer herbivore, carnivore, omnivore

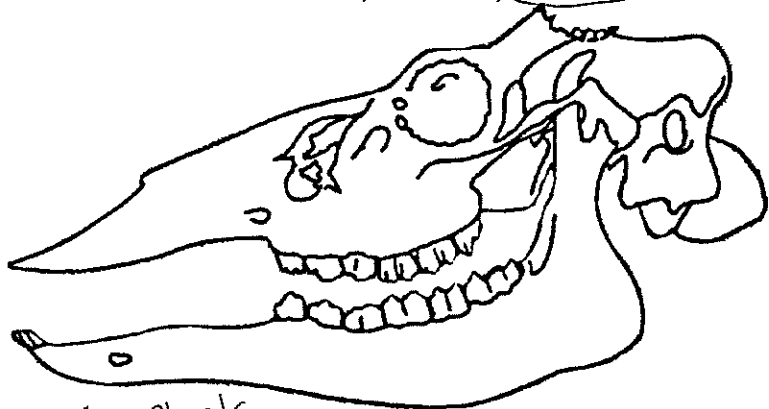
bear jaw



With my molars and canines I eat both meat and plants

I'm called a(n) Circle the best answer herbivore, carnivore, omnivore

Deer jaw



(diagram here)

With my molars I eat mostly plants

I'm called a (n) Circle the best answer herbivore, carnivore, omnivore




Activity #8-Scat Happens

You will find four scat samples in the wolf box, that's right...poop! The four scat samples are from a wolf, coyote, elk and dog. You and your students might be surprised to find this in the box and wonder how and why this lends itself to the educational process!

OBJECTIVES:

Students will:
identify foods that wolves, coyotes, elk and dog eat.

MATERIALS YOU NEED:

 4 scat samples

STUDENT WORKSHEET:

Scat Attack (student workbook pg.19)

KEY VOCABULARY:

scat

DOING THE ACTIVITY:

1. Brainstorm with students what they might learn from looking at scat.
2. Introduce the concept of scat and what clues it can tell scientists. Scat can tell scientists many things about animals such as:
 - *evidence that the animal has traveled through the area
 - *what the animal eats
 - *whether the animal is sick or has parasites
 - *how many animals live in an area.

Scientists are very careful to handle scat only with gloves and never with bare hands.

3. Have students examine the 4 scat and complete *the Scat Attack* worksheet in the student workbook. Be sure the scat remains in the plastic sealed containers.



Scat Attack

Scat (the scientific word for poop or feces) tells scientists different things about animals. Examine the 4 scat samples in the wolf box.

By looking at the four samples what is one thing they can tell us about the animal?

1) The scat told me what it eats
what about the animal?

2) Each box has a number on it. Match the number of the scat to the correct animal species.

Scat	Animal Species	Why did you pick that number?
Scat #1	wolf	Biggest / lots of hair
Scat #2	elk	large pellets
Scat #3	coyote	some hair / grasses
Scat #4	dog	looks like dog food in it

3) Two of the scat samples have hair in them. What animals do you think the hair came from?
coyote, wolf

4) Looking at the scat and remembering what you learned from the skulls, circle the best term for the animal. If you have to you can find the definitions on your skull page or in your student glossary. Circle the right answer.

A wolf is a(n) herbivore, carnivore, omnivore

An elk is a(n) herbivore, carnivore, omnivore

A dog is a(n) herbivore, carnivore, omnivore

A coyote is a(n) herbivore, carnivore, omnivore

5) Go home tonight and look at the scat of your pet animal. Does it look similar to any of the scats you have examined today? Does it give you clues on what your pet ate? Be careful to not handle it with bare hands.



Activity #9-Wolf Communication




Wolves, like humans communicate, many different ways with each other. Wolves use their eyes, ears, mouths, fur and tails to share information and even feelings.

OBJECTIVES:

Students will:

- observe different wolf communication messages.
- interpret and record communication strategies.

MATERIALS YOU NEED:

-  wood wolf model
-  4 wolf body language cards (2 white, 2 tan)
-  The Wonder of Wolves pg. 40-44

STUDENT WORKSHEETS:

- Check your Wolf Communication Skills (student workbook pg. 20)*
- Wolf Body Language (s.w.pg.21)*

TEACHER WORKSHEETS:

- Check your Wolf Communication Skills (teacher workbook pg.36)*
- Wolf Body Language (t.w. pg.37)*

KEY VOCABULARY:

submissive, dominant

DOING THE ACTIVITY:

1. Discuss with your students how they, their parent or teacher(!) use body language to communicate a certain feeling or idea.
2. Complete page 42 in The Wonder of Wolves with your students.
3. Use the wood wolf model and white wolf body language cards in the wolf box to review wolf communication with your students. You and your students can refer to the *Wolf Body Language* handout in both the student and teacher workbook.
4. Complete *Check your Wolf Communication Skills* in the teacher and student workbook. Have one or two students role play each situation. The other students are to observe and record *field notes* in the student workbook.

OPTIONAL:

Have students complete the **Wolf Puppet Adventure** (two big tan cards) from the wolf box. Students use the wolf model to conduct this activity. Photocopy the **Wolf Body Language Adventures** on the tan cards in the wolf box for each student to complete.

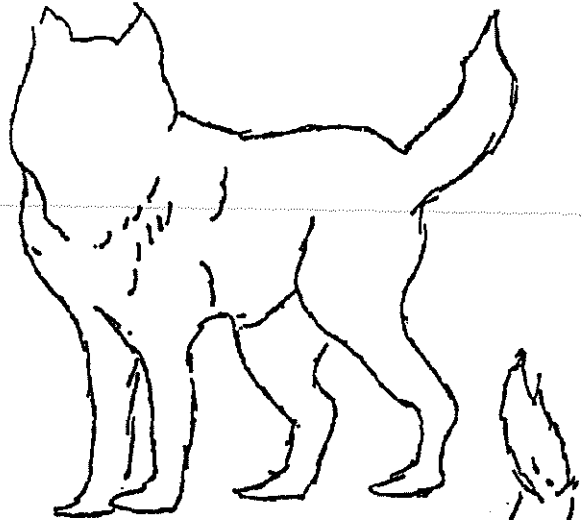


WOLF

BODY LANGUAGE

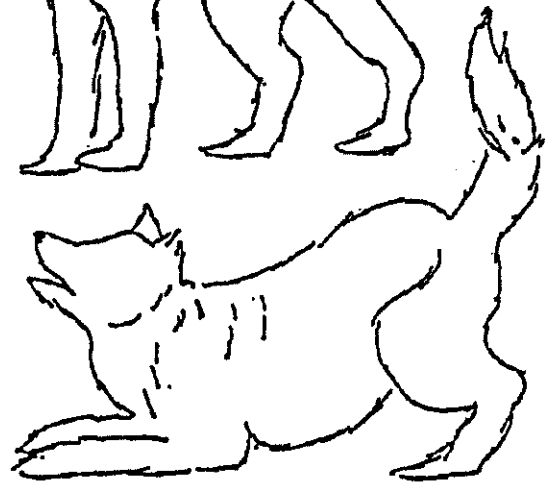
ALPHA BEHAVIOR

- 🐾 Tail held high and bushed out
- 🐾 Head held high
- 🐾 Fur coat puffed to look even larger
- 🐾 Ears pointed forward
- 🐾 A relaxed body posture
- 🐾 An assertive pose



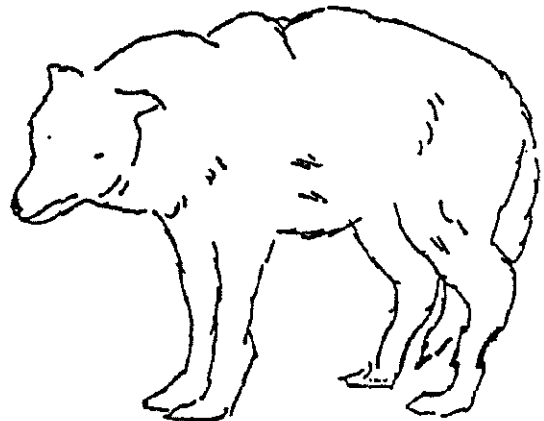
PLAYING POSITION

- 🐾 Tail wagging
- 🐾 Ears pointed forward
- 🐾 Face relaxed and almost smiling
- 🐾 Hind end up in air



SUBMISSIVE BEHAVIOR

- 🐾 Tail flattened
- 🐾 Tail may be held between legs
- 🐾 Head held low to the ground
- 🐾 Ears lowered and flattened to head
- 🐾 Eye contact with other wolves avoided



DON'T HURT ME

- 🐾 Wolf rolls over on back and exposes its belly
- 🐾 Tail held between back legs
- 🐾 Head held down
- 🐾 Mouth closed and tense
- 🐾 Ears held back and down
- 🐾 Eye contact with another wolf is avoided



CHECK YOUR WOLF COMMUNICATION SKILLS

Role playing: choose one or two students for each situation. Students are to act out the body language a wolf or pack of wolves. The other students are to observe and take field notes in their student workbook. After the last activity, discuss the results of each situation. Be sure to have students refer to the "Wolf Body Language" handout in workbook.

1. I am the alpha male who is directing the pack to a location for resting after a hunt.
Stands up, sniffs, stretches, begins a howl, after group howl, he walks off.

2. I am trying to eat part of a carcass; when a higher ranking wolf comes in and challenges me for my position.

Head goes down, lips come up in smile, tail goes down between legs, eye contact avoided.

3. I am a lone wolf who has wandered into a pack's territory.

Submissive behavior, the "don't hurt me," keeps distance.

4. I am a pup who wants to be the leader someday. How would I portray that within the litter?

Tries to get other pups to play, stands over other pups acts aggressive with littermates, displays curiosity.

5. I want to play, what do I have to do?

The play bow, yips, tail wagging

6. I hear a noise coming from the far distance. How would I behave and communicate this noise to other pack members?

Ears alert, head up, begin to howl



Activity #10-Howling


The wolf is best known for its howl. Do you know why it howls?

OBJECTIVES:

Students will:

- listen to howling wolves and interpret what they hear.
- write poetry on the wolf howl.

MATERIALS YOU NEED:

-  wolf howling tape
- tape recorder

STUDENT WORKSHEET:

Howling Poetry (student workbook pg. 22)

TEACHER WORKSHEET:

Howling Information (teacher workbook pg. 39)

Howling Poetry Ideas (teacher workbook pg. 40)

KEY VOCABULARY:

haiku, free verse, windspark, acrostic (optional)

DOING THE ACTIVITY:

1. Discuss with your students what types of vocalizations do they think wolves make. Students will probably identify the howl as one way wolves communicate. Howling may occur day or night and allows pack members to locate each other when they are separated. It pulls the family together before and after a hunt, and serves as an alarm. It is a warning to outsiders; it alerts other wolf packs and lone wolves that this territory is taken. Scientists still do not know all the reasons that wolves howl- sometimes they seem to do it just for the joy of it!
2. Listen to the wolf tape in the wolf box.
3. Can you identify how many wolves there are? How many puppies there are? Can you guess what is happening in the tape? Be sure to listen to the narrated side of the tape too.
4. Refer to the student worksheet *Howling Poetry*. Have students write their own poem on the wolf howl, why they howl, or other. Please refer to next page for poetry ideas.



Howling Information

BACKGROUND:

We still know very little about why wolves howl, but here's a few things we do know:

- 🐾 Wolves often howl together before starting off to hunt; this may serve as a sort of rallying ceremony, rather like a football huddle.
- 🐾 Wolves howl to warn other packs to stay away. They are especially likely to howl when they have killed a prey animal.
- 🐾 Wolves howl to locate other pack members if they become separated.
- 🐾 Wolves howl most often in February (during the breeding season) and in August and September (when the pups are out of the den and learning how to howl).
- 🐾 Wolves never harmonize when howling; this makes it sound like there are more of them than there are and may intimidate other packs.
- 🐾 Wolves howl as often when there isn't a full moon as when there is.
- 🐾 Wolves howl more often at night than during the day. This may be because sound travels farther at night than during the day (sound waves travel farther when the humidity is low, and it is usually lower at night).
- 🐾 In still weather on flat open ground, wolves can hear each other several miles away.
- 🐾 Wolves respond to human imitations of howls more readily than to tape recordings of their own howls.
- 🐾 It might just be that howling is fun for wolves!



Howling Poetry ideas

BACKGROUND: POETIC FORMS

Haiku is a Japanese form of poetry that consists of three lines: the first lines have five syllables, the second line has seven, and the third line has five again.

EXAMPLE

The snow-covered tree
Sparkles in the soft moonlight
The wind rushes by.

In acrostic poetry the first letter in each line, when read vertically, spells out the name of something or conveys some other kind of message.

EXAMPLE

Towering
Reaching
Extending
Embracing the sky.

A windspark poem has five lines with the following pattern: 1) "I dreamed," 2) "I was..." (something or someone), 3) where, 4) an action, and 5) how.

EXAMPLE

I dreamed
I was a tree
On a hillside
Playing with the wind
Joyfully.

Free verse follows no set formula or style.

EXAMPLE

I am
The tree
That overcomes
All.
I am
The one
That laughs
At the wind.

Adapted with permission from [Project Learning Tree](#)



Activity #11-Who was that?


You and your students will view a video and determine if the image shown was a dog, wolf or coyote.

OBJECTIVE:

Students will:

identify the differences between wolves, coyotes and dogs.

MATERIALS YOU NEED:

 Was That a Wolf?—video

STUDENT WORKSHEETS:

Who was that (student workbook pg.23)

Compare and Contrast-Venn Diagram (s.w. pg.24-25)

DOING THE ACTIVITY:

- 1) Have students complete the worksheet *Who Was That* as they watch the video *Was that a Wolf?* You might want to stop it at different places to discuss the differences between wolves, dogs and coyotes. They have a series of animals they will have to identify at the end of the video, be sure to have them record their guesses in their student workbook (with the right answers too!).
- 2) Students should then complete the workbook sheets *Compare and Contrast-venn* diagrams for the wolf and coyote and the wolf and human.

TEACHER BACKGROUND:

Wolves, coyotes, and some breeds of dogs look similar from a distance. However, each have certain characteristics to help tell them apart.

WOLF (CANIS LUPUS)

Color: black, white, all shades of gray and tan, never spotted

Size: 80 to 100 lbs., 26-34 inches at shoulder

Tail: hangs straight down or straight out, never curls

Ears: rounded, small upright



Muzzle: large and blocky

General: massive, long-legged, first impression is often of deer or calf.

COYOTE (CANIS LAATRANS)

Color: all shades of tan and gray, rarely black, never spotted

Size: 20 to 30 lbs., 16-20 inches at shoulder

Tail: hangs straight down or straight out, never curls

Ears: pointed, large upright

Muzzle: long, pointed

General: delicate, medium size, fox-like face

DOG (CANIS FAMILIARIS)

Color: variable, may be spotted

Ear: variable, may hang down

Size: variable

Muzzle: variable

Tail: variable, may be curled

General: variable



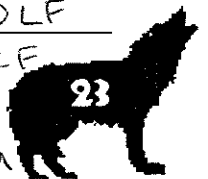
Who was that?

Fill in the Chart:

	dog	wolf	coyote
Size	varies with each dog	largest 70-115 lbs 2 1/2 ft tall 5 1/2 - 6 ft. length	20-35 lbs 1 1/2 tall
Coloration	can be spotted	varies Black → Grey TAN	never/rare Black
Tail	curls	hangs down stands up never curls	→ same →
Facial Features	ears hang down sometimes or flop	broader large blocky ears short muzzle blunt ears never hang down	pointy pointed/longer muzzle pointy
Tracks	varies toe nails show	over 4" long 3-3 1/2 wide toe nails show longer stride	toe nails show
Howl	sometimes howl/yip	low howl pitch	higher pitch yips

From the video what are your guesses for each animal shown?

Guess?	Why did you guess that?	Answer
1) DOG	curled tail	DOG
2)	color ^{eyes} blank/lanky legs	WOLF
3)	coloration / facial features	DOG
4)	pointy ears	COYOTE
5)	curled tail	DOG
6)	blocky features	WOLF
7)	<u>blocky features</u>	WOLF
8)		WOLF Zilla

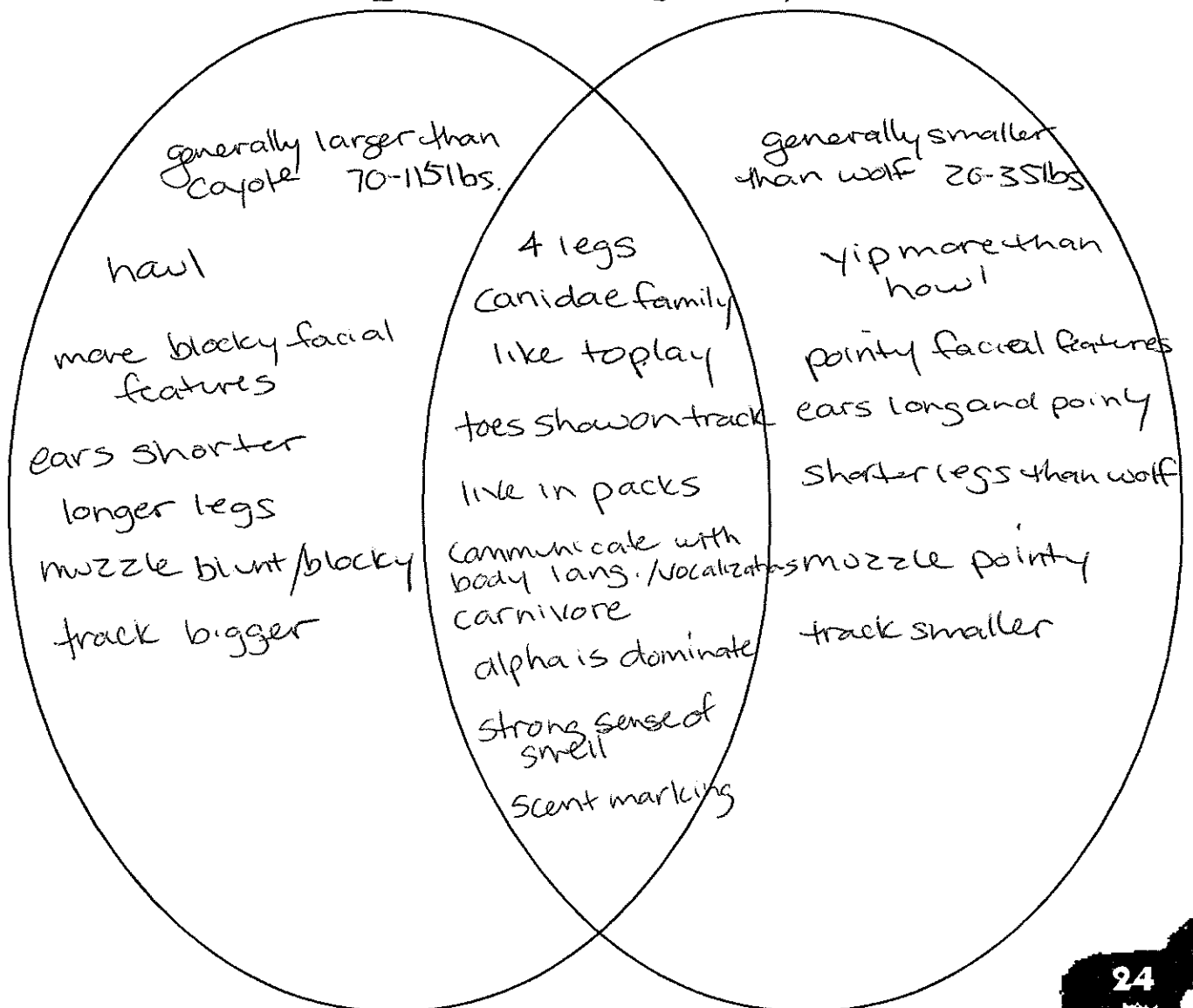


COMPARE AND CONTRAST

Wolves and coyotes have similarities and differences in personality, appearance, and behavior. There are also some similarities and differences between wolf pack behavior and coyote family behavior. Write down all the things you know about wolf personality, appearance, behavior, and communication. Do the same for coyotes. In the section where both overlap list the things that are much the same for both wolves and coyotes.

WOLVES

COYOTES

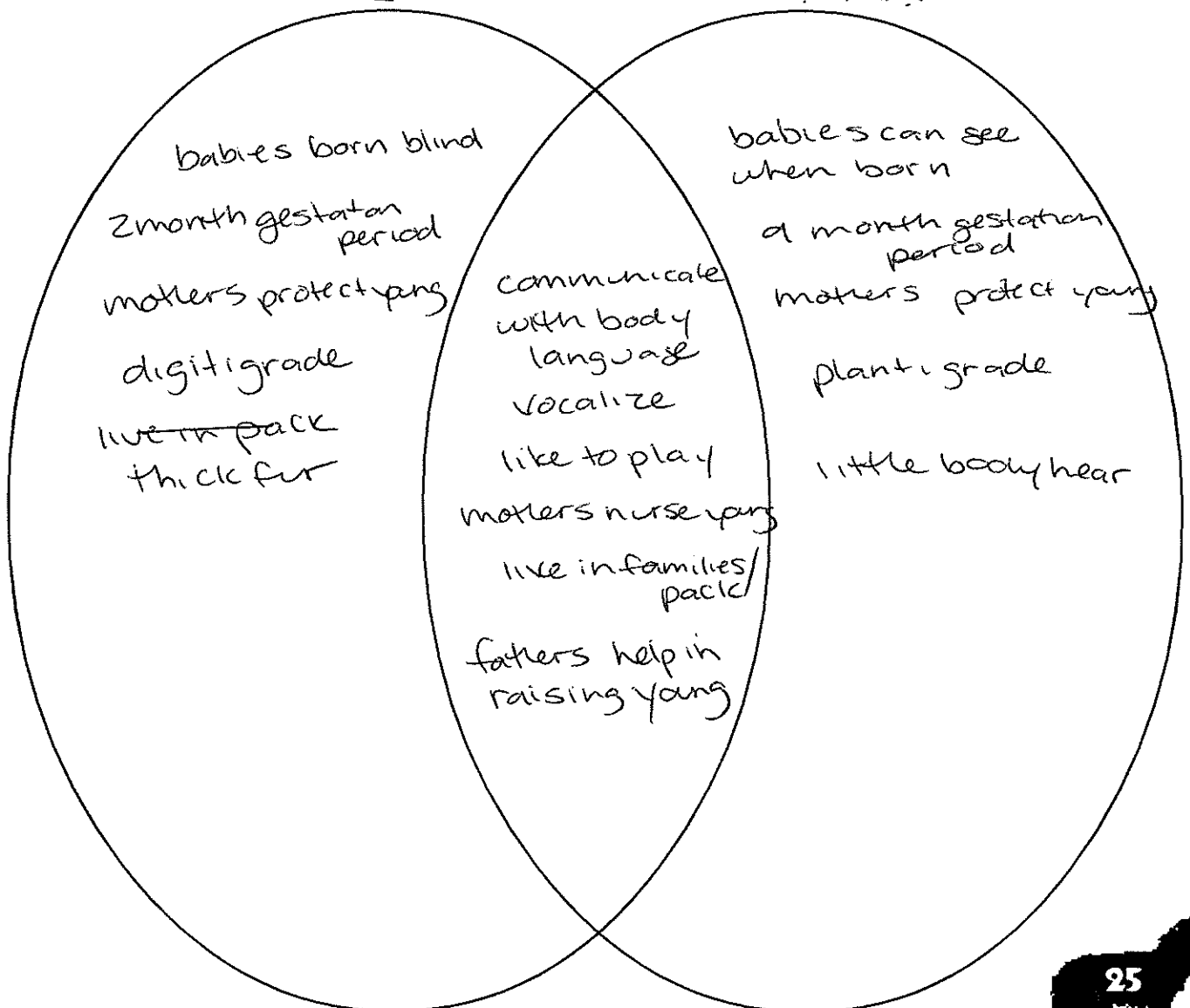


COMPARE AND CONTRAST

Wolves and humans have similarities and differences in personality, appearance, and behavior. There are also some similarities and differences between wolf pack behavior and human family behavior. Write down all the things you know about wolf personality, appearance, behavior, and communication. Do the same for humans. In the section where both overlap list the things that are much the same for both wolves and humans.

WOLVES

HUMANS



Activity #12-Making Tracks

The track of an animal is a good clue to determine who walked this way.

OBJECTIVES:

Students will:

- examine different animal tracks from the wolf box.
- measure a wolf and coyote track.

MATERIALS YOU NEED:

- 4 tracks from wolf box
- measuring sticks

STUDENT WORKSHEET:

Tracks (student worksheet pg. 26)

KEY VOCABULARY:

digitigrade, ungulate

DOING THE ACTIVITY:

1. Discuss with students the type of track they leave, with shoes on and off. Do we all make the same track?
2. Ask students that have cats, dogs or other animals as pets if they have studied their tracks. It might be a good homework assignment to draw their pet's track.
3. Discuss what they think the track looks like of a wolf, coyote, cougar and elk.
4. Show them the four tracks from the wolf box...an elk track, wolf, coyote and cougar or mountain lion. Have them guess which track belongs to which animal. Tracks that are made by animals in the dog or canidae family display their nails. Which two tracks display their nails? They walk on their toes, we call this digitigrade. Tracks from the cat family, however, retract their nails. Which track could be from the cat family? Elk and deer have split hoofs as tracks. We call them ungulates.
5. Have students complete *student worksheet pg. 26*. You could also have students measure the tracks from the box and their pet's tracks too.



TRACKS

(Actual Size)

Measure each foot with your inch ruler and centimeter ruler.

Compare the size of the two species tracks. Measure to the nearest 1/4 inch.

WOLF
Front Foot

COYOTE
Front Foot

COYOTE
Hind Foot

Wolf Front _____ inches
_____ centimeters

Wolf Hind _____ inches
_____ centimeters

Coyote Front _____ inches
_____ centimeters

Coyote Hind _____ inches
_____ centimeters

Your Foot _____ inches
_____ centimeters

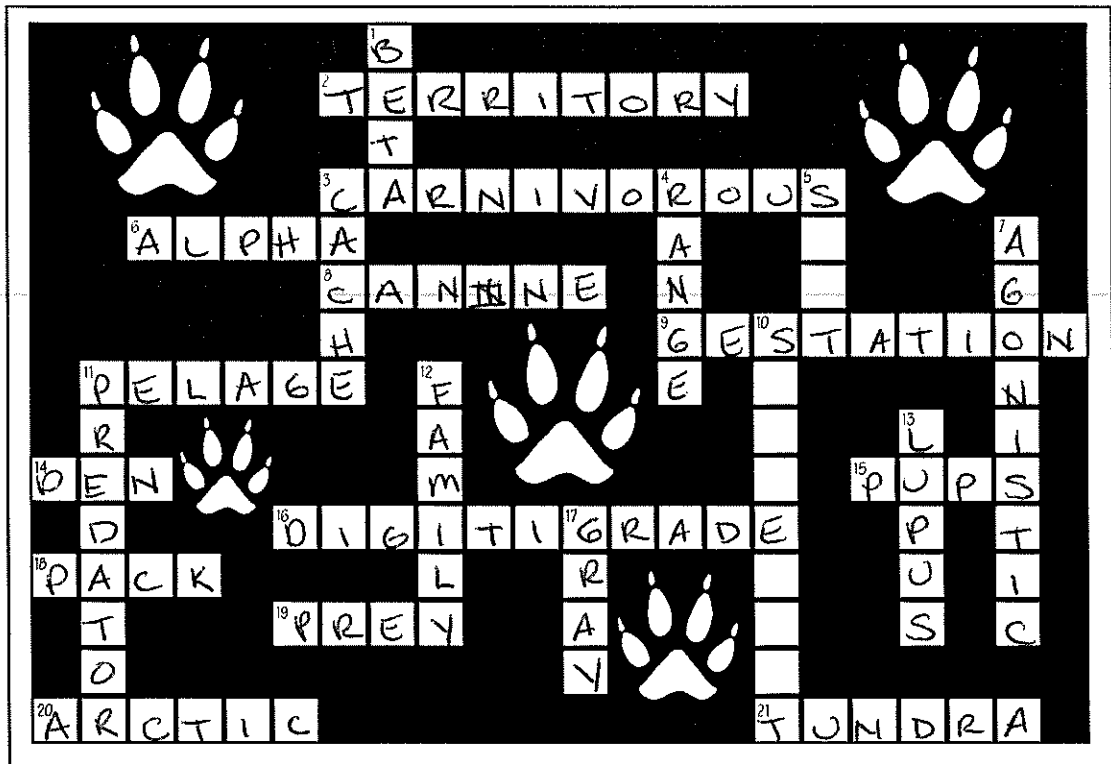
WOLF
Hind Foot



WOLF CROSSWORD

WORD LIST

agonistic
 scat
 digitigrade
 carnivorous
 range
 gestation
 alpha
 territory
 beta
 canine
 family
 den
 pack
 artic
 predator
 prey
 gray
 tundra
 lupus
 pups
 cache
 scapegoat
 pelage



ACROSS:

2. The area in which a wolf pack lives
3. Meat eating
6. The female or male leader in the pack
8. Wolves are part of the _____ family
9. Period of pregnancy
11. Name for a wolf's body covering
14. Where the female has her pups
15. Young wolves, under one year of age
16. A word to describe how wolves walk
18. A group of wolves
19. A caribou, moose, or deer could be _____ for a wolf
20. An area in the far North where white wolves live
21. Treeless plains in the far North

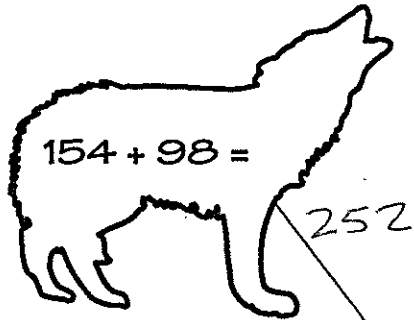
DOWN:

1. Second most important male or female in the pack
3. Stored food supply
4. The area in which a wolf travels and hunts
5. _____ can be examined by biologists to discover what a wolf has been eating
7. Aggressive behavior
10. The outcast, or loner, on the fringes of the pack
11. Any animal that hunts other animals for food
12. A pack is a _____ much like that one you belong to
13. Scientific name for wolf Canis _____
17. A common color for wolves; part of common name for North American wolves.

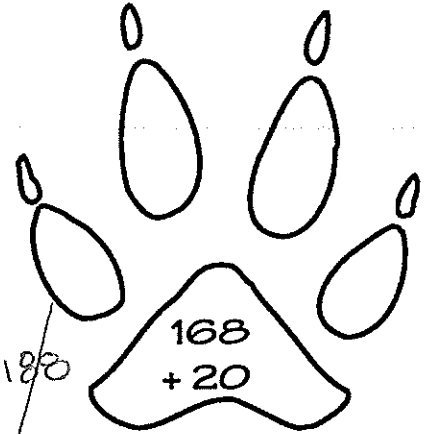


WOLF MATH ADDITION

Directions: complete the math and match the wolf and tracks
Please show your work on a separate sheet
of paper if there is not enough space available.



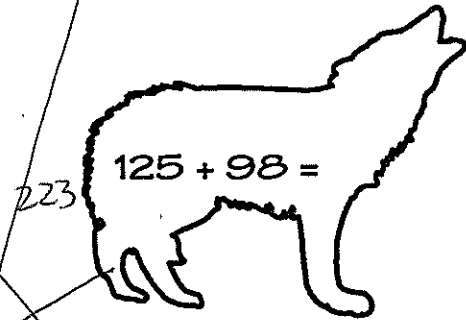
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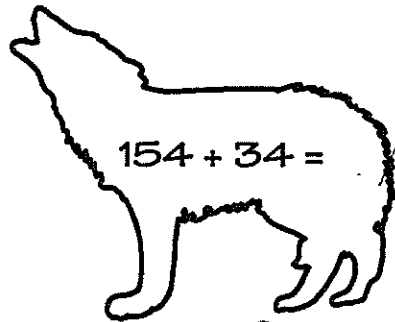
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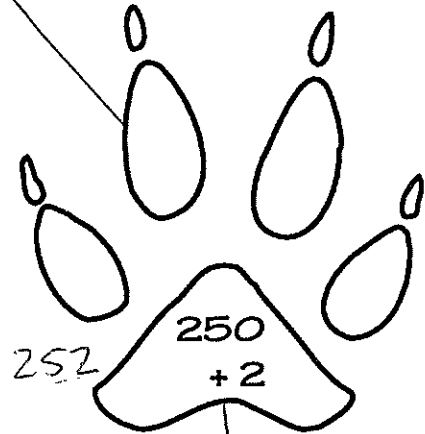
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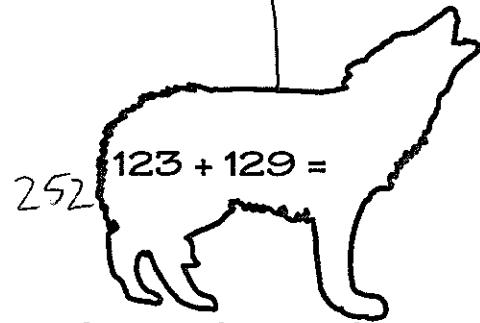
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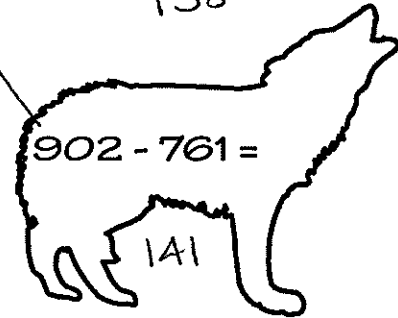
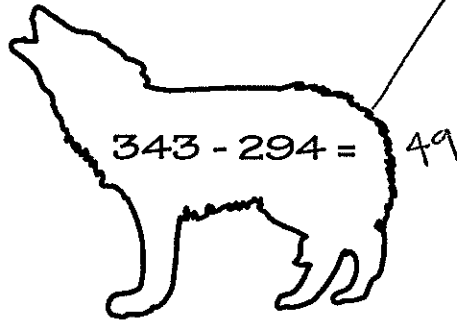
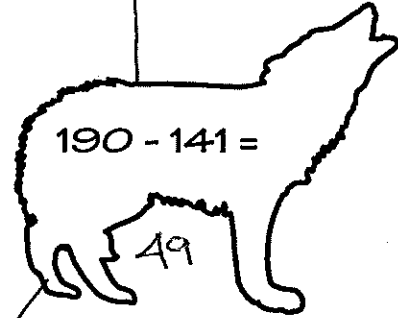
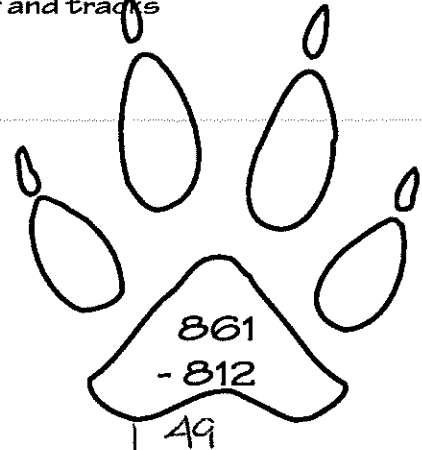
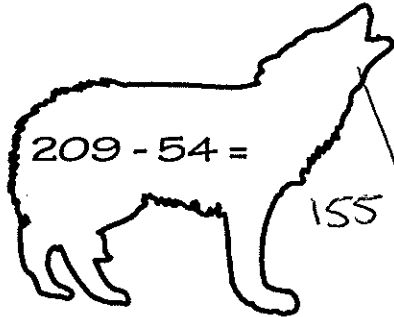


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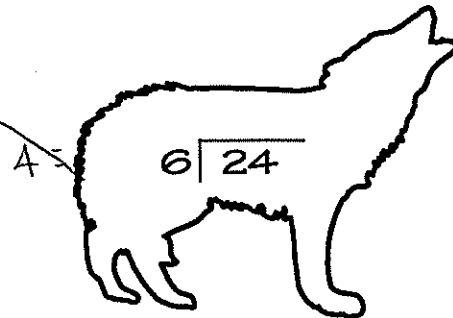
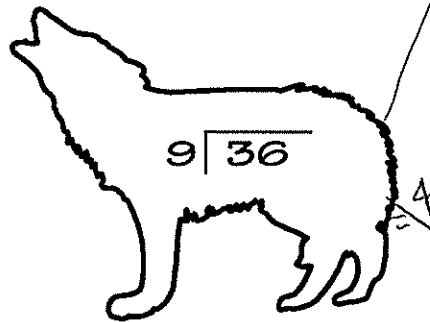
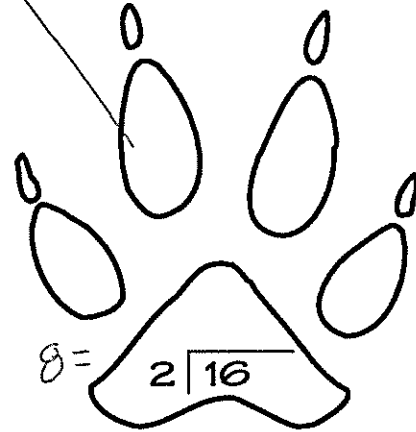
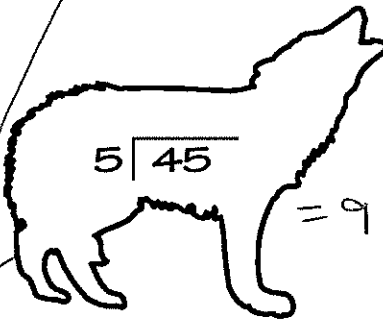
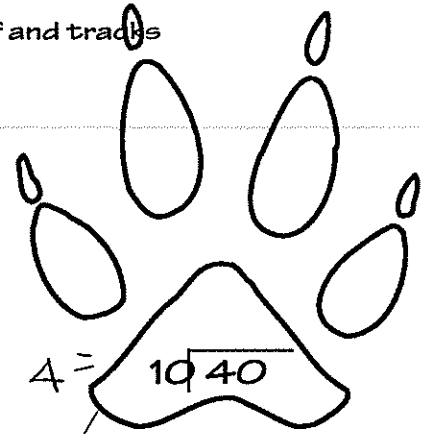
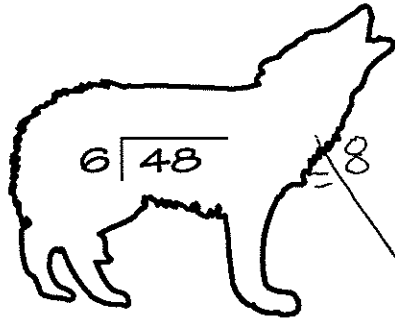
WOLF MATH SUBTRACTION

Directions: Complete the math and match the wolf and tracks
Please show your work on a separate sheet
of paper if there is not enough space available.



WOLF MATH DIVISION

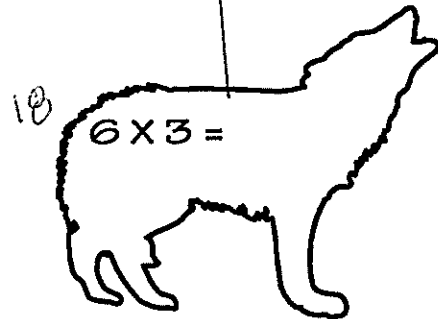
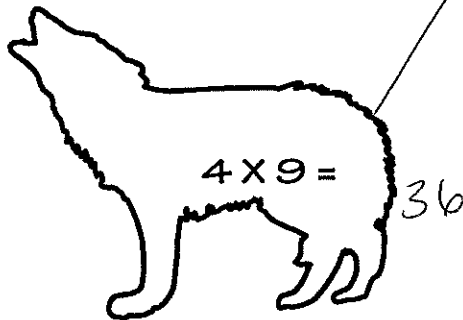
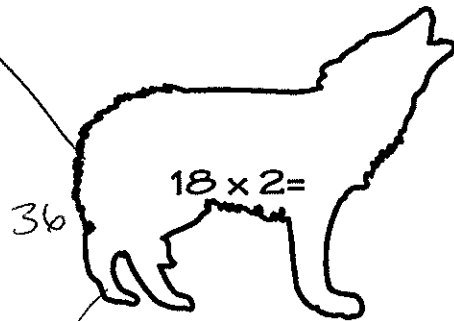
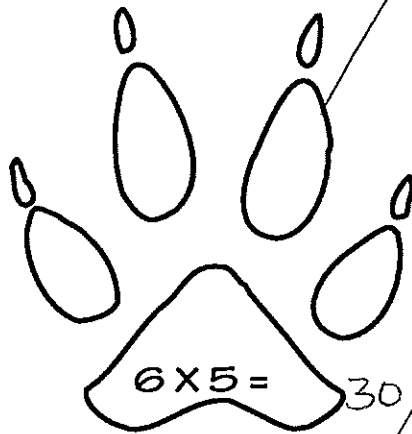
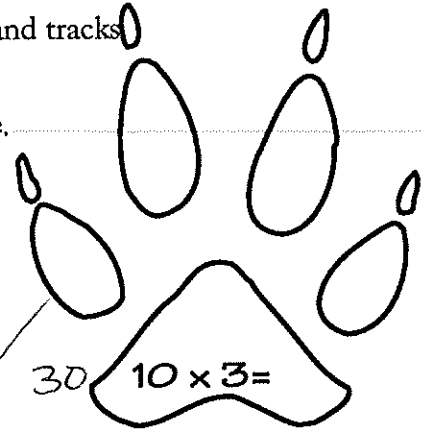
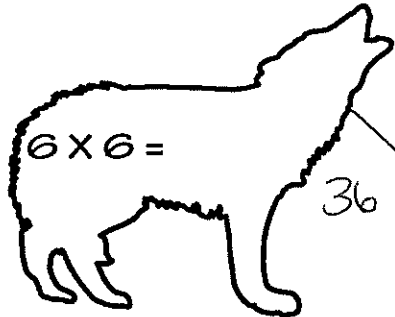
Directions: Complete the math and match the wolf and tracks
Please show your work on a separate sheet
of paper if there is not enough space available.



WOLF MATH

MULTIPLICATION

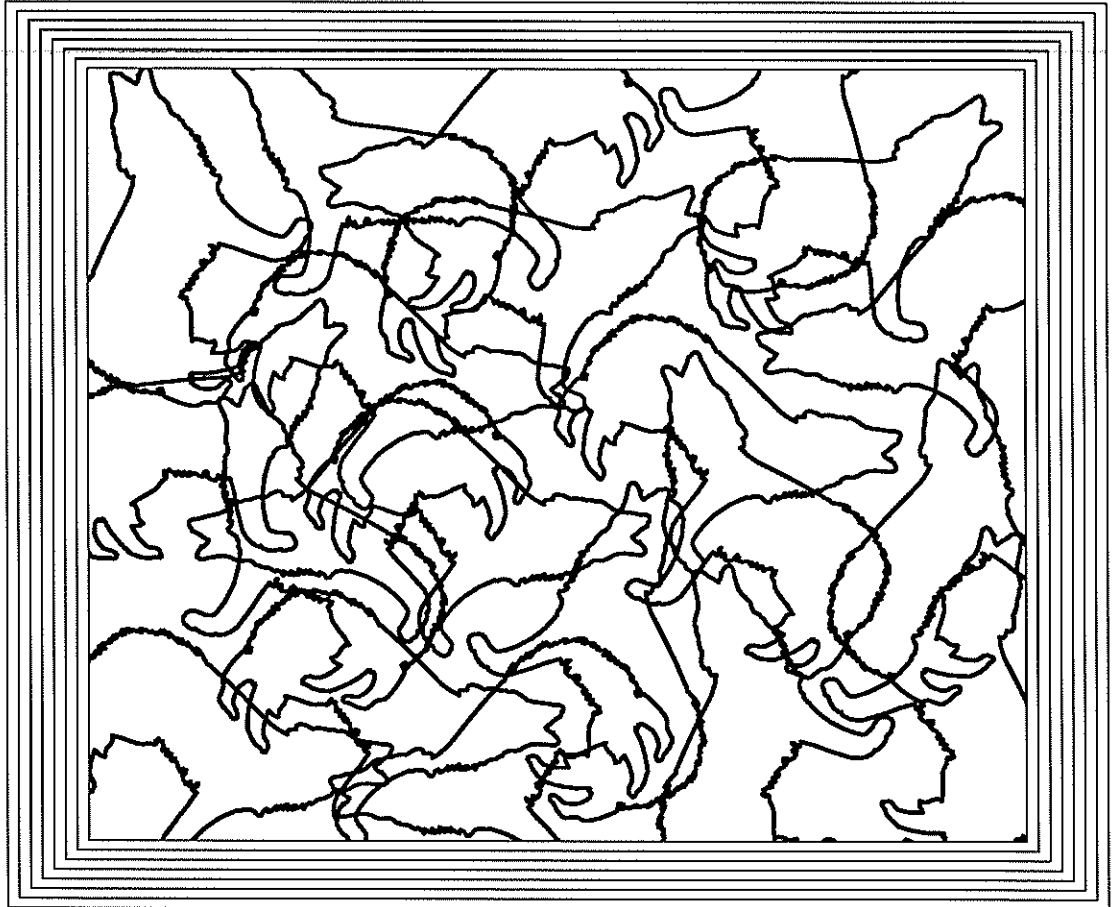
Directions: Complete the math and match the wolves and tracks.
Please show your work on a separate sheet of paper if there is not enough space available.



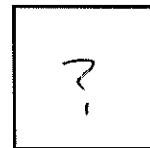
HOW MANY DO YOU SEE?

DIRECTIONS:

Count how many completed wolves you can spot in this square. Make sure to count those wolves that overlap.



TOTAL NUMBER OF WOLVES:



we have no idea !!



PROBLEM SOLVING FOR THE WOLVES

1. Wolves commonly travel 20 miles in 24 hours.
How many miles would a wolf travel in 7 days?

$$20 \times 7 = 140 \text{ miles in seven days}$$

2. The distance between Dirty Face Mountain and Mt. Baker is 80 miles.
A wolf can travel 20 miles a day. If a wolf left Dirty Face Mountain on Friday, on what day would he reach Mt. Baker?

$$80 \div 20 = 4 \text{ days will reach Mt. Baker on Tues}$$

3. Throughout the night you heard a pack of wolves howling. This particular pack howls every 20 minutes. You heard 7 separate howls from the same pack. How much time passed as you were listening?

$$20 \text{ min} \times 7 \text{ times of howling} = 140 \text{ min. or } 2 \text{ hrs. and } 20 \text{ min.}$$

4. During a research period, biologists recorded seeing 60 wolves. Within two months 49 of the wolves were killed by illegal hunters. What was the percentage killed by illegal hunters? You may use a calculator after your teacher has explained percentages to you.

$$82\% \text{ were killed}$$

5. What was the percentage of wolves that survived?

$$18\% \text{ survived}$$

6. If a wolf traveled only 15 miles a day, how many days would it take to go 90 miles?

$$15 \mid 90 = 6 \text{ days}$$

7. Several packs of wolves were studied by biologists to determine how successful they were as hunters. Moose were seen by wolves 131 times and only 6 times were moose actually killed. What percentage of these encounters resulted in successful hunt by wolves?

$$5\% \text{ success rate}$$



WOLVES: TRUE OR FALSE

DIRECTIONS:

Read the statements below. If the statement is true, place a "T" in the box. If the statement is false, place a "F" in the box and rewrite the statement to make it true.

- T 1. The habitat of the wolf may influence the color of its fur.
- T 2. The wolf can smell and hear prey a long distance away.
- T 3. Wolves live in a pack. A pack is like a family with a mother, father, several pups and close relatives.
- F 4. Wolves are plantigrade animals. (look up plantigrade in the glossary) *They are digitigrade - walk on their toes*
- T 5. Wolves on an average have a larger footprint than do dogs or coyotes.
- T 6. Lone wolves are more apt to respond to a howl from a pack.
- T 7. Wolves and dogs are related.
- T 8. Wolves communicate by howling, barking, whimpering, and growling.
- F 9. Wolves have four toes on the front paws and six on the back paws. *No - far toes front and back*
- F 10. Wolves' tails have a curl to them. *No! only straight or downward
Dogs curl*
- T 11. The muzzle of the wolf is large and blocky.
- T 12. Wolves include ungulate animals in their diet. (look up ungulate in the glossary)
- T 13. Scat is the name used for wolf droppings.
- T 14. One function of howling is to identify distance between packs.
- F 15. Wolves howl for an hour without stopping. *No, 20 minutes at most
before stopping*
- T 16. All wolves are protected in the lower 48 states by the Endangered Species Act.



TEACHER GLOSSARY

ADAPTATION: A change in behavior or physical characteristics of a plant or animal that enables it to survive in its environment.

AGONISTIC: Aggressive behavior, used by bears and wolves to chase away threatening people or animals.

ALPHA: The female leader and male leader of a wolf pack.

ALPINE: High level land, characterized by stunted trees, low growing shrubs, and flowers; covered by snow much of the year.

ARTIC: The area surrounding the North Pole.

BETA: The second most important male or female in a wolf pack; they are submissive only to the alpha wolves.

BLACK BEAR: *Ursus americanus*, a bear found over much of North America, smaller than a grizzly, with a longer face and no shoulder hump.

BOAR: A male bear

CACHE: Buried or partially buried meat stored for eating later. This method is used by bears and wolves.

CANINE: Teeth used to grab and hold onto prey.

CARNASSIAL: The back teeth of a carnivore used for chewing meat.

CARNIVORE: Any meat-eating animal.

CARNIVOROUS: Meat eating (adjective)

CARRION: The flesh of dead animals

CLAWS: The long sharp "toenails" used by grizzlies for digging.

CUB: A young bear



DAYBED: A protected bed where a bear rests when it is not traveling, feeding, or hibernating.

DELAYED IMPLANTATION: The mechanism by which a fertilized egg does not attach to the uterine wall until the bear's hibernation.

DEN: 1. Where the bear hibernates. 2. A secure dug out room in which a female wolf gives birth to her pups; also the place where the pups spend the first few weeks of their lives.

DIGITIGRADE: The manner in which an animal walks on just the toes of his feet, like dogs and wolves do.

DISH FACE: One of the distinguishing characteristics of a grizzly; a concave dip in the nose.

ECOSYSTEM: A community of living organisms interacting with their environment and each other to form a unified whole.

ENDANGERED: Population of a species is so low that extinction is possible.

EXTINCT: No longer existing.

GESTATION: The period of pregnancy between mating and birth.

GRIZZLY: *Ursos arctos*, a large brown bear of North America.

HABITAT: The environment in which an animal lives.

HABITUATION: Becoming accustomed to human presence; losing fear of humans.

HERBIVORE: An animal who only eats plants.

HIBERNATION: A state of lowered metabolism in wintertime, during which a bear rests in his den, neither eating nor urinating or defecating.

HUMP: A large mass of muscle above the grizzly's shoulders, characteristic of the grizzly.

HYPERPHAGIA: Metabolic change leading to hibernation; eating less, lethargic.

HYPOPAGIA: The period right after a bear comes out of hibernation; eating sparingly, still metabolizing body fat for energy.

INCISOR: The front teeth used for catching and killing prey.



ISOLATION: Being alone, not being bothered by human presence; one of the seven requirements of grizzlies.

LITTER: A group of wolf pups, the average litter size is six pups.

LUPUS: The scientific name for wolf (*canis lupus*).

MOLAR: The back teeth used for smashing and grinding food.

OMEGA: Lowest ranking wolf in the pack.

OMNIVORE: Any animal that eats both animal and plant foods.

PACK: A group of wolves who live together, hunt together and socialize with each other.

PELAGE: Another name for the fur coat of an animal.

PLANTIGRADE: Walking on the soles of the feet, as does a grizzly; a human does also.

PREDATOR: Any animal that hunts and kills another animal for food.

PREY: Any animal that is hunted or killed by another animal.

RANGE: The area an animal travels to find food and mates.

RENDEZVOUS SITE: A safe area where a wolf pack rests between hunts.

RUB-MARKING: Where bears bite, claw, or rub trees to indicate to other bears that they have been there.

SCAPEGOAT: The outcast, or lone wolf. This is a wolf that is not accepted by any other wolf in the pack. He usually leaves the pack on his own, or is forced to leave—may become a lone wolf, or might join another pack.

SCAT: An animal's excrement (poop!).

SCAVENGER: Any bird or animal that eats the remains (carrion) of a previously killed animal.

SLEEPING CHAMBERS: The part of the den where the bear hibernates and gives birth to cubs.

SOW: A female bear



SPECIES: Scientific classification of living creatures.

STALK: The act of sneaking closer to prey before rushing in to attack.

SUB-ALPINE: Mountain land slightly lower in elevation than alpine regions, characterized by taller trees, more plant growth, and steep mountain meadows. This region remains snow-free slightly longer than the alpine regions.

SUBMISSION: 1. Sign of non-aggression, or unwillingness to fight. 2. A behavior that indicates a low place in the wolf pack order of importance.

SUB-SPECIES: A scientific classification just below species; for instance, a Kodiak brown bear is a sub-species of *Ursos arctos*

TEMPERATE: The land areas below sub-alpine, usually lower mountain valleys. These areas are snow-free much longer each year than alpine or sub-alpine areas. These areas are characterized by a variety of plant and animal life, shorter winters, and abundant water.

TERRITORY: 1. The area of an animal's range which that animal will defend against intruders. 2. The area a wolf pack will defend against intrusion by other wolves. Territories are a smaller part of the wolves' range.

THREATENED: A species that may become endangered if their numbers and habitat continue to decline.

TRACK: The foot print left by an animal.

TUNDRA: Cold, treeless plains of the arctic and subarctic regions.

TUNNEL: A narrow chamber leading to the larger sleeping chamber in a den.

UNGULATE: Any hoofed mammal, such as a deer, elk, moose, caribou, or mountain sheep.
Common prey of wolves.

VEGETATION: Any kind of plant growth.

YEARLING: Any wolf between the ages of one and two.



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Tryon, Leslie. A Unit about Wolves. the Evan-Moor Group. 1989.

Winner, Cherie. Coyotes. Carolhoda books, Inc. 1995.

Zoobooks Series: Wolves. Wildlife Education Ltd. 1986.

WOLF Organizations

Alaska Wildlife Alliance
P.O. Box 202022
Anchorage, AK 99520

International Wolf Center
1396 Hwy. 169
Ely, MN 55371

Mexican Wolf Coalition
207 San Pedro NE
Albuquerque, NM 87108

Timber Wolf Alliance
Sigurd Olson Environmental Institute
Northland College
Ashland, WI 54806

Wild Canid Survival and Research Center
Wolf Sanctuary
P.O. Box 760
Eureka, MO 63025

Wolf Park
North American Wildlife Park Foundation
Battle Ground, IN 47920

Wolf Education and Research Center
P.O. Box 280
Winchester, ID 83555

Defenders of Wildlife
1101 Fourteenth Street N.W.
Washington, D.C. 20005

National Wildlife Federation
1400 Sixteenth Street N.W.
Washington, D.C. 20036-2266

Preserve Arizona's Wolves (P.A.WS)
1413 E. Dobbins Road
Phoenix, AZ 85040

Mexican Wolf Coalition of Texas
P. O. Box 1526
Spring, TX 77383-1526

White Sands Wolf Coalition
P.O.Box1347
Alamogordo, NM 88311-1347

Wolf Haven International
311 Offut lake road
Tenino, WA. 98589

NAME: _____

WOLVES

STUDENT WORKBOOK





KNOWLEDGE CHECK

DIRECTIONS:

Write all the things you know about wolves before you start your booklet.
After you finish this unit, compare your before and after facts.

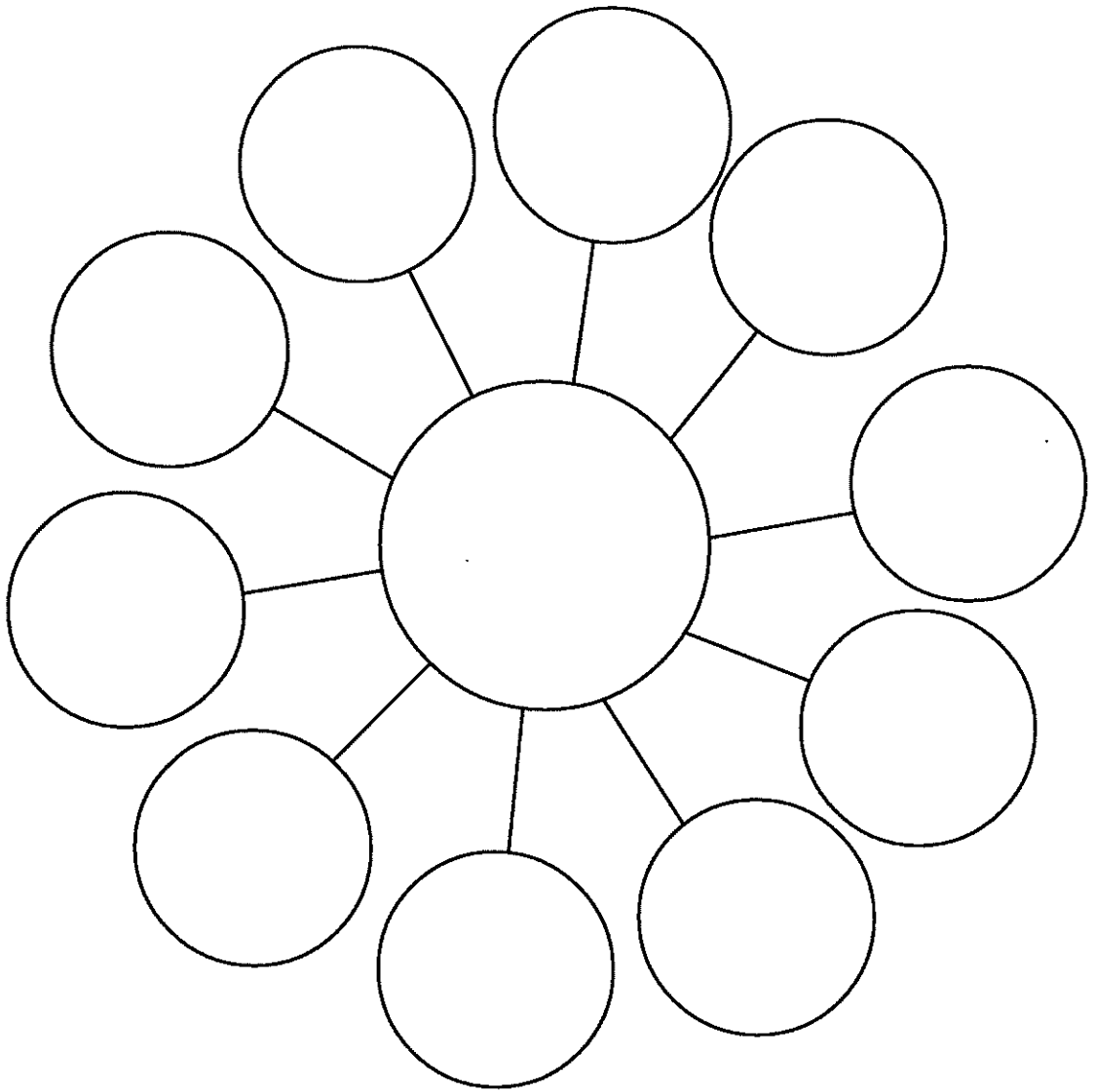
BEFORE THE FACTS...

WHAT QUESTIONS DO YOU HAVE ABOUT WOLVES? WRITE THEM BELOW



Wolf Word Web

WRITE WOLF IN THE CENTER OF THE WEB. IN THE CIRCLES AROUND IT WRITE WORDS YOU THINK OF THAT ARE ASSOCIATED WITH WOLVES.



Wolf Images

List three words that describe how the wolf is depicted in fairy tales such as the Three Little Pigs and the Big Bad Wolf and Little Red Riding Hood.

1. _____

2. _____

3. _____

What word images that you wrote above are based on scientific or actual facts?

What word images that you wrote above are based on fiction?

After hearing or reading wolf tales from other perspectives, how was the wolf depicted in these stories? List three words describing how the wolf was depicted in each story.

1. _____

2. _____

3. _____

What images that you wrote above are based on fact?

What images that you wrote above are based on fiction?

Take a survey of your family, friends and students about how they feel about wolves. Ask them why they feel that way. Be sure to record all of your responses on the back of this page.



TIMELINE OF A WOLF'S YEAR

USE THE TIMELINE BELOW TO LIST WHAT HAPPENS TO THE WOLF DURING ONE YEAR.

MARCH	_____
APRIL	_____
MAY	_____
JUNE	_____
JULY	_____
AUGUST	_____
SEPTEMBER	_____
OCTOBER	_____
NOVEMBER	_____
DECEMBER	_____
JANUARY	_____
FEBRUARY	_____
MARCH	_____



Life Cycle of the Wolf

NUMBER IN ORDER 1-11 THE SEQUENCE OF THE LIFE OF THE WOLF FROM ONE SPRING THROUGH TO THE NEXT SPRING. CUT OUT THE STRIPS AND TAPE THEM TO YOUR TIME LINE ON THE PREVIOUS PAGE.

SEQUENCE THE FOLLOWING:

- PUPS PRACTICE THEIR HOWLING.**
- WHEN THE PUPS ARE ABOUT TWELVE DAYS OLD THEIR EYES FINALLY OPEN.**
- THE PUPS BEGIN TO PRACTICE THEIR HUNTING SKILLS.**
- BY EARLY WINTER THE PUPS ARE NEARLY AS TALL AS THEY WILL GET.**
- THE ALPHA FEMALE (THE LEADER) OF THE PACK DIGS HER DEN.**
- THE NEXT SPRING THE ALPHA PAIR WILL MATE AGAIN, AND A NEW BATCH OF PUPS WILL BE BORN.**
- SHE HAS FIVE PUPS THAT FIRST YEAR.**
- THE PUPS ARE BORN BLIND, HELPLESS, AND COVERED WITH SHORT DARK FUR.**
- THEY BEGIN TO EAT REGURGITATED MEAT.**
- THE WOLVES MOVE TO A RENDEZVOUS SITE IN THE SUMMER.**
- THE WOLVES HAVE THE ADVANTAGE WITH THEIR LARGE FEET AND WELL-PACKED TRAILS, AND THEY EAT WELL THAT WINTER.**



Seasonal Art

Draw your wolf and what it is doing in each season

SPRING

SUMMER

FALL

WINTER



LOCATION MAPS OF WOLVES AND CLOSE RELATIVES

LIVES HERE



LIVES HERE



LOCATION MAPS OF WOLVES AND CLOSE RELATIVES

LIVES HERE



LIVES HERE



LOCATION MAPS OF WOLVES AND CLOSE RELATIVES

LIVES HERE



LIVES HERE



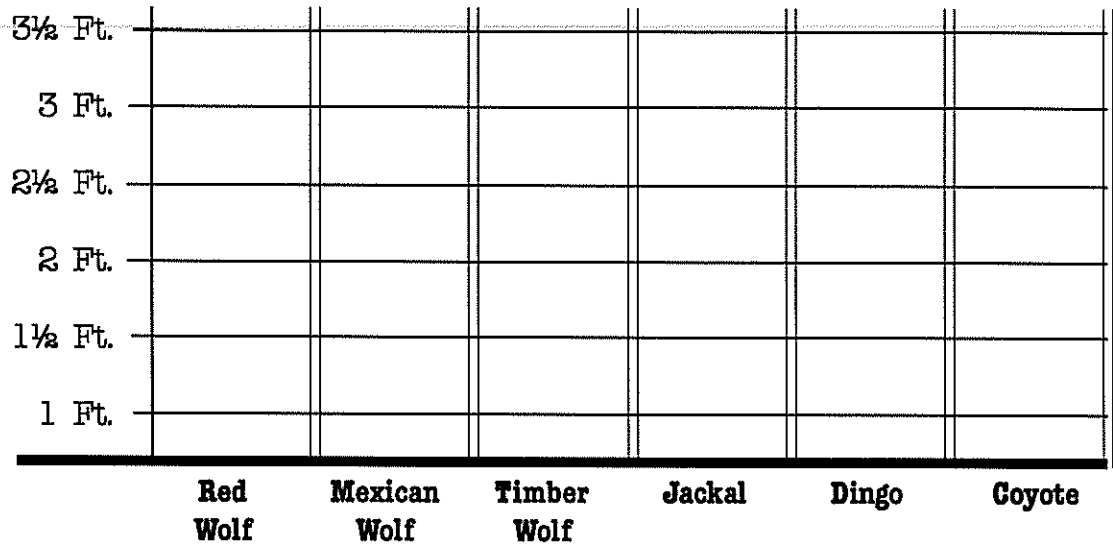
COLOR AND LABEL THE LOCATIONS OF THE WOLF AND ITS CLOSE RELATIVES



HOW DOES THE WOLF MEASURE UP?

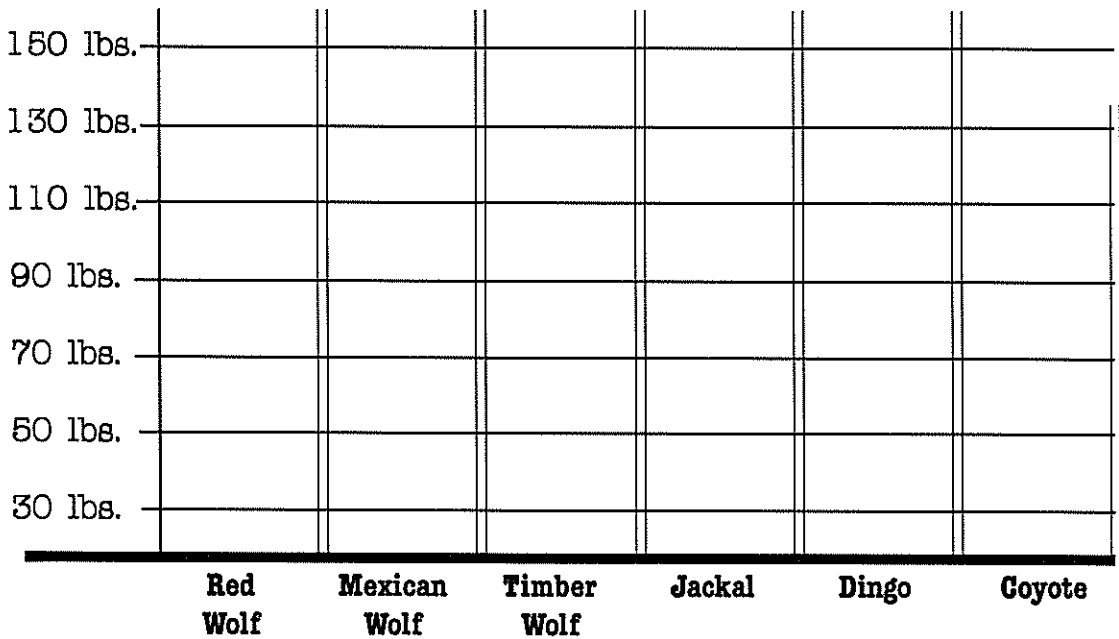
DIRECTIONS:

Use the resources available to locate the height of the six wolves and close relatives. Place their measurement on the graph.



DIRECTIONS:

Find the weight of the six wolves and close relatives and graph them accordingly.



How Does the Wolf Measure up? (part II)

REFERRING TO YOUR GRAPHS ON THE PREVIOUS PAGE, ANSWER THE FOLLOWING QUESTIONS:

CIRCLE THE BEST ADJECTIVE:

THE RED WOLF IS TALLER OR SHORTER THAN THE JACKAL?

THE TIMBER WOLF IS LIGHTER OR HEAVIER THAN THE MEXICAN WOLF?

CREATE YOUR OWN SENTENCE USING ONE OF THE FOLLOWING ADJECTIVES: TALLER, SHORTER, HEAVIER, OR LIGHTER:

WHICH IS THE SHORTEST ANIMAL?

HOW TALL IS THE TALLEST WOLF?

WHAT 2 ANIMALS ARE CLOSEST IN HEIGHT?

WHAT IS THE LIGHTEST ANIMAL?

WHO IS THE HEAVIEST?

WHAT 2 ANIMALS WEIGH THE CLOSEST?

WHAT ANIMAL ARE YOU CLOSEST IN HEIGHT TO?

WHAT ANIMAL ARE YOU CLOSEST TO IN WEIGHT?



The Wolf and Coyote Pelt

WE CALL THE FUR OF AN ANIMAL IT'S PELT. PLEASE BE GENTLE WITH THE PELTS WHEN YOU ARE HANDLING THEM.

WHAT ARE THE COLORS OF THE WOLF PELT?

WHAT ARE THE COLORS OF THE COYOTE PELT?

BY LOOKING AT THE COLORS WHERE DO YOU THINK THE WOLF LIVED?

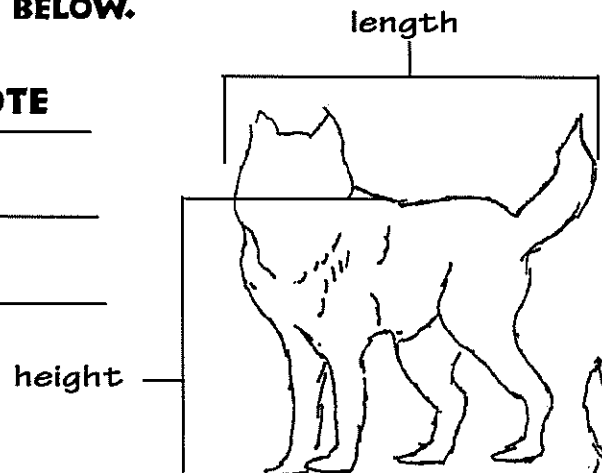
BY LOOKING AT THE COLORS WHERE DO YOU THINK THE COYOTE LIVED?

WHERE ARE THE LONGEST HAIRS ON THE WOLF AND COYOTE?

WHY DO YOU THINK THEY ARE THE LONGEST THERE?

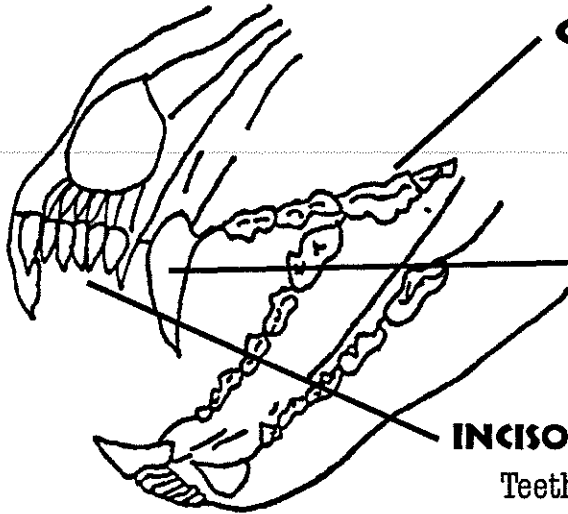
MEASURE THE HEIGHT AND LENGTH OF THE COYOTE AND WOLF. LABEL YOUR MEASUREMENTS BELOW.

	WOLF	COYOTE
height:		
length:		



JAWS

WOLF JAW STRUCTURE AND TEETH



CARNASSIAL (kar-nas-ee-al)

Used for chewing into smaller pieces for swallowing. How are these different from the bear's molars?

CANINE (kay-nine)

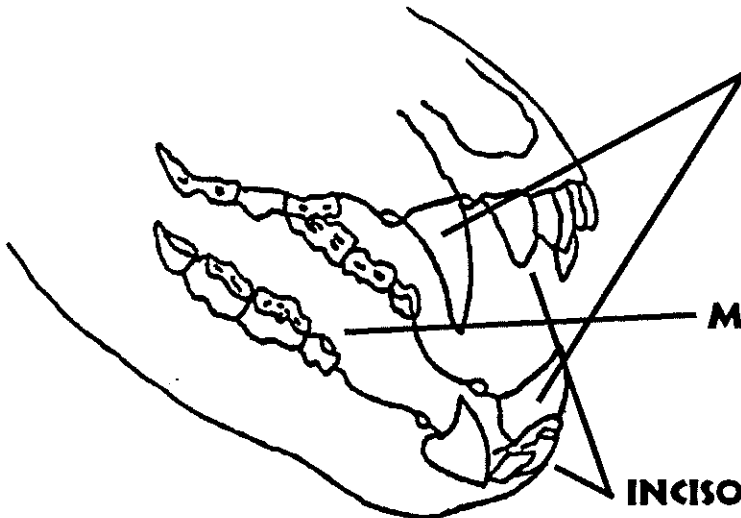
Teeth used to grab and hold onto prey.

INCISORS (in-size-ors)

Teeth used to pick meat off bones. Where are your incisors? What do you use them for?

How are your teeth the same or different from wolves and bears?

GRIZZLY JAW STRUCTURE AND TEETH



CANINE (kay-nine)

Used for catching and killing prey. Also used for ripping meat from carcass.

MOLARS (mow-lers)

Used for smashing and grinding plant food.

INCISORS (in-size-ors)

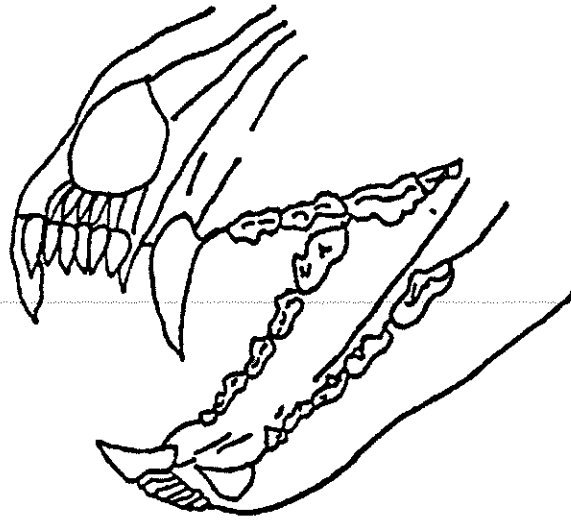
Used for catching and killing prey. Also used for ripping meat from carcass.



Color my teeth

color my molars green
color my canines orange
color my incisors blue
color my carnassials red

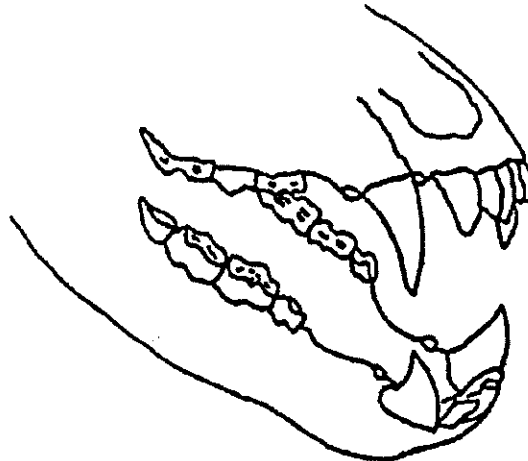
wolf jaw



With my sharp carnassials I eat mostly _____

I'm called a(n) Circle the best answer herbivore, carnivore, omnivore

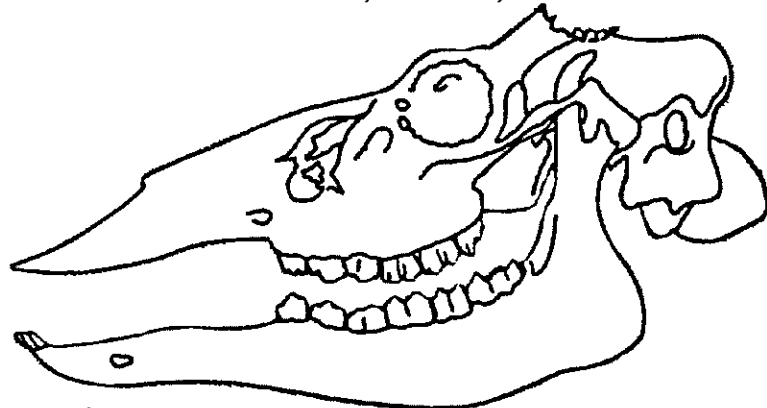
bear jaw



With my molars and canines I eat both _____ and _____

I'm called a(n) Circle the best answer herbivore, carnivore, omnivore

Deer jaw



(diagram here)

With my molars I eat mostly _____

I'm called a (n) Circle the best answer herbivore, carnivore, omnivore



Scat Attack

Scat (the scientific word for poop or feces) tells scientists different things about animals. Examine the 4 scat samples in the wolf box.

By looking at the four samples what is one thing they can tell us about the animal?

1) The scat told me _____
what about the animal?

2) Each box has a number on it. Match the number of the scat to the correct animal species.

Scat	Animal Species	Why did you pick that number?
Scat #1	wolf	
Scat #2	elk	
Scat #3	coyote	
Scat #4	dog	

3) Two of the scat samples have hair in them. What animals do you think the hair came from?

4) Looking at the scat and remembering what you learned from the skulls, circle the best term for the animal. If you have to you can find the definitions on your skull page or in your student glossary. Circle the right answer.

A wolf is a(n) herbivore, carnivore, omnivore

An elk is a(n) herbivore, carnivore, omnivore

A dog is a(n) herbivore, carnivore, omnivore

A coyote is a(n) herbivore, carnivore, omnivore

5) Go home tonight and look at the scat of your pet animal. Does it look similar to any of the scats you have examined today? Does it give you clues on what your pet ate? Be careful to not handle it with bare hands.



CHECK YOUR WOLF COMMUNICATION SKILLS

👉 A role playing activity to do with teacher assistance using the next page as a guide.
What do you think is being communicated?

FIELD NOTES...

SCENARIO 1

SCENARIO 2

SCENARIO 3

SCENARIO 4

SCENARIO 5

SCENARIO 6

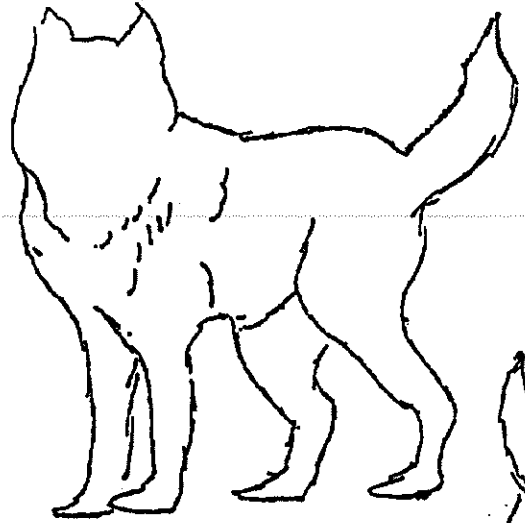


WOLF

BODY LANGUAGE

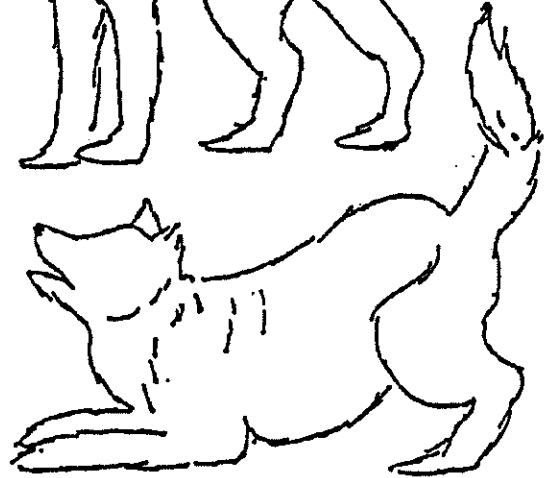
ALPHA BEHAVIOR

- 🐾 Tail held high and bushed out
- 🐾 Head held high
- 🐾 Fur coat puffed to look even larger
- 🐾 Ears pointed forward
- 🐾 A relaxed body posture
- 🐾 An assertive pose



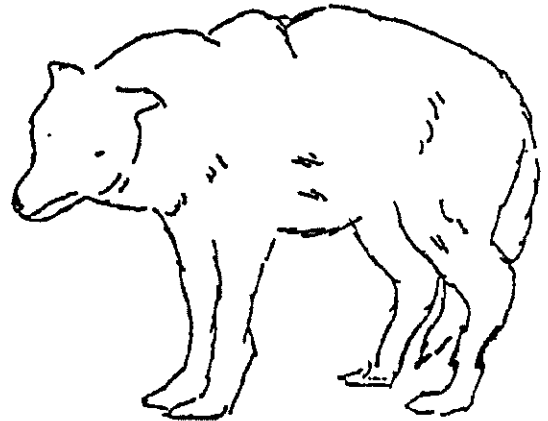
PLAYING POSITION

- 🐾 Tail wagging
- 🐾 Ears pointed forward
- 🐾 Face relaxed and almost smiling
- 🐾 Hind end up in air



SUBMISSIVE BEHAVIOR

- 🐾 Tail flattened
- 🐾 Tail may be held between legs
- 🐾 Head held low to the ground
- 🐾 Ears lowered and flattened to head
- 🐾 Eye contact with other wolves avoided



DON'T HURT ME

- 🐾 Wolf rolls over on back and exposes its belly
- 🐾 Tail held between back legs
- 🐾 Head held down
- 🐾 Mouth closed and tense
- 🐾 Ears held back and down
- 🐾 Eye contact with another wolf is avoided

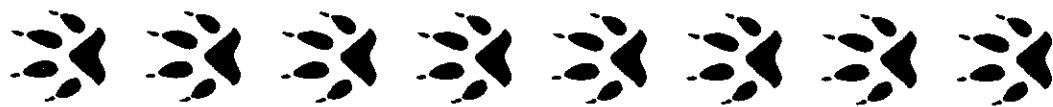


HOWLING POETRY

CREATE A POEM ABOUT WHY THE WOLF HOWLS, WHAT IT IS
HOWLING AT OR ????



DRAW A PICTURE OF YOUR WOLF



Who was that?

Fill in the Chart:

	dog	wolf	coyote
Size			
Coloration			
Tail			
Facial Features			
Tracks			
Howl			

From the video what are your guesses for each animal shown?

Guess?	Why did you guess that?	Answer
1)		
2)		
3)		
4)		
5)		
6)		

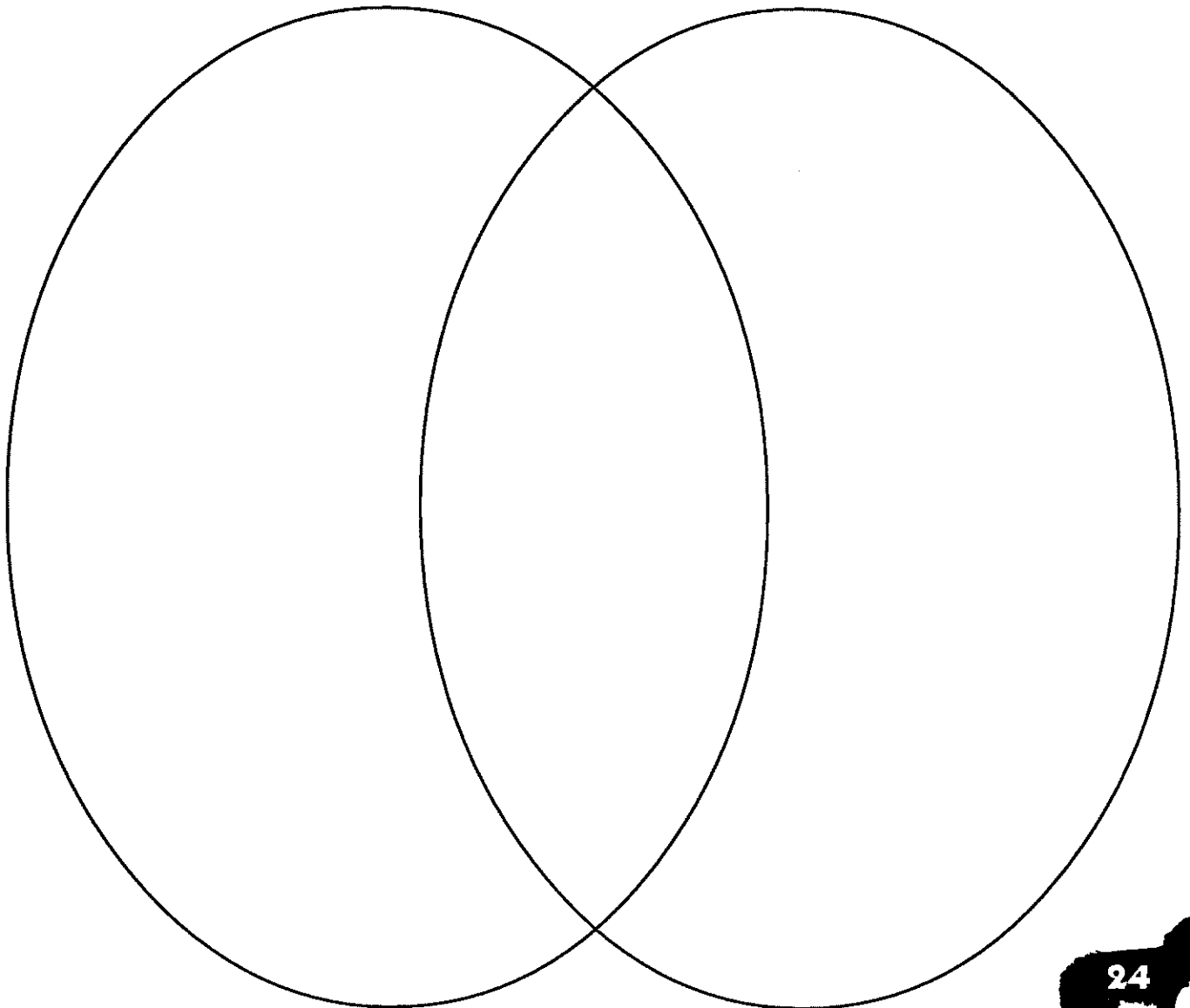


COMPARE AND CONTRAST

Wolves and coyotes have similarities and differences in personality, appearance, and behavior. There are also some similarities and differences between wolf pack behavior and coyote family behavior. Write down all the things you know about wolf personality, appearance, behavior, and communication. Do the same for coyotes. In the section where both overlap list the things that are much the same for both wolves and coyotes.

WOLVES

COYOTES

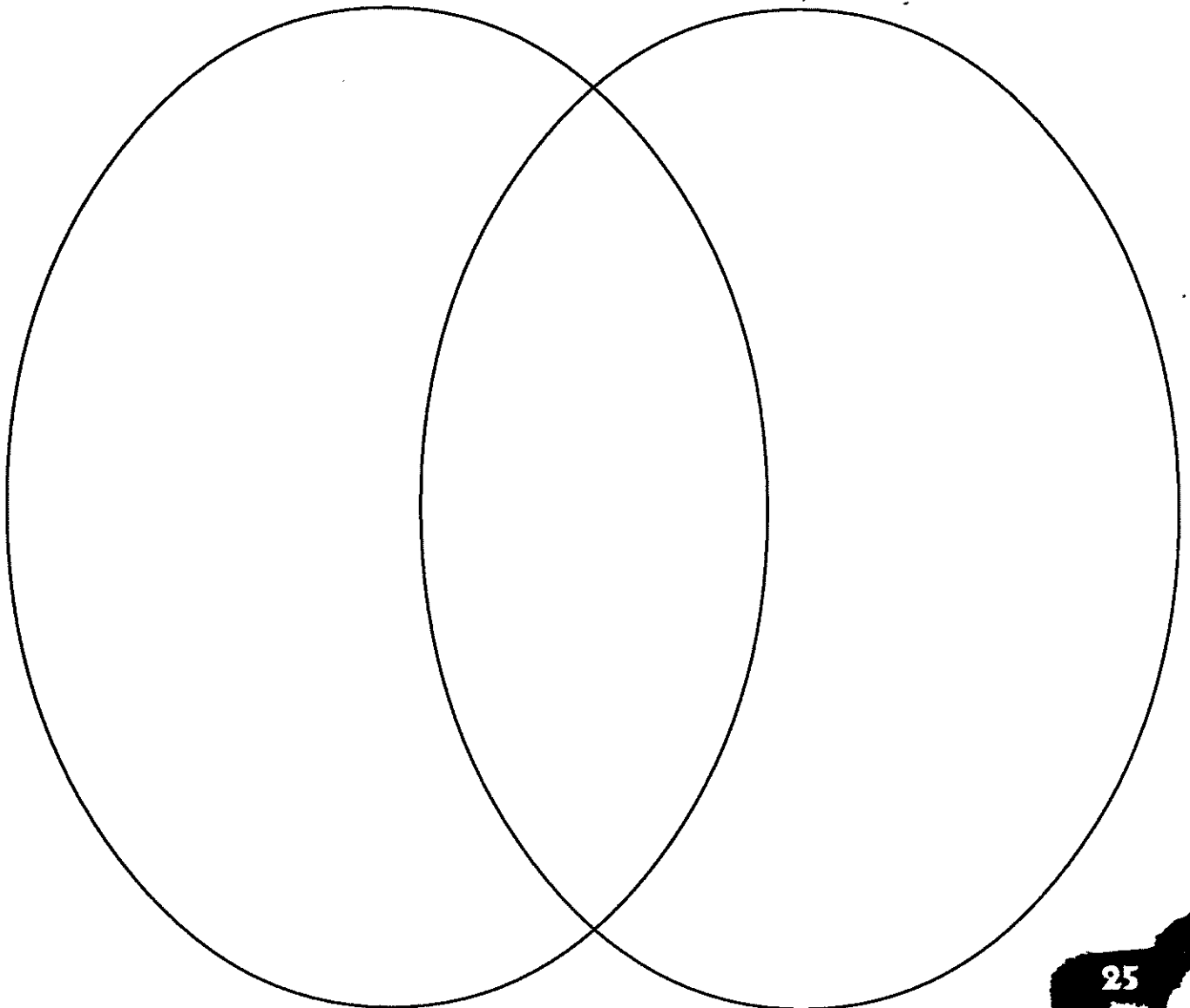


COMPARE AND CONTRAST

Wolves and humans have similarities and differences in personality, appearance, and behavior. There are also some similarities and differences between wolf pack behavior and human family behavior. Write down all the things you know about wolf personality, appearance, behavior, and communication. Do the same for humans. In the section where both overlap list the things that are much the same for both wolves and humans.

WOLVES

HUMANS

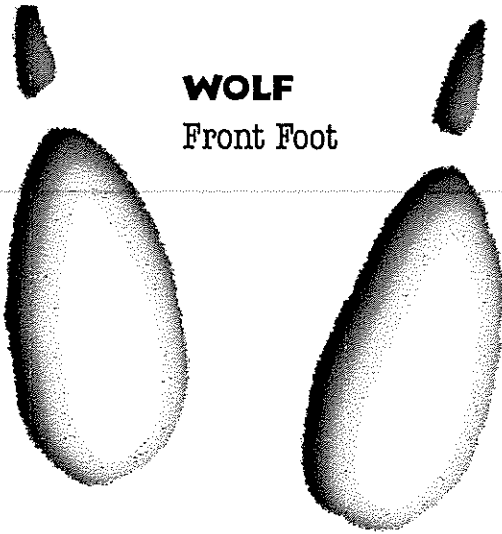


TRACKS

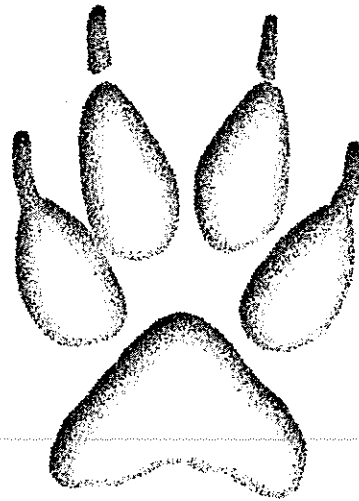
(Actual Size)

Measure each foot with your inch ruler and centimeter ruler.

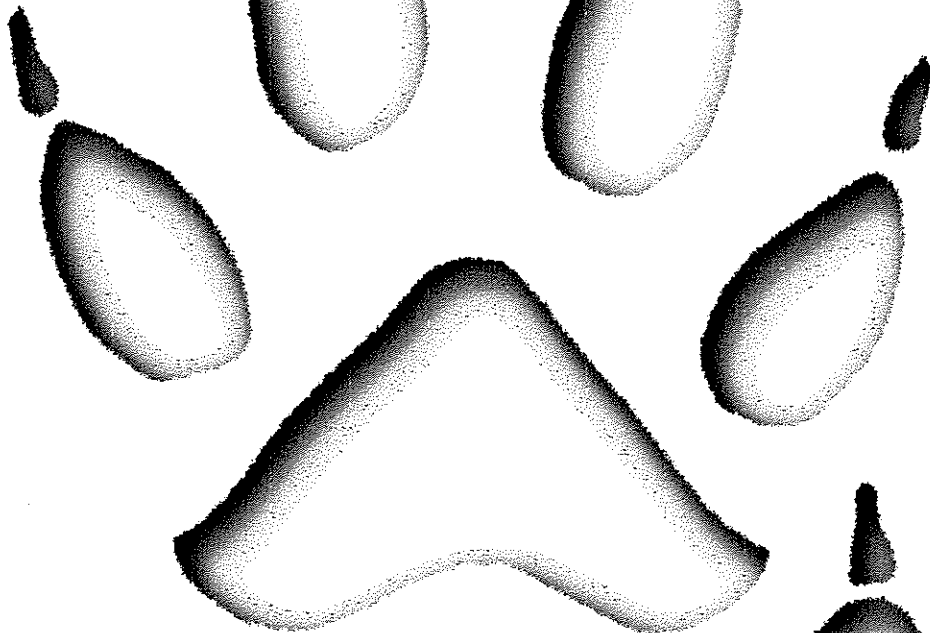
Compare the size of the two species tracks. Measure to the nearest 1/4 inch.



WOLF
Front Foot



COYOTE
Front Foot



COYOTE
Hind Foot

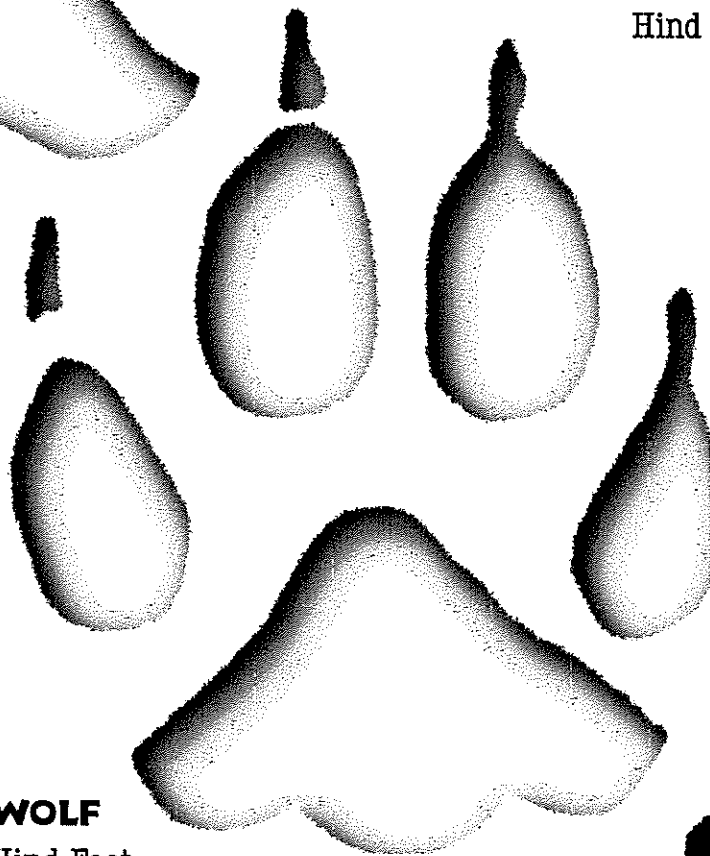
Wolf Front _____ inches
_____ centimeters

Wolf Hind _____ inches
_____ centimeters

Coyote Front _____ inches
_____ centimeters

Coyote Hind _____ inches
_____ centimeters

Your Foot _____ inches
_____ centimeters



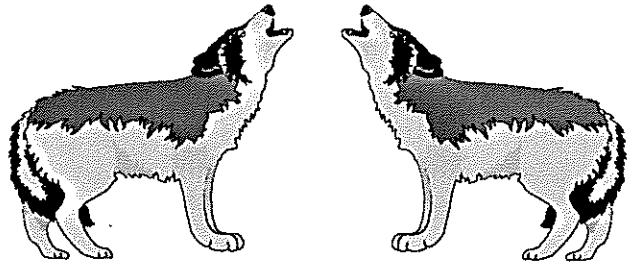
WOLF
Hind Foot



WOLVES FACT OR FICTION ?

DIRECTIONS:

Write five statements about wolves.



ITEMS TO PROVE:

Example: Wolf packs have a pair of wolves who are the leaders.

1.

2.

3.

4.

5.

DIRECTIONS:

List the titles of the resources you used to prove the statements in the above section.

RESOURCES USED:

Example: Wolf book

1.

2.

3.

4.

5.

DIRECTIONS:

Write the corrected facts as statements. Use complete sentences.

THE REAL TRUTH:

Example: Each wolf pack has an alpha male and alpha female who are responsible for the pack.

1.

2.

3.

4.

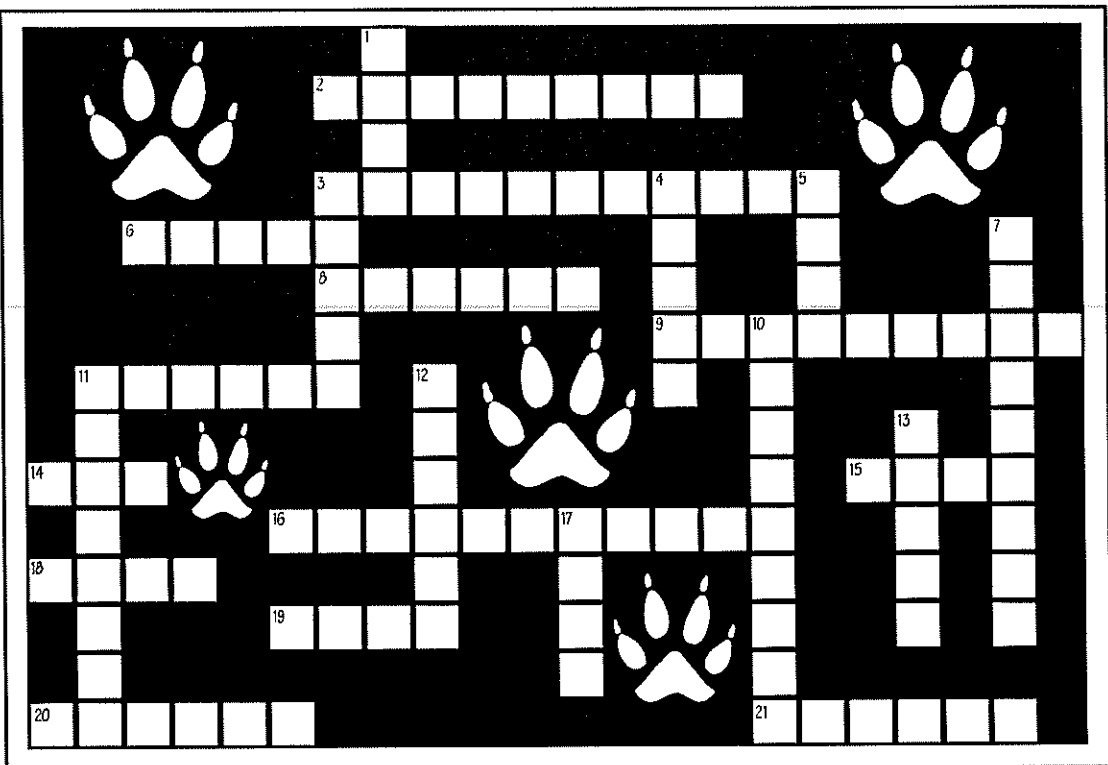
5.



WOLF CROSSWORD

WORD LIST

agonistic
 scat
 digitigrade
 carnivorous
 range
 gestation
 alpha
 territory
 beta
 canine
 family
 den
 pack
 arctic
 predator
 prey
 gray
 tundra
 lupus
 pups
 cache
 scapegoat
 pelage



ACROSS:

2. The area in which a wolf pack lives
3. Meat eating
6. The female or male leader in the pack
8. Wolves are part of the _____ family
9. Period of pregnancy
11. Name for a wolf's body covering
14. Where the female has her pups
15. Young wolves, under one year of age
16. A word to describe how wolves walk
18. A group of wolves
19. A caribou, moose, or deer could be _____ for a wolf
20. An area in the far North where white wolves live
21. Treeless plains in the far North

DOWN:

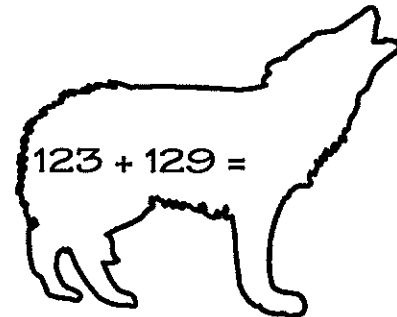
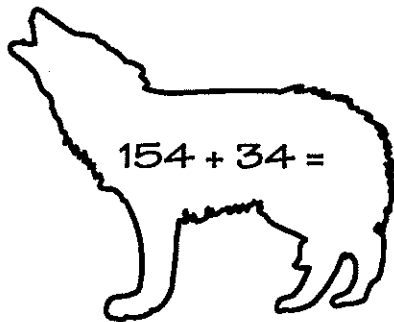
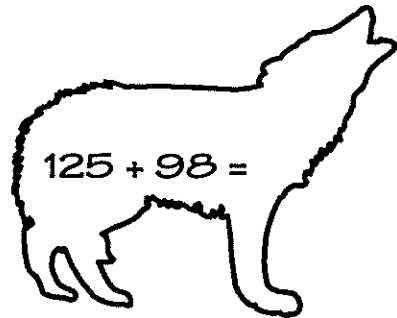
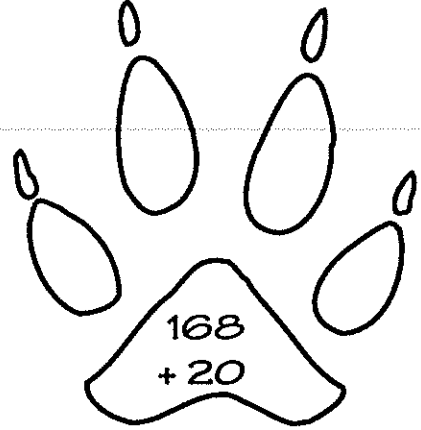
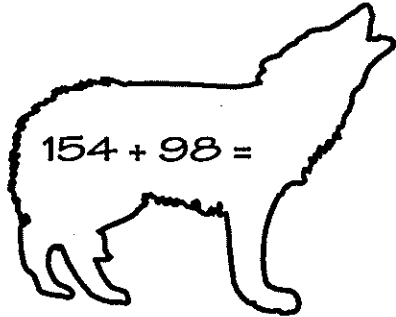
1. Second most important male or female in the pack
3. Stored food supply
4. The area in which a wolf travels and hunts
5. _____ can be examined by biologists to discover what a wolf has been eating
7. Aggressive behavior
10. The outcast, or loner, on the fringes of the pack
11. Any animal that hunts other animals for food
12. A pack is a _____ much like that one you belong to
13. Scientific name for wolf *Canis* _____
17. A common color for wolves; part of common name for North American wolves.



WOLF MATH ADDITION

Directions: complete the math and match the wolf and tracks

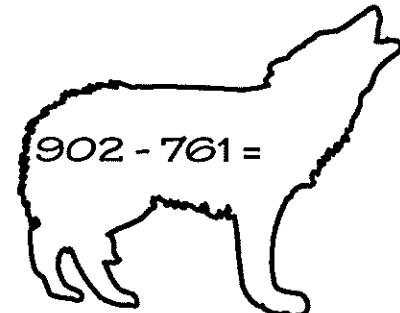
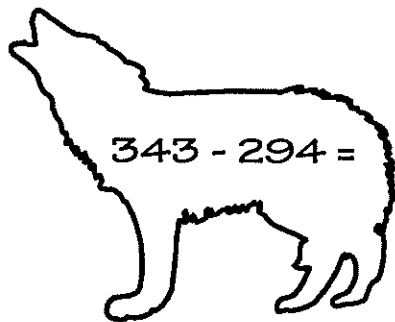
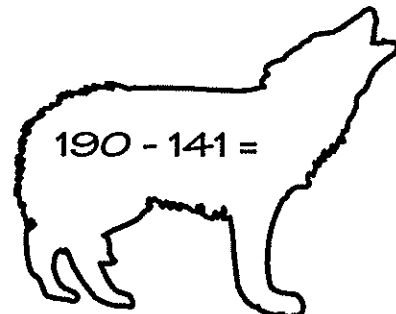
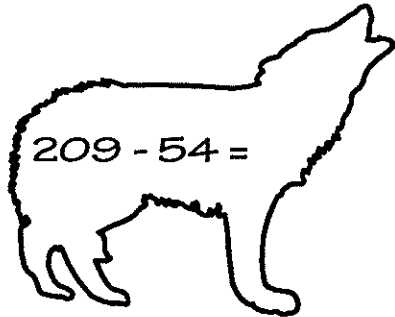
Please show your work on a separate sheet
of paper if there is not enough space available.



WOLF MATH

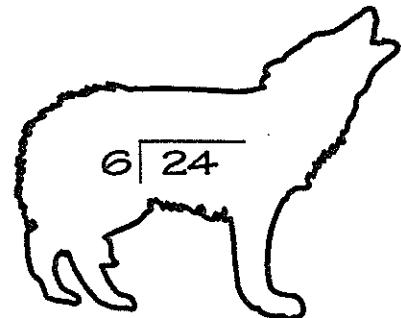
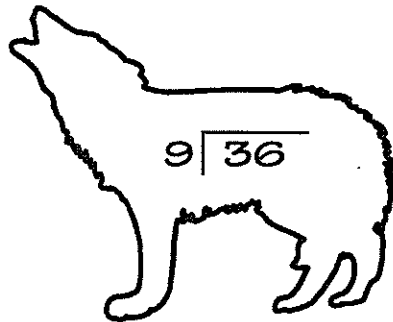
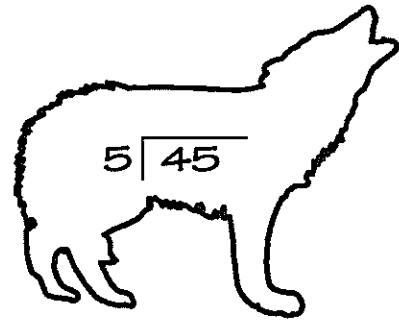
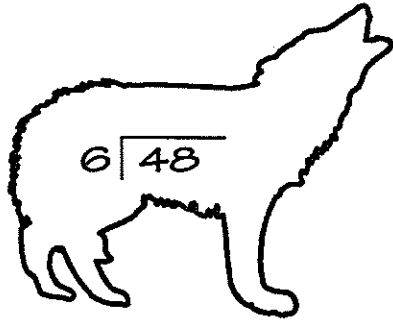
SUBTRACTION

Directions: Complete the math and match the wolf and tracks
Please show your work on a separate sheet
of paper if there is not enough space available.



WOLF MATH DIVISION

Directions: Complete the math and match the wolf and tracks
Please show your work on a separate sheet
of paper if there is not enough space available.

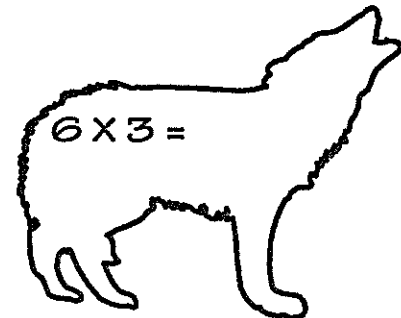
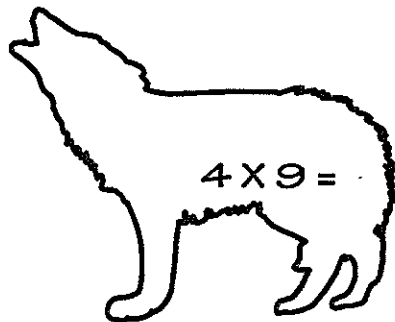
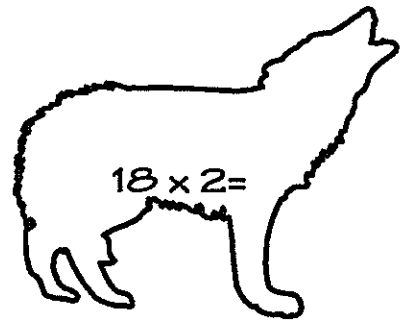
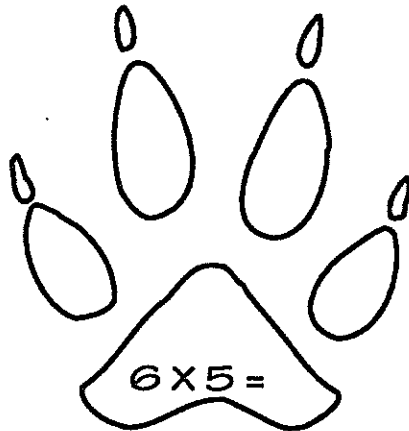
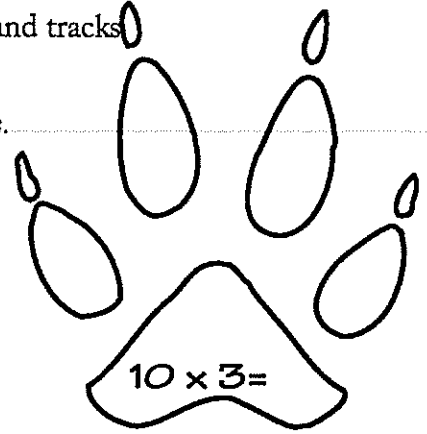
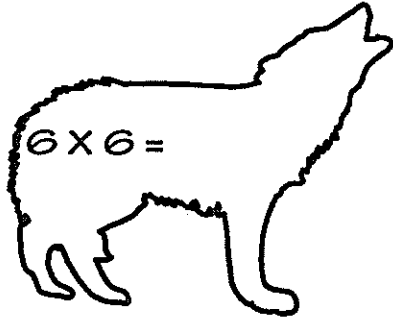


WOLF MATH

MULTIPLICATION

Directions: Complete the math and match the wolves and tracks!

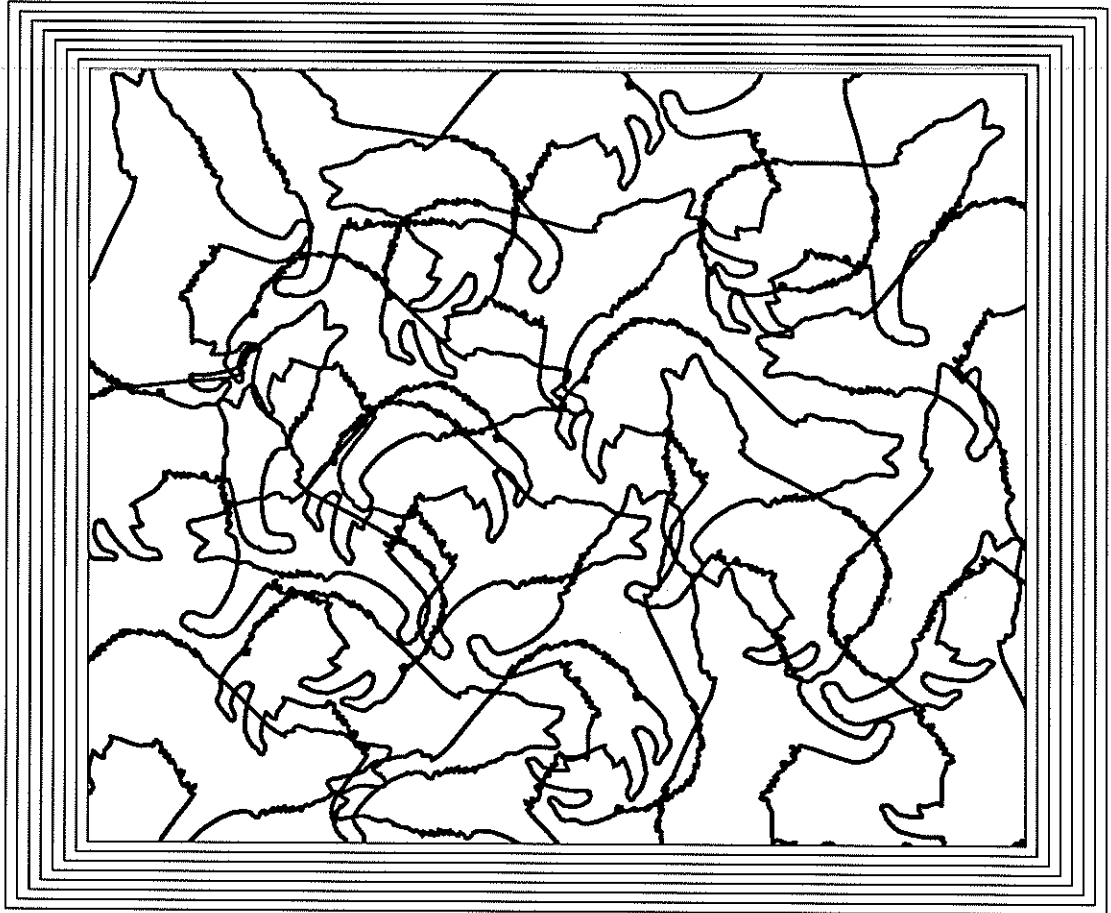
Please show your work on a separate sheet of paper if there is not enough space available.



HOW MANY DO YOU SEE?

DIRECTIONS:

Count how many completed wolves you can spot in this square. Make sure to count those wolves that overlap.



TOTAL NUMBER OF WOLVES:



PROBLEM SOLVING FOR THE WOLVES

1. Wolves commonly travel 20 miles in 24 hours.
How many miles would a wolf travel in 7 days?

2. The distance between Dirty Face Mountain and Mt. Baker is 80 miles.
A wolf can travel 20 miles a day. If a wolf left Dirty Face Mountain on
Friday, on what day would he reach Mt. Baker?

3. Throughout the night you heard a pack of wolves howling. This
particular pack howls every 20 minutes. You heard 7 separate howls
from the same pack. How much time passed as you were listening?

4. During a research period, biologists recorded seeing 60 wolves. Within two
months 49 of the wolves were killed by illegal hunters. What was the
percentage killed by illegal hunters? You may use a calculator after your
teacher has explained percentages to you.

5. What was the percentage of wolves that survived?

6. If a wolf traveled only 15 miles a day, how many days would it take to go
90 miles?

7. Several packs of wolves were studied by biologists to determine how
successful they were as hunters. Moose were seen by wolves 131 times and
only 6 times were moose actually killed. What percentage of these
encounters resulted in successful hunt by wolves?



WOLVES: TRUE OR FALSE

DIRECTIONS:

Read the statements below. If the statement is true, place a "T" in the box. If the statement is false, place a "F" in the box and rewrite the statement to make it true.

1. The habitat of the wolf may influence the color of its fur.
2. The wolf can smell and hear prey a long distance away.
3. Wolves live in a pack. A pack is like a family with a mother, father, several pups and close relatives.
4. Wolves are plantigrade animals. (look up plantigrade in the glossary)
5. Wolves on an average have a larger footprint than do dogs or coyotes.
6. Lone wolves are more apt to respond to a howl from a pack.
7. Wolves and dogs are related.
8. Wolves communicate by howling, barking, whimpering, and growling.
9. Wolves have four toes on the front paws and six on the back paws.
10. Wolves' tails have a curl to them.
11. The muzzle of the wolf is large and blocky.
12. Wolves include ungulate animals in their diet. (look up ungulate in the glossary)
13. Scat is the name used for wolf droppings.
14. One function of howling is to identify distance between packs.
15. Wolves howl for an hour without stopping.
16. All wolves are protected in the lower 48 states by the Endangered Species Act.





KNOWLEDGE CHECK

DIRECTIONS:

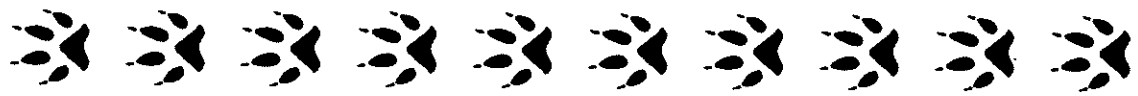
Write all the things you know about wolves after completing your booklet.
Compare your before and after facts pages.



AFTER THE FACTS....

CAN YOU NOW ANSWER THE QUESTIONS YOU HAD AT THE BEGINNING OF YOUR WORKBOOK? WRITE THE ANSWERS BELOW USING FULL SENTENCES.





WOLF ART

DRAW A PICTURE OF SOMETHING YOU LEARNED ABOUT WOLVES



WRITE A SENTENCE TO DESCRIBE YOUR PICTURE



STUDENT GLOSSARY

ADAPTATION: A change in behavior or physical characteristics of a plant or animal that enables it to survive in its environment.

AGONISTIC: Aggressive behavior, used by bears and wolves to chase away threatening people or animals.

ALPHA: The female leader and male leader of a wolf pack.

ALPINE: High level land, characterized by stunted trees, low growing shrubs, and flowers; covered by snow much of the year.

ARTIC: The area surrounding the North Pole.

BETA: The second most important male or female in a wolf pack; they are submissive only to the alpha wolves.

BLACK BEAR: *Ursus americanus*, a bear found over much of North America, smaller than a grizzly, with a longer face and no shoulder hump.

BOAR: A male bear

CACHE: Buried or partially buried meat stored for eating later. This method is used by bears and wolves.

CANINE: Teeth used to grab and hold onto prey.

CARNASSIAL: The back teeth of a carnivore used for chewing meat.

CARNIVORE: Any meat-eating animal.

CARNIVOROUS: Meat eating (adjective)

CARRION: The flesh of dead animals

CLAWS: The long sharp "toenails" used by grizzlies for digging.

CUB: A young bear



DAYBED: A protected bed where a bear rests when it is not traveling, feeding, or hibernating.

DELAYED IMPLANTATION: The mechanism by which a fertilized egg does not attach to the uterine wall until the bear's hibernation.

DEN: 1. Where the bear hibernates. 2. A secure dug out room in which a female wolf gives birth to her pups; also the place where the pups spend the first few weeks of their lives.

DIGITIGRADE: The manner in which an animal walks on just the toes of his feet, like dogs and wolves do.

DISH FACE: One of the distinguishing characteristics of a grizzly; a concave dip in the nose.

ECOSYSTEM: A community of living organisms interacting with their environment and each other to form a unified whole.

ENDANGERED: Population of a species is so low that extinction is possible.

EXTINCT: No longer existing.

GESTATION: The period of pregnancy between mating and birth.

GRIZZLY: *Ursos arctos*, a large brown bear of North America.

HABITAT: The environment in which an animal lives.

HABITUATION: Becoming accustomed to human presence; losing fear of humans.

HERBIVORE: An animal who only eats plants.

HIBERNATION: A state of lowered metabolism in wintertime, during which a bear rests in his den, neither eating nor urinating or defecating.

HUMP: A large mass of muscle above the grizzly's shoulders, characteristic of the grizzly.

HYPERPHAGIA: Metabolic change leading to hibernation; eating less, lethargic.

HYPOPHAGIA: The period right after a bear comes out of hibernation; eating sparingly, still metabolizing body fat for energy.

INCISOR: The front teeth used for catching and killing prey.



ISOLATION: Being alone, not being bothered by human presence; one of the seven requirements of grizzlies.

LITTER: A group of wolf pups, the average litter size is six pups.

LUPUS: The scientific name for wolf (*canis lupus*).

MOLAR: The back teeth used for smashing and grinding food.

OMEGA: Lowest ranking wolf in the pack.

OMNIVORE: Any animal that eats both animal and plant foods.

PACK: A group of wolves who live together, hunt together and socialize with each other.

PELAGE: Another name for the fur coat of an animal.

PLANTIGRADE: Walking on the soles of the feet, as does a grizzly; a human does also.

PREDATOR: Any animal that hunts and kills another animal for food.

PREY: Any animal that is hunted or killed by another animal.

RANGE: The area an animal travels to find food and mates.

RENDEZVOUS SITE: A safe area where a wolf pack rests between hunts.

RUB-MARKING: Where bears bite, claw, or rub trees to indicate to other bears that they have been there.

SCAPEGOAT: The outcast, or lone wolf. This is a wolf that is not accepted by any other wolf in the pack. He usually leaves the pack on his own, or is forced to leave—may become a lone wolf, or might join another pack.

SCAT: An animal's excrement (poop!).

SCAVENGER: Any bird or animal that eats the remains (carrion) of a previously killed animal.

SLEEPING CHAMBERS: The part of the den where the bear hibernates and gives birth to cubs.

SOW: A female bear



SPECIES: Scientific classification of living creatures.

STALK: The act of sneaking closer to prey before rushing in to attack.

SUB-ALPINE: Mountain land slightly lower in elevation than alpine regions, characterized by taller trees, more plant growth, and steep mountain meadows. This region remains snow-free slightly longer than the alpine regions.

SUBMISSION: 1. Sign of non-aggression, or unwillingness to fight. 2. A behavior that indicates a low place in the wolf pack order of importance.

SUB-SPECIES: A scientific classification just below species; for instance, a Kodiak brown bear is a sub-species of *Ursos arctos*

TEMPERATE: The land areas below sub-alpine, usually lower mountain valleys. These areas are snow-free much longer each year than alpine or sub-alpine areas. These areas are characterized by a variety of plant and animal life, shorter winters, and abundant water.

TERRITORY: 1. The area of an animal's range which that animal will defend against intruders. 2. The area a wolf pack will defend against intrusion by other wolves. Territories are a smaller part of the wolves' range.

THREATENED: A species that may become endangered if their numbers and habitat continue to decline.

TRACK: The foot print left by an animal.

TUNDRA: Cold, treeless plains of the arctic and subarctic regions.

TUNNEL: A narrow chamber leading to the larger sleeping chamber in a den.

UNGULATE: Any hoofed mammal, such as a deer, elk, moose, caribou, or mountain sheep.
Common prey of wolves.

VEGETATION: Any kind of plant growth.

YEARLING: Any wolf between the ages of one and two.



GRIZZLY BEARS

TEACHER INFORMATION



APPENDIX B

BEAR TEACHER WORKBOOK

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ACTIVITY

#1- Getting Started-Bear

ESSENTIAL LEARNING'S

Science 2. The student knows and applies the skills and processes of science and technology.

Reading

1. The student understands and uses different skills and strategies to read.

BENCH MARK 1- GRADE 4

2.1 develop ability to do scientific inquiry questioning, ask questions about objects, organisms, and events in the environment.

1.2 building vocabulary through reading building reading vocabulary by interpreting context clues and using dictionaries, glossaries, and other sources.

#2- Bear Images

Social Studies: History
3. the student understands the origin and impact of ideas and technological developments on history and social changes.

Social Studies: Geography
3. the student observes and analyzes the interaction between people, the environment, and cultures.

Reading

2. The students understand the meaning of what is read

3.2 analyze how historical conditions shaped ideas and how ideas change over time explain how historical conditions have shaped ideas.

3.3
examine cultural characteristics, transmission, diffusion, and interaction

2.3 think critically and analyze author's use of language, style, purpose, and perspective separate fact from opinion recognize different purposes and styles for writing.

ACTIVITY

#3-Life Cycle of the Bear

ESSENTIAL LEARNING'S

Science

1. the student understands and uses scientific concepts and principals

BENCH MARK 1- GRADE 4

1.2 recognize the components, structure, and organization of systems and the interconnections within and among them molecular basis of heredity describe the life cycle of plants and animals, and recognize the differences between inherited and acquired characteristics.

1.3 understand how interactions within and among systems cause changes in matter and energy. Interdependence of life describes how and organism's behavior and ability to survive is influenced by its environment, other life forms, and availability of food and/or other resources

Arts

4. The student understands how arts connect to other subjects areas, life, and work.

4.1

use arts skills and knowledge

in other subjects areas use arts forms to reflect concepts learned in other subjects.

#4-Where has the bear gone?

Social Studies- geography

1. The students uses maps, charts, and other geographic tools to understand the spatial arrangement of people, places, resources, and environments on Earth's surfaces.

1.1 use properties to identify, describe, and categorize substances, material, and objects use characterized to categorize living things. Use properties to sort natural and manufactured material and objects, for example size, weight, shape, color, texture, and hardness.

Social Studies-geographic

3. The student observes and analyzes the interaction between people, the environment, and culture.

3.1 identify and examine people's interaction with and impact on the individual describe how individual behaviors alter the environment and how the environment influence the individual.

ACTIVITY

#5-The Fabulous Eight

ESSENTIAL LEARNING'S

Social Studies-geography
1. The student uses maps, charts, and other geographic tools to understand the spatial arrangement of people, places, resources, and environments on Earth's surfaces.

BENCH MARK 1- GRADE 4

1. use and construct maps, charts, and other resources.

Mathematics

1. The student understands and applies the concepts and procedures of mathematics.

1.4 understand and apply concepts and procedures form probability and statistics organize and display data in numerical and graphical forms such as tables, charts, pictographs, and bar graphs.

4. The student communicates knowledge and understanding in both everyday and mathematical language.

4.1 gather information use reading, listening, and observation skills to access and extract mathematical information form a variety of classmates, oral narrative, and symbolic representation.

4.2 represent and share information express ideas using mathematical language and notation such as physical or pictorial models, tables, charts, graphs or symbols.

#6-Can You Tell Us Apart?

Science

1. The student understands and uses scientific concepts and principles.

1.3 understand how interactions within and among systems cause changes in matter and energy. Interdependence of life describes how and organism's behavior and ability to survive is influenced by its environment, other life forms, and availability of food and/or other resources

ACTIVITY

ESSENTIAL LEARNING'S

BENCH MARK 1- GRADE 4

#6-Can You Tell Us Apart?
continued

Science
1. The student understands and uses scientific concepts and principles.

1.1 use properties to identify, describe, and categorize substances, material, and objects use characterized to categorize living things. Use properties to sort natural and manufactured material and objects, for example size, weight, shape, color, texture, and hardness.

#7-Bear Research

Science 2. The student knows and applies the skills and processes of science and technology.

2.2
apply science knowledge and skills to solve problems and meet challenges identify problems
identify problems found in familiar contexts in which science/technology can be or has been used to design solutions.

Reading
2. The students understand the meaning of what is read.

2.1 comprehend important ideas and details demonstrate comprehension of the main idea and supporting details; summarize ideas in own words.

#8-Be Bear Aware

Writing
1. The student writes clearly and effectively.

1.1 develop concept and design.
1.2 1.2 use style appropriate to the audience and purpose
1.3 apply writing conventions

#9-Chow Down

Mathematics
1. The student understands and applies the concepts and procedures of mathematics.

1.1 understand and apply concepts and procedures of mathematics.

ACTIVITY

#9-Chow Down

ESSENTIAL LEARNING'S

5. The student understands how mathematical ideas connect within mathematics, to other subject areas, and to real-life situations

BENCH MARK 1- GRADE 4

5.2 relate mathematical concepts and procedures to other disciplines use mathematical thinking and modeling in familiar situations in together disciplines.

#10-Jaws

Communication

1. The student uses listening and observation skills to gain understanding.

1.2 listen and observe to gain and interpret information identify visual information such as from a science experiment interpret visual text such as illustrations, comics, and videos.

Science

1. The student understands and uses scientific concepts and principles.

1.1 use properties to identify, describe, and categorize substances, material, and objects use characterized to categorize living things. Use properties to sort natural and manufactured material and objects, for example size, weight, shape, color, texture, and hardness.

2. The student knows and applies the skills and processes of science and technology.

2.1 develop abilities necessary to do scientific inquiry use data to construct reasonable explanations.

ACTIVITY

ESSENTIAL LEARNING'S

**BENCH MARK 1-
GRADE 4**

Bears

IN NORTH AMERICA

Hello Teachers!

Welcome to the activity guide for bears. By presenting interesting facts concerning this species, we hope to increase understanding of the bears and their roles in our environment. It is the intent for this guide to be user friendly, hands on and interdisciplinary.

This guide is geared for grades 3rd through 5th grade students, but can be adapted for other grade levels. The guide includes activities in all curriculum areas. Your bear unit will be greatly enhanced with the use of the U.S. Forest Service bear box. The box may be checked out at the Leavenworth Ranger district by contacting the education coordinator at 509-548-6977.

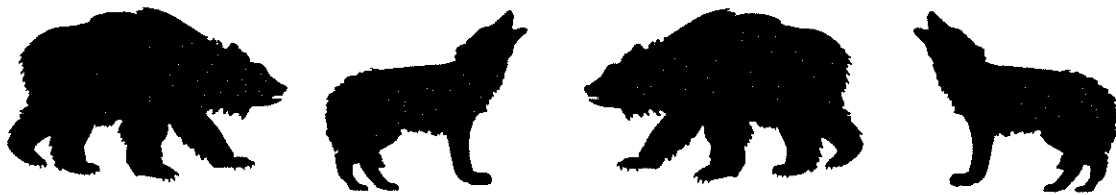
We encourage teachers to utilize other resources in the use of this guide e.g. school librarian, songs, books, and movies. Take time to review this guide and the boxes thoroughly before beginning your unit. The bear guide is split into a teacher and student workbook. Many of the activities involve materials and props from the boxes. Each of the lessons will tell you what materials are needed. Materials that have a 🐻 next to them indicate that they are found in the bear box. Please understand that there is a lot of information here and you will have to decide what you can and can not cover.

All of the activities have been aligned with the Washington State Essential Academic Learning Requirements revision from July 17, 1998. They are aligned with benchmark 1 for 4th grade. This material has been tested in classrooms and resulted in an exciting learning experience for teachers, students, and parents.

This guide is by no means the exclusive source for bears. In fact, there are many great resources and materials and we hope you will incorporate those along with this guide and the bear box to make your unit the very best. We welcome any feedback on how this can be continually improved.

We hope you enjoy teaching these units!





Dear Parent,

Over the next two weeks, our class will be studying grizzly bears and/or wolves. They are both listed as endangered species in the lower 48 states.

In this unit we are presenting the students with the facts about bears and/or wolves - two of the most fascinating mammals in North America. Our aim is to give the students all the information we can and then let them come to their own conclusions about how man and these two species can coexist.

We encourage you to discuss this lesson with your child, check out books on bears and/or wolves from the library and be willing to carefully look at the materials your child is working on.

In this time of increasing environmental awareness, our goal is to teach the students to look at all sides of an environmental concern. They will learn to weigh the issues fairly, and come to understand all the responsibilities involved in protecting our world for future generations.

You are welcome to join us in our classroom to help us learn about bears and/or wolves. If you have any bear or wolf related items that you would like to share, please call your child's teacher and let him/her know what you have available.

Sincerely,

Activity #1-Getting Started

1. Check out the bear box from the Leavenworth Ranger Station, U.S. Forest Service, at 548-6977.
2. Review the activity guide and boxes to organize your unit. Remember you probably won't have time to do everything.
3. Please note with each of the activities in this guide that a 🐾 in the "Materials you Need" section indicates props you will find in the bear box. The materials and props from the box are referenced in **bold lettering** throughout the activity. The worksheets needed for each activity are identified throughout the guide in *italics*.
4. Contact your school librarian and other sources to obtain additional materials on bears. The Everywhere Bear, The Zoobook, Northwest treks BEARS, and The Beauty and the Beast (all four are in the Bear Box) are very good sources for ideas and additional activities. Review the National Geographic video **Grizzlies** and the Eyewitness video and decide if and when you would like to show it.
5. Photocopy the student workbook located in the second half of this guide (decide if you will have time to use the whole workbook or certain portions) for each student.
6. Have students complete the *Knowledge Check* pg.1 in the student workbook before you begin the unit. Have students share their facts and questions about bears with the rest of the class. Be sure students complete the *Knowledge Check on pg. 49* in the student workbook after you have completed the bear unit.
7. Photocopy the *blank bear tracks* on the next page. Students should write down a question they have on one of the tracks. Display the track question on a bulletin board or around the classroom in some creative fashion. Refer to these questions throughout the unit. As you and your students discover the answers be sure to record those too.
8. Some of the activities include key vocabulary to review with your students. Students should complete their key vocabulary student worksheet on page 2 when these key words are discussed.
9. Have students look at *Wonderful Bear Words* pg.3 in their student workbook. Be sure students add new vocabulary words throughout the unit.
10. Student worksheet pgs. 36-48 do not belong to any specific activity but can be done when students have free time.
11. If you decide to do the wolf activity guide along with the bear guide then you might want to compare and contrast the wolf and bear activities, i.e. their lifecycles, tracks, skulls, etc.
12. Student answers are found at the end of each activity in your teacher worksheet.



Activity #2-Bear Images

People, including your students, have different stereotypes or images of bears. These may have been developed because of television programs, a movie, or what they heard someone say. Different cultures have different ways of viewing the bear. In this activity you will be discussing with your students their images of bears and share with them other culture's perspectives.

OBJECTIVES:

Students will:

- complete a word web of bear images.
- identify different human perceptions about bears from different cultures.
- create their own bear legend or myth.

MATERIALS YOU NEED:

- 🐻 Videos-Grizzly,National Geographic and Eyewitness on Bears
- 🐻 The "Boy Who Lived with the Bears" by Joseph Bruchac in The Everywhere Bear pp. 37-41
- 🐻 Beauty and the Beast curriculum p. 11-20
- 🐻 Northwest Trek's BEARS, pp. 3-7

STUDENT WORKSHEETS:

- Bear Word Web (student workbook pg. 4)*
- Bear Images (s.w. pg.5)*
- Role of Bear in Mythology and Legends (s.w. pg. 6)*
- A Tale of Teddy (s.w.pg.7)*

TEACHER WORKSHEETS:

- Mythology, Legends, and Bears (teacher workbook pg. 5)*
- Native Americans and Bears (t.w. pg.6-9)*

KEY VOCABULARY:

legend, mythology

BEFORE THE ACTIVITY:

Gather from your library and other sources information on bears.

DOING THE ACTIVITY:

1. Discuss with your students the different images they have of bears.
2. Have them complete *the Bear Word Web* in the student workbook using different words that describe the bear. The students do not have to fill all the bubbles at this point but can continually



fill them in as they learn more about bears. Many of your students might use words like “mean” or “dangerous” in the beginning. As they learn more about bears you might be surprised at what words are written on their word web. Students might ask about bear attacks. Please read pages 10-11 on “Bear Attacks-How Serious a Threat?” in Northwest Trek’s Introduction to Bears.

3. Discuss with your students different stories or movies that have bears depicted in them. Was it based on fact or fiction?

4. Read and discuss with students other stories about bears from other cultures. These stories are in *The Everywhere Bear*, *Beauty and the Beast* and *Northwest Bear* (see “what you need” section above for page numbers). How is the bear viewed in each of these stories? Have students complete *Bear Images* from their student workbook..

5. Share with your students *Mythology, Legends and Bears and Native Americans and Bears* from your teacher workbook. Have students complete *Role of the Bear in Mythology and Legends*.

6. Share with students “From Werebears to Teddy Bears” In Northwest Trek’s Introduction to Bear. Have students complete *A Tale of Teddy* in their Student workbook



MYTHOLOGY, LEGENDS, AND BEARS

There are many myths from ancient civilizations regarding bears. In one Ancient Greek myth the goddess Hera changed Kallisto into a bear when she found out that her god-husband Zeus also loved Kallisto. Then Hera tricked the goddess Artemis (the huntress) into shooting the bear. Zeus found out what happened, and because he loved the dead bear (Kallisto) so much, he sent her to live in the sky forever as the Great Bear - Ursa Major. Later Kallisto's son was sent to the sky to become her guardian. He was called Ursa Minor, or little bear.

Ancient Romans had a similar myth, but the names of the gods and goddesses were different. Hindu myths say that the "great sky bear", Ursa Major, is the source of all energy in the universe.

Among Native American tribes, stories similar to ancient myths were told. The Algonquin Indians living around present day Quebec and Ontario Canada told of a bear trying to escape a hunter. When the bear was finally shot, a nearby chickadee rushed in with a dipper which she filled with blood. When the dipper overflowed, the blood fell to the ground, turning the leaves red as we now see them in autumn. After the blood had all spilled, the falling drops of white bear fat fell as snow, bringing winter.

In the Arctic regions of Asia in Siberia and Lapland, ancient tribes told a story about bears. The legend said that the bear was content to live on a cloud near the Great Bear constellation. One day a cub (Little Bear) stuck his paw through a cloud, saw humans below, and begged to be allowed to go play. While Little Bear visited, he taught the people the importance of honoring the bear. When Little Bear returned to the sky, he took with him gifts of silver objects. These became the shining stars in the constellations of Ursa Major and Ursa Minor.

In the Arctic regions of North America, the Eskimos' legend explained how the constellations came to be in the sky. In this legend, a woman came upon a bear family in human form. She lived with them awhile, then asked to go home. The bears made her promise not to tell her husband, a hunter, where they lived. But she did tell him, and the hunter went to the bears' home. The bears became very angry and one went to the woman and bit her on the neck. As the bears were leaving, one of the man's dogs attacked. In the middle of the dog-bear battle, a fire came down from the sky, hiding the bears from the dogs, and the bears returned to the sky in safety as Ursa Major and Ursa Minor — the bear family.

NATIVE AMERICANS AND BEARS

KWAKIULTL (WESTERN BRITISH COLUMBIA)

- 🐾 A hunter who killed a grizzly was said to inherit its powers, becoming fierce and unpredictable.
- 🐾 Parents in this tribe desired the grizzly's power and ability as a gatherer for their daughters.



ATHAPASKAN (NORTHERN CANADA)

*SEE ALSO NAVAJO

- 🐾 After slaying a bear, the hunters cut off its front paws and poked out its eyes so the animal could not hurt them or see who killed it.
- 🐾 Hunters of this tribe were avid and skilled bear hunters who also loved to eat the meat of black bears.
- 🐾 Women and girls from this tribe avoided all contact with bears, live or dead.



TLINGIT (YUKON TERRITORY, COASTAL TRIBE)

- 🐾 This tribe believed that grizzlies were half human, and told legends about bear-human marriages.
- 🐾 Tribal members refused to kill the grizzly, but often killed black bears.
- 🐾 Hunting black bears with dogs was a common practice in this tribe.
- 🐾 Tribal members always spoke carefully of bears because they believed that bears had power of human speech and understanding.



YAVAPAI (ARIZONA)

- 👣 This tribe believed that bears were like people except they lacked the ability to make fire.
- 👣 They didn't eat bear meat because it would be like eating a person.
- 👣 They believed that a bear was the first great shaman, or medicine man (healer).



EASTERN CREE (EASTERN CANADA)

- 👣 Crees traditionally killed black bears while they were in their dens.
- 👣 When preparing for a hunt, hunters NEVER said the word "bear" but referred to him as "grandmother," "cousin", or "brother."
- 👣 The hunters took a sweat bath before the hunt to be properly clean before entering the forest.
- 👣 Their belief was that the only proper way to kill a bear was with a club, or a spear. Using a bow and arrow was taboo. They believed hunters should be closely matched in battle with the bear.
- 👣 They did not gut or skin the bear in the forest as they did with other animals. They performed that as part of the ceremony upon returning to camp.
- 👣 Bears were considered valuable because of the body fat which could be rendered into an excellent grease.
- 👣 This tribe, along with other Indian tribes, honored ALL animals killed.



KOOTENAI (SOUTHERN BRITISH COLUMBIA)

- 👣 These people thought the grizzly was the most powerful of all spirit guardians.
- 👣 Their name for the grizzly meant "real bear"
- 👣 The black bear was considered spiritually weak in comparison to the grizzly bear.
- 👣 Tribal members sang, prayed and danced every spring as protection against being killed by a bear during the coming year.



NAVAJO

(ORIGINALLY PART OF THE ATHAPASKAN TRIBES WHICH MIGRATED SOUTH OVER 1,000 YEARS AGO)



- 👣 Navajo tribes and sub-Arctic tribes hunted bears in their dens.
- 👣 Navajos and related tribes preferred using clubs and spears.
- 👣 Along with sub-Arctic tribes, they spoke to bears before and after hunting them.
- 👣 They decorated the carcasses and had a solemn feast of bear meat.
- 👣 The Navajos ONLY ate bear meat when they were on the verge of starvation. (differing from sub-Arctic groups)
- 👣 The bones were disposed of in special rituals.
- 👣 It was taboo to say the word “bear” before or during a hunt. (fine “young chief”, “grandmother”, “elder brother”, used instead).
- 👣 The Navajos rarely hunted bear, except when the shaman required bear paws or gall bladders for ceremonies.

OJIBWA (WOODLANDS OF WISCONSIN, MINNESOTA, ONTARIO)

- 👣 They referred to the bear with a word that meant Indian.
- 👣 Their secret society, (Medicine Lodge Society) had initiation rituals that involved bear. Members were sent to follow bear paths.



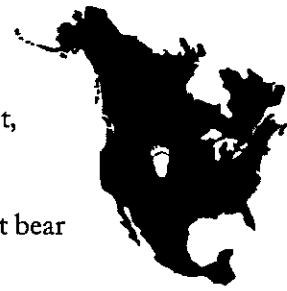
SIoux (GREAT PLAINS TRIBES, ALSO CALLED DAKOTA OR LAKOTA)

- 👣 They honored the bear because he knew the secrets of the plants.
- 👣 Bear dances were performed to heal the sick and those injured in battle.



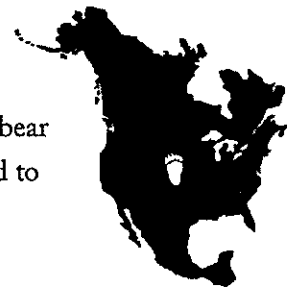
BLACKFEET (WESTERN PLAINS)

- ❖ Shamans used bear hides for ceremonies, and warriors could possess claws. For all others, it was taboo to kill, eat, or use the hide of a bear.
- ❖ The tribe would choose to starve to death rather than eat bear meat.
- ❖ When hunting in bear country, they talked out loud, telling bears they were NOT looking for bears.
- ❖ There were no grizzly bears but many black bears lived in the woodlands.



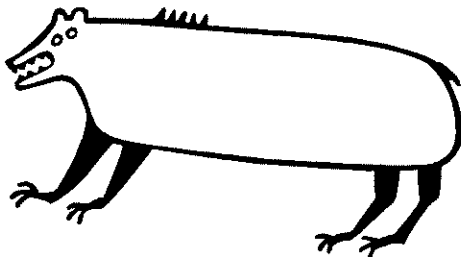
PLAINS TRIBES IN GENERAL

- ❖ Bears were not generally hunted because enough other kinds of game were available. Many tribes had exclusive bear societies. A shaman with the bear's power was considered to be the greatest healer of all.

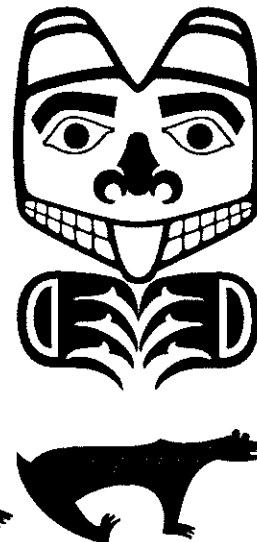


OTHER TRIBES IN GENERAL

- ❖ Tribes that hunted the black bear for food avoided the grizzly. Those tribes that did hunt the grizzly treated the hunt and the bears with extreme respect.
- ❖ Many tribes thought that the bears were the guardians of the plant medicines.
- ❖ Most tribes recognized the similarities between bears and humans — both in their body shape, their diet, and also in the way in which both human mothers and bear mothers are fierce protectors of their young.



Plains Grizzly Bear



Northwest Coast
Grizzly Bear



Southwest Grizzly Bear



INDIAN BEAR ART

Activity #3-Life Cycle of the Bear

All things have a season in the life of a bear.

OBJECTIVE:

Students will:

create a seasonal life cycle of the bear.

MATERIALS YOU NEED:

- All About Bears and Eyewitness -videos
- National Geographic- Grizzly -video
- Little puppet cub with lunch box

STUDENT WORKSHEETS:

Timeline of a Grizzly Bear's Year(student workbook pg. 8)

Life Cycle of a Bear (s.w. pg. 9)

Seasonal Art (s.w. pg.10)

TEACHER WORKSHEET:

Grizzly Story (teacher workbook pgs. 11-14)

KEY VOCABULARY:

boar, carrion, hibernation, delayed implantation

DOING THE ACTIVITY:

1. Share the *Grizzly story* from your teacher workbook with your students. You may want to read it aloud or have students take turns reading aloud. Discuss the life cycle of the bear. Be sure to show the baby cub puppet as a size reference when cubs are discussed in story. This is the size of a cub when it is born. A new born cub can fit in a lunch box.
2. Have the students develop a timeline to list what happens to the bear in one year. *Timeline of a Grizzly bear's year* is provided in the student notebook. Students can fill in their own answers or they can cut out the events and sequence them from the next page *Life cycle of a Bear* in the student notebook.
3. Have students complete *Seasonal Art* in their student notebook. You can have students create a bulletin board timeline using their seasonal art pictures, stories and poems for the events occurring within each season.
4. After viewing the videos in the box show the one you feel is most age appropriate (National Geographic for older grades, Eyewitness for young grades). Rewind videos when completed.

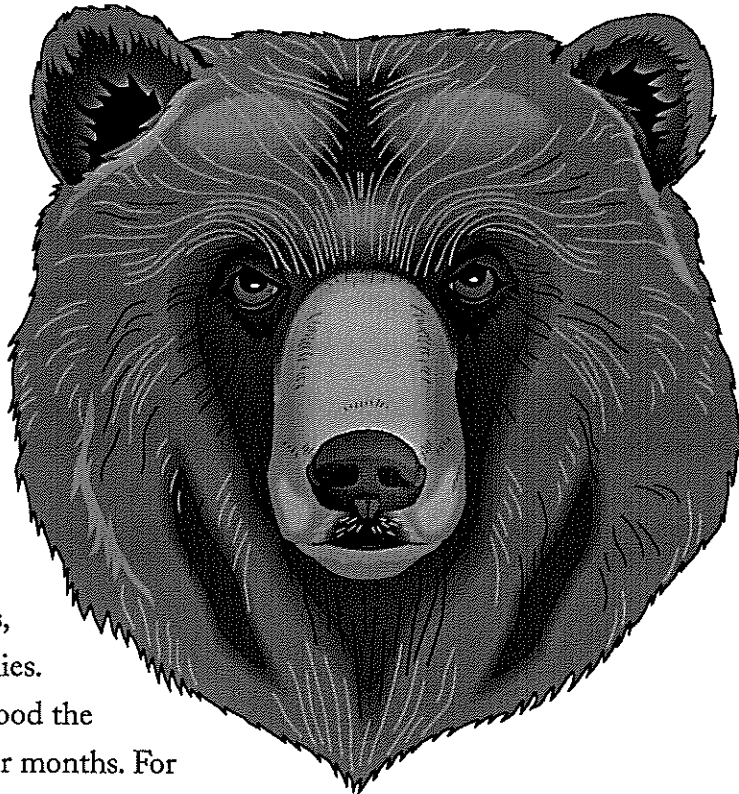
GRIZZLY STORY

EARLY SPRING

It was a cold day in early spring. The threatening sky promised more wet snow, even though several south-facing hillsides were already bare. The large male grizzly, or boar, slowly emerged from his den dug into the hillside. Bits of dried grass and evergreen needles stuck to his fur. They had been part of the soft bedding in his den. He gave a lazy shake, sniffed the air, and wandered a short distance away.

In time, he slowly waddled down the slope, and headed toward the lower valleys several miles away. There the snow was melting, exposing skunk cabbage and horsetail shoots, miners' lettuce and glacier lilies. These plants were the first food the grizzly had eaten in over four months. For the first few weeks, he traveled the slowly warming valleys, eating the small tender spring plants. Once, he caught scent of a dead deer and headed hungrily toward the smell. The deer had died of starvation. The grizzly gorged himself on the carrion for several days. The crows, ravens, and coyotes also helped themselves to the rotting meat when the grizzly was not guarding it.

As the weather grew warmer, his appetite increased. The plants were growing quickly, providing him with many choices in his diet. He dug for roots and bulbs, ate the tender plant tops and blossoms, and now and then he would get a real treat — a marmot or a ground squirrel, dug from its den under the rocks.



LATE SPRING

In late spring the boar picked up the scent of a female grizzly in his territory. He was interested in breeding but he had to be cautious. If the female had cubs she would fight him to defend her family. Usually, the female would convince the boar to leave, but occasionally she would be killed or injured and the cubs would be left to fend for themselves. Without their mother the cubs usually died. Male grizzlies would also attack cubs that had strayed from their mother.

SUMMER

In late June the big male found a female who had chased her two year old cubs away. They were big enough to be on their own, and she was now ready to mate again. The female and male went through a friendly courtship, traveling and feeding together in a peaceful manner. But as soon as the breeding season was over, the pair separated, having nothing further to do with each other.

Over the summer the boar wandered, digging roots, eating berries, and feasting happily on insects of many kinds. When he noticed there were fish spawning in great numbers in the streams, he went fishing. Any part of the fish he did not eat was left on the bank for other, less dominant bears. Crows and ravens sat nearby, waiting for their turn at the carrion.

Throughout the last part of summer, the bear steadily gained weight, continually adding to the thick layer of fat under his thick brownish-yellow coat.

LATE SUMMER/FALL

As the air grew chillier and the days became shorter he felt an insistent urge to find a den for the coming winter. He ate roots and berries along the way, and slowly traveled back to the higher elevations. His new den would be in the same general area as the previous year's den, but he would dig a new hole, and line it with fresh boughs and grasses.

On a north facing slope, about one-fourth mile from his old den, he found the right place. He used his long, sharp claws and strong shoulder muscles to dig out a huge amount of dirt from the hillside. He stopped working only to eat more roots and berries still clinging to the bushes. There had already been several snow storms and snow was on the ground. The time for sleep was approaching.

WINTER

The female he had mated with had already completed her den and was well into her winter sleep. She had lined her den much more carefully than the male, as she knew the bed had to be just right for her cubs when they arrived. Even though she had mated with the male, no cubs were growing inside her yet. As soon as she began her hibernation, the fertilized eggs attached themselves to the uterine wall and began to grow. This process, called delayed implantation, ensured that the cubs would not be born too soon. They grew inside her for about two months. One day in late December two tiny cubs were born. The mother laid peacefully in her den, nursing her blind and nearly hairless cubs, while winter raged outside.

The cubs grew quickly as they nursed on the mother's fattening milk. The mother dozed through it all, nudging and licking her babies even while half asleep. During the five months the mother was in the den, she did not eat, urinate, or defecate. Her body temperature was five to eight degrees below normal, and her heartbeat had slowed a little, but she was not truly hibernating, as the marmots and other rodents were doing.

If something disturbed the adult bears while they were in their dens they were alert enough to respond, even coming out of their dens to defend it in the middle of winter. During warm, sunny spells in late winter they might come out for a short time, only to re-enter until spring was really on its way.

FOLLOWING SPRING

It was early spring again. The big male grizzlies and the sub adults who had separated from their mother the summer before were all leaving their dens. They instinctively traveled once more to the lower valleys where the spring plants were growing.

The mother with the new cubs emerged from her den a few weeks later. By now the cubs were covered with warm fur, their eyes had been opened for weeks, and they were walking easily on their own. When the mother brought them out of the den into the bright sun reflecting on the snow, they dashed back to the entry tunnel. She was persistent however, and after three tries, managed to convince them to stay outside with her. Their curiosity soon won out over their fear of the unknown. They followed their mother down the snow covered hillside, sometimes enjoying a family sledding run. Even the mother enjoyed sliding on her rump in the snow.

The family headed to the rich feeding grounds in the lower valleys. The cubs were learning things from their mother every minute of the day. She taught them to climb up a tree to safety when danger threatened. She taught them all the best places

to dig for roots, insects, and other foods. She allowed them to play everyday with each other, and many times she even joined their games. They nursed regularly, gaining weight and height quickly from the rich milk. The sow spent the next year and one half being a loving, playful, but strict mother. She knew that she only had a short time to teach them all they needed to learn to survive on their own. They spent all that summer with her, and denned with her the next winter. Sometime during the following summer she chased them off, sensing that she was ready to mate again. In years when there was not much food, she might have kept her cubs with her for still another year. She would not mate until the food became more plentiful. This instinct would help insure that all of the bears in the area would not have to compete too actively for meager food supplies.



In years when the food was plentiful all summer, she might have a larger litter, maybe three cubs instead of the normal one or two.

As long as the bears are not threatened by their worst enemy - man; as long as they have plenty of room to follow the seasonal food sources; as long as they have private places far away from civilization to den, then the bears will survive for future generations.

Life Cycle of a Bear

Number in order 1-11 the sequence of the life of the bear. Cut out the strips and tape them to your timeline on the previous page.

- 3 As the weather grew warmer, his appetite increased. The plants were growing quickly, providing him with many choices in his diet.
- 4 In late spring, the female and male went through a friendly courtship, traveling and feeding together in a peaceful manner.
- 2 These plants were the first food the grizzly had eaten in over four months. For the first few weeks in early spring, he traveled the slowly warming valleys, eating the small tender spring plants.
- 5 Over the summer the boar wandered, digging roots, eating berries, and feasting happily on insects of many kinds.
- 7 As the air grew chillier and the days became shorter he felt an insistent urge to find a den for the coming winter.
- 1 The large male grizzly, or boar, slowly emerged from his den dug into the hillside. Bits of dry grass and evergreen needles stuck to his fur.

On a north facing slope, about one-fourth mile from his old den, he found the right place. He used his long, sharp claws and strong shoulder muscles to dig out a huge amount of dirt from the hillside.
- 8 One day in late December two tiny cubs were born. The mother laid peacefully in her den, nursing her blind and nearly hairless cubs, while winter raged outside.
- 9 Throughout the last part of summer, the bear steadily gained weight, continually adding to the thick layer of fat under his thick brownish-yellow coat.
- 6 During the five months the mother was in the den, she did not eat, urinate or defecate.
- 10 It was early spring again. The mother with the new cubs emerged from her den a few weeks later.
- 11



Activity #4-Where has the bear gone?

Grizzly Bear populations have declined steadily since the 1850's. Why have bear populations declined?

OBJECTIVE:

Students will:

identify on a map where Grizzly bear populations are prior to 1800 to present.

MATERIALS YOU NEED:

📺 "Beauty and the Beast" Video and curriculum (optional)

STUDENT WORKSHEET:

Where have the bears gone? (student workbook pg. 11)

TEACHER WORKSHEETS:

Grizzly Bear Populations (teacher workbook pg. 17)

Grizzly Bear Populations Map (t.w pg. 18)

KEY VOCABULARY:

habitat, poachers, threatened

BEFORE THE ACTIVITY:

Make an overhead of *grizzly bear populations* map in teacher workbook.

DOING THE ACTIVITY:

1. Discuss with students if they think we have big populations of Grizzly bears left in North America. Where do they live? Why have bear populations declined?
2. Share with them in your teacher workbook *Grizzly Bear Populations* on bear populations prior to 1800s and to present.
3. Show students the overhead of the *Grizzly Bear Populations* map and have them complete student worksheet *Where have the bears gone?*
4. Show the "Beauty and the Beast" video in the bear box. Preview the video for age appropriateness and length. The video shares the stories of bears and their recovery in Yellowstone National Park with the help of people such as the Frenches. The lesson on pgs. 52-57 in the curriculum "Beauty and the Beast" coincides with the video "Beauty and the Beast" (both found in bear box).

BACKGROUND:

Westward expansion in the last 150 years has caused problems for grizzly bear populations. Here in the North Cascades references to grizzly bears are found in Native American stories and legends, records of early explorers and settlers, and in government records from 1840 through to the present. Biologists still do not agree on how many grizzly bears used to inhabit the North Cascades however they do know that 425 grizzly bear pelts were turned in to Hudson's Bay Company forts in the North Cascades from 1846 to 1851. Bears were shot for their fur and because for fear that they would kill domestic livestock. As more and more people settled away from urban areas and developments increased, this has pushed grizzlies further and further out of what used to be their territory. With more roads being built into remote territory along with more people the isolation that bears need is being lost. Bears usually avoid people, however sometimes they will defend their young or a food source.

Wildlife biologists estimate that the current grizzly bear population of the North Cascades may be between 10 and 20. In an effort to keep these few bears from disappearing, a conservation plan for grizzly bears in the North Cascades has been developed. One of the most important parts of this plan includes balancing the need of people with the needs of bears. Keeping some areas of the North Cascades "wild" will be important for the survival of grizzly bears.

In addition, learning how to live and recreate in grizzly bear country will help to protect bears and people. We can all help the bear by better educating ourselves about what they need, what is fact and fiction about the bear, securing our trash and keeping a clean camp if we go into bear country (you will learn more about safe camping techniques in the activity guide).

Grizzly Bear Populations

PRIOR TO THE 1800'S

Grizzly bears once inhabited areas in North America from the Arctic Circle down into Mexico and from the Pacific Ocean east to the Mississippi River. As long as seven essential habitat characteristics were present their population could survive. Those seven requirements are: space; isolation; sanitation; denning sites; safety; vegetation types; food.

In 1805 the Lewis and Clark Expedition reported seeing (and killing) many grizzlies in their travels west. From the early 1800's onward, grizzlies were steadily eliminated from the continental U.S.A. Hunters, **poachers**, habitat loss, and eradication programs sponsored by federal and state government all took their toll on grizzly bear populations.

FROM 1975 TO PRESENT

Continued settlement in remote areas still threatens the grizzly bear's existence. As people settled in areas populated by grizzlies, they tended to destroy the **habitat** required by the big bears. Road building, logging, mining, and human presence all damaged one or more of the seven essential requirements. This activity took away an important habitat requirement—**isolation**.

Currently, grizzly bears exist in Yellowstone National Park and Glacier National Park - places where they are protected from hunters and **poachers**. There are small populations in isolated areas of Northern Washington and Idaho. In addition, grizzlies are found in areas surrounding Glacier and Yellowstone Parks, but once outside the parks, they are subject to poaching.

The grizzly bear was listed as a **threatened** species in the lower 48 states in 1982. This protected it from hunting and poaching.

Alaska has a large population of grizzlies, and a subspecies, the Kodiak Island brown bear. The hunting of the grizzlies is still allowed, although somewhat limited and regulated.

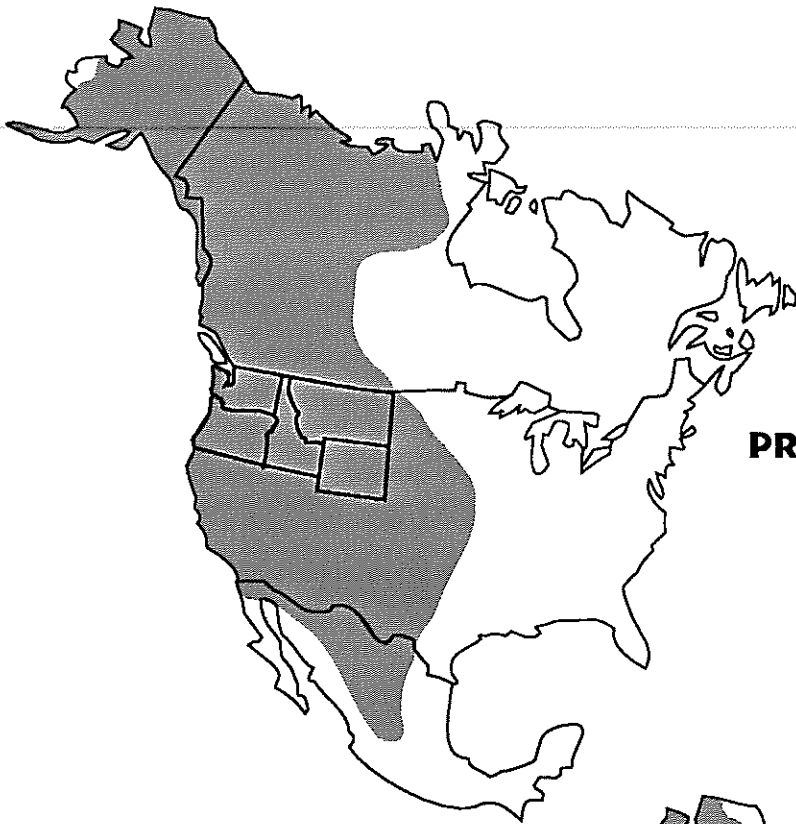
Remote areas of Northwestern Canada still claim grizzly populations mostly in the Yukon Territory and Northwest Territories.

What state has a grizzly pictured on its flag even though the big bear has been extinct there since 1924?

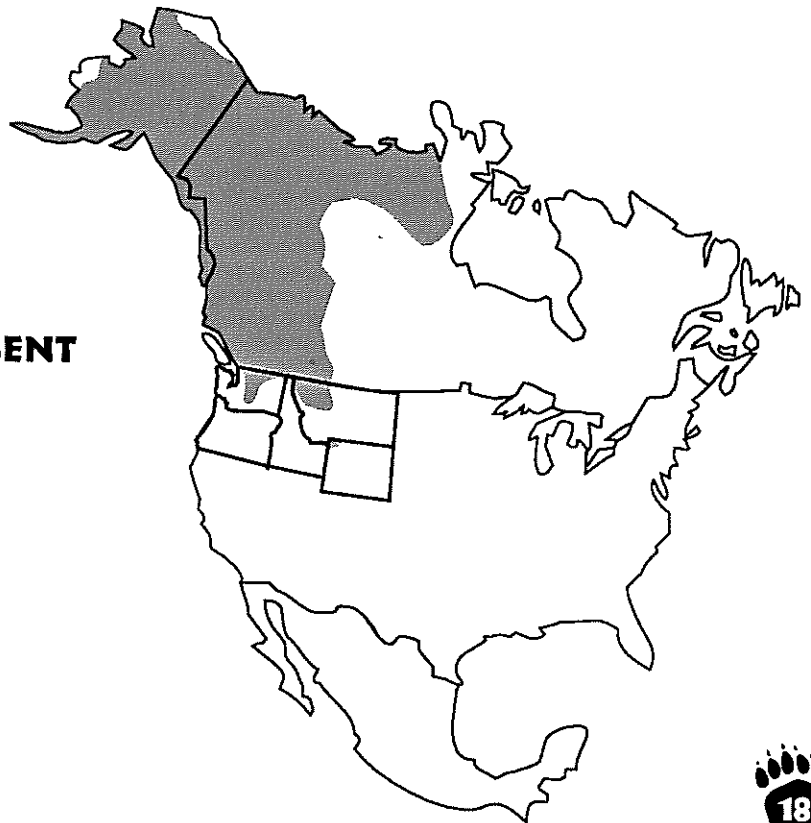


GRIZZLY BEAR POPULATION MAP

(INCLUDES ALL NORTH AMERICAN BROWN BEARS)



PRIOR TO 1800



PRESENT

Where have the bears gone?

While studying the overhead map on Grizzly Bear Populations answer the following questions:

Prior to 1800, what country could bears be found?

MEXICO

Name three states that used to have bears prior to 1800?

CALIFORNIA, OREGON, NEVADA
and others too

What state can we find the most grizzly bears?

ALASKA

Do we have grizzly bears in Washington State?

YES (10-2015 estimated population)

Why do you think we still can find grizzly bears in Montana?

Location borders Canada where there is a greater bear population. Bears are slowly migrating down from Canada.
List three reasons why the bear population has declined.

1. Habitat destruction due to human population moving into "bear country"
2. Poaching
3. Road Building, logging, mining,

What is one thing you can do to help bear populations?

- SAFE camping techniques
• Keeping a clean camp when we are in Bear Country
- Educating ourselves about bears, what they need, what is fact & fiction
- Supporting keeping "wild" places.



Activity #5-The Fabulous Eight

Eight species of bears live throughout the world. Let's find out more about them!

OBJECTIVES:

Students will:

- locate through maps the eight different bear species.
- graph the height and weight of the eight bear species.

MATERIALS YOU NEED:

- 📖 The Everywhere Bear pp. 10-16 (optional)
- 📖 Zoobook for reference
- map of world or globe (optional)

STUDENT WORKSHEETS:

- Location maps of eight species* (student workbook pgs. 12-14)
- Map of the world* (s.w. pg.15)
- How does the Bear Measure up* (s.w. pg. 16)
- How does the Bear Measure up (II)?* (s.w. pg. 17)

TEACHER WORKSHEETS:

- The Eight Bear Species fact sheets* (teacher workbook pgs. 20-25)
- Location maps of the fabulous eight* (t.w. pgs.26-29)

BEFORE THE ACTIVITY:

1. Decide how you want to direct this activity.
Option A: Photocopy the set of *fact sheets* for team of students.
Option B: Post up the fact sheets on a bulletin board.

MAPPING EXERCISE:

- Option A: Use *eight individual maps* and have students identify where each bear is located
- Option B: Use the *one map of the world* and have them draw in the locations with a colored key to the side.
- Option C: Do both options!

DOING THE ACTIVITY:

1. Have students locate the location of the eight bears using the options from above. You might want to have a bigger version of a map or globe so that students can reference this.
2. Have the students graph the heights and weights of each of the bears using the worksheet *How does the Bear Measure up?* and answer the questions on *part II of How does the bear measure up?* Use the poster of bear measurements in the bear box for them to answer questions for part II. When graphing, have students make bar graphs. If it is a range of height or weight make lines diagonal to show the range.

THE FABULOUS EIGHT THE EIGHT BEAR SPECIES

MOON BEAR

Latin name: *Selenarctos thibetanus*

The Latin name means “moon bear of Tibet.” The moon bear also has many other names, including: Tibetan black bear, Himalayan black bear, and the Asiatic black bear. The moon bear is found in the Himalayas, Asia, parts of the former Soviet Union, Afghanistan, Iran, Taiwan, and the Japanese islands of Honshu and Shikoku.

This bear has the distinct marking of a crescent on its chest. The crescent can be white, yellow, or orange-yellow. The moon bear’s pelt is either black or brown and is soft and shaggy. The moon bear has short front claws and slender legs. The bear can weigh up to two hundred and fifty pounds and be as long as six feet. The male is actually one-fourth to one-third larger than the female.

The diet of the moon bear consists of insects, fruit, plant material, and carrion. The denning procedure of this bear varies depending on the climate. The females will always follow the ritual of denning, but the males might not hibernate. The dens may be caves, or holes dug out beneath tree roots.

The litter of a moon bear usually contains one or two 8 ounce cubs. The cubs open their eyes within one week and will forage for food with their mother after a month.

These bears could be forced into the threatened animal category, for a number of reasons. The Chinese view the paws of the bear as a delicacy, Laotians, and Taiwanese find the bile and bones to have some medical properties, and the cubs are important to the Indians of Pakistan and Afghanistan for circus use.

*See maps for the location of bears
and close relatives on pages 26-29*



SUN BEAR

Latin name: *Helarctos malayanus*

This bear is the smallest of the species. The nicknames include honey bear and Malay bear. The sun bear can be found in North East India, Southern China, Thailand, Malaysia, and the provinces of Borneo and Sumatra in the Indonesian Islands.

This bear, which weighs about 100 pounds and is about four feet long, is black with a white or yellow mark on its chest. Although the sun bear has sharp claws, and powerful jaws, it is primarily a herbivore. Its diet is mushrooms, honey, insects, fruit, and occasionally lizards and rodents.

The sun bear is able to mate after its third year. Because of its tropical habitat the bear does not hibernate, therefore the female doesn't experience delayed implantation. The cubs, born after a 100 day gestation period, weigh 9 ounces and are about seven inches long. They are able to hear and see after their second week, but they will not be able to walk until they are two months old.

SLOTH

Latin name: *Melursus ursinus*

This bear also has the name lip bear. The sloth bear can be found in India, Sri Lanka, and parts of Nepal.

The bear can weigh up to two hundred and fifty pounds and be as long as six feet. The shaggy black pelt of this bear makes it look even larger than the bear's actual size. The bare belly and under leg and scarce amount of hair on the nose is a way the bear has adapted to its hot environment. The sloth also has a yellow or white marking on its chest that resembles the letters (y) or (v). The facial features of this bear are very distinct - protruding lips, no front teeth and very few molar teeth.

This bear's favorite insect is the termite. It will break a rotten log and will blow frantically to remove dust before eating the insects. This noise can be heard over two hundred feet away. The sloth also enjoys ants, maize or corn, yams, sugarcane, and berries. Since food is so plentiful for the sloth their habitat may consist of only about ten square miles.

The sloth bear doesn't hibernate, yet it does delay implantation and has dens where the cubs are born. The dens are usually under boulders or in caves. The litter averages two cubs which remain blind for three weeks. After about five weeks the sow will carry her young on her back while foraging. This will continue until the cubs are about one-third their mother's size.



SPECTACLED BEAR

Latin name: Tremarctos ornatus

This bear may also be called the Andean bear, underbark bear, or black puma. The spectacled bear is the only survivor of the short-faced mammals which came across to America about 1.5 million years ago.

The spectacled bear is the only bear which can be found in South America. This bear has been found living in Ecuador, Peru, Chile, and Bolivia.

The bear has a shaggy appearance with white, red, or yellow markings which look like eyebrows. The pelt of the bear is black. The bear's average weight is between 175 to 275 and can be 6 feet long.

The spectacled bear is an herbivore for the most part, eating fruit, honey, and sugar cane.

PANDA BEAR

Latin name: Ailuropoda melanoleuca

The panda bear can only be found in a few areas: portions of the eastern rim of the Tibetan Plateau and west central China. There has been an estimated count of 700 pandas in the wild and about 120 in captivity worldwide.

These bears have a look all their own with white hair marked with black patches on their ears, shoulders, chest, and limbs. The bear also has black circles around its eyes. The pandas can weigh from 200 to 230 pounds, usually the males will be about 15% larger than females. The males can be five feet long. The animal has forty-two powerful teeth to chew their main dietary food source, bamboo.

The panda bear has some unique features, which sets it apart from the other bear species. The panda has cat-like slit-eyes instead of the round pupils like the other seven species. The hind foot of the panda has no heel pad so it does not leave human-like track marks. The last unique feature of this bear is the ability to move its thumb independently because of an extra bone on the heel pad. This helps when breaking and eating bamboo.

The panda eats about thirty pounds of food a day. Most of its roaming is done during the early morning and dusk. Because its diet doesn't contain much fat the bear is unable to store enough body fat to go into hibernation. The bear will move down to lower elevations when weather becomes too cold.

The breeding period for the panda is between mid-March and early May. The animals do have a short period of delayed implantation and give birth to their cubs during the months of August and September. The actual gestation period is between three and a half and four and a half months.



POLAR BEAR

Latin name: Ursus maritimus

The polar bear evolved from the Siberian brown bear during the glacial advancement which forced the bear to evolve into a carnivorous animal. The polar bear developed sharper teeth, refined claws, and the whitish hide. The polar bear is also the only bear with fur padding on the soles of its feet for better traction on the snow and ice. It also has a webbed membrane between the forepaws to make swimming an easy task.

This bear can be found in Greenland, North Canada, Alaska, the Arctic Circle region, and the Norwegian Islands. The polar bear also has a yearly migration route within the region it is found.

The female polar bear stops growing at age four. At maturity, it can weigh up to 700 pounds and attain a length of nine feet. The male bear grows for eight years, and can weigh more than 1400 pounds and can measure twelve feet or more.

The diet of the bear includes seal, walrus, carrion and in late summer blueberries, mushrooms, grass, duck eggs, and lemming when available.

The bears are able to mate between the ages of five to seven. The polar bear does delay implantation until October and delivers an average litter of three cubs in December or January. The hibernation of the polar bear may be interrupted periodically because of disruptive weather conditions; severe storms can cause movement of polar ice which may destroy a bear's den. This destruction frequently forces them to find another denning site. The male polar bears are very restless during hibernation and may only hibernate a few weeks.

BLACK BEAR

Latin name: Ursus americanus

When translated, the Latin name of Ursus americanus, Ursus means “bear” and americanus means “America”. The black bear is found throughout North America.

The black bear can be observed in a number of colors, including black, light brown, blue-gray, or even white in certain environments. The male bears can weigh between 200 to 400 pounds, twice as much as females. The black bear has a straight face profile in comparison to the grizzly which has a dished face profile. The black bear is the smallest and most common bear in America. They can be five and a half feet in length. If you were hiking in the forest and saw a bear print, the black bear would have a wedge in the instep of the back print and would have a round heel.

The black bear is a true omnivore. Its diet in the spring consists of horsetail, sedges, grasses, and berries. During summer the diet ranges from wild berries to fish, carrion, insects, and moose calves.

The denning of the bear occurs in the late fall and extends into early spring between March and May. The dens are typically created at the base of a live tree, or in a hillside. Occasionally, they will den under slash piles or uprooted trees.

The male bears are able to mate at one year, the females between the ages of two or three, if healthy. Mating takes place in June, but the development of the embryo does not take place until the mother has gone into hibernation for the winter.

Two or three cubs are born in January or February. These cubs stay with their mother for two years, or until she is ready to mate again. Once she is ready to mate she will chase her sub-adult cubs away.



GRIZZLY BEAR

Latin name: Ursus arctos

The grizzly has accumulated many different names throughout the centuries; some include, real bear, brown bear, badger, white bear, or silvertip.

These amazing creatures survive best in a wild, roadless environment which is not inhabited by mankind. Sadly, the grizzly is extinct in ninety-eight percent of its original roaming zone. At one time, there were fifty to one hundred thousand bears who roamed below the 48th parallel, now there are only about one thousand.

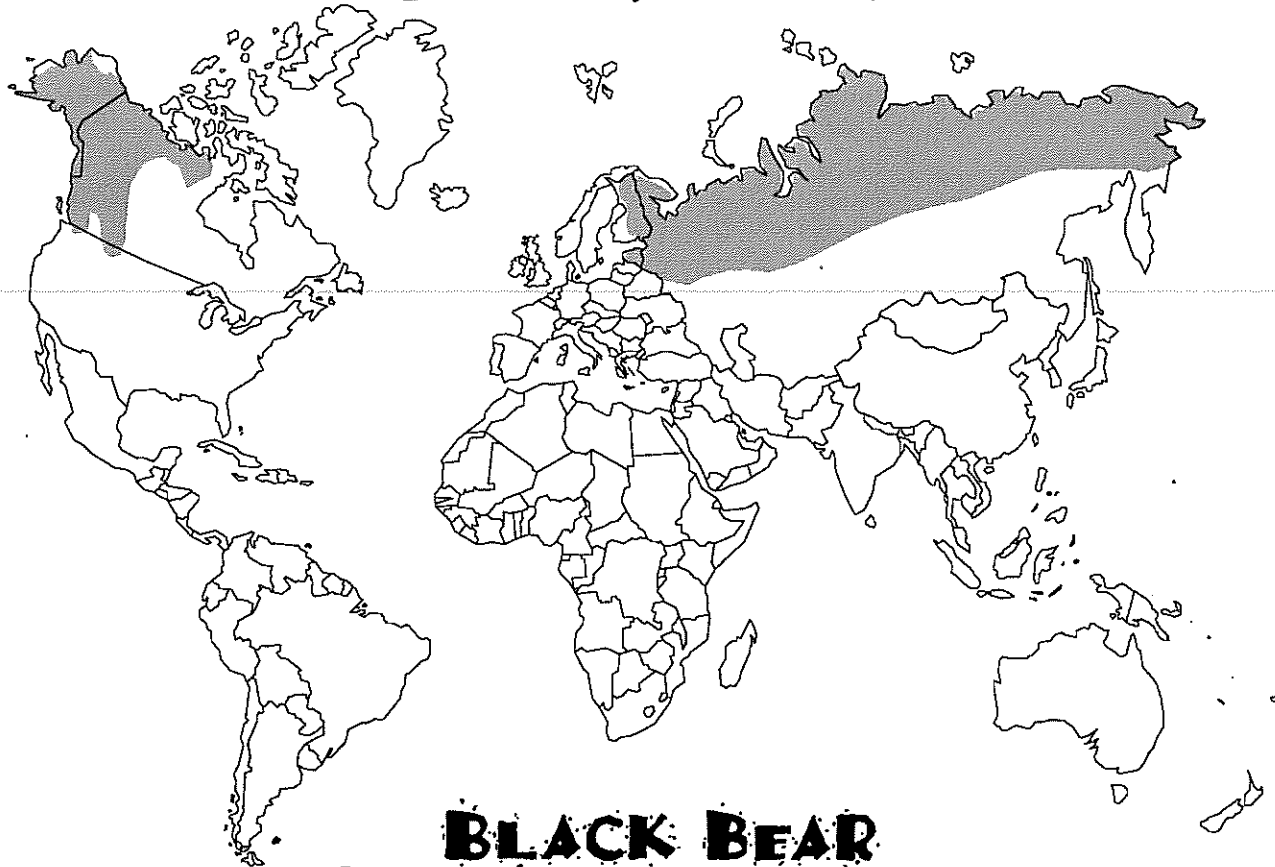
The bear immigrated to North America about 20 million years ago from Europe. The only two places grizzlies have not been found are Australia and Antarctica.

The grizzly bear has forty-two teeth and is an omnivore. The bear's front feet, which has claws four inches long, are nearly as dexterous as human hands. The back claws are one inch in length. The bear can be observed in a number of colors including blue-black, red, cinnamon, tan, and chocolate brown. They can weigh up to 800 pounds and be seven feet long. The three features which distinguish the grizzly bear from the black bears are the following: the grizzly has a hump behind its neck, a concave or dished face, and a shuffling walk, which makes the footprints close together.

The bear can begin reproducing at age four and mating takes place in the early summer (May to July). The female has delayed implantation until she is hibernating. The birth of one to four cubs takes place in February. The length of hibernation depends on the weather, sex and age of the bear, as well as its parental status. A den is dug for hibernation each year, typically in a steep hillside or dirt bank, and is lined with vegetation.

LOCATION MAPS OF THE EIGHT BEAR SPECIES

GRIZZLY BEAR



BLACK BEAR



LOCATION MAPS OF THE EIGHT BEAR SPECIES

MOON BEAR



SUN BEAR



LOCATION MAPS OF THE EIGHT BEAR SPECIES

PANDA BEAR



POLAR BEAR



LOCATION MAPS OF THE EIGHT BEAR SPECIES

SPECTACLED BEAR



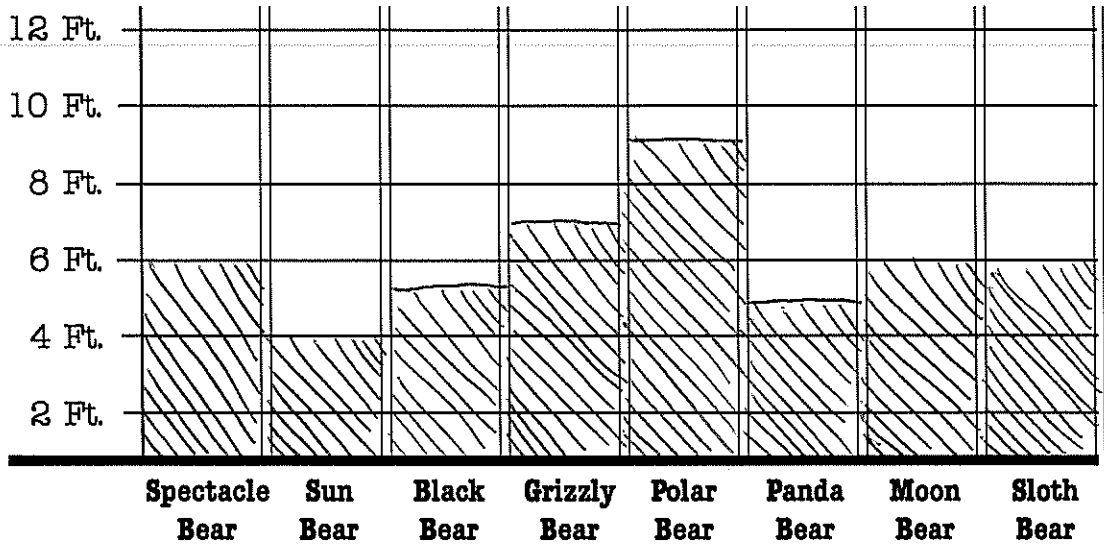
SLOTH BEAR



HOW DOES THE BEAR MEASURE UP?

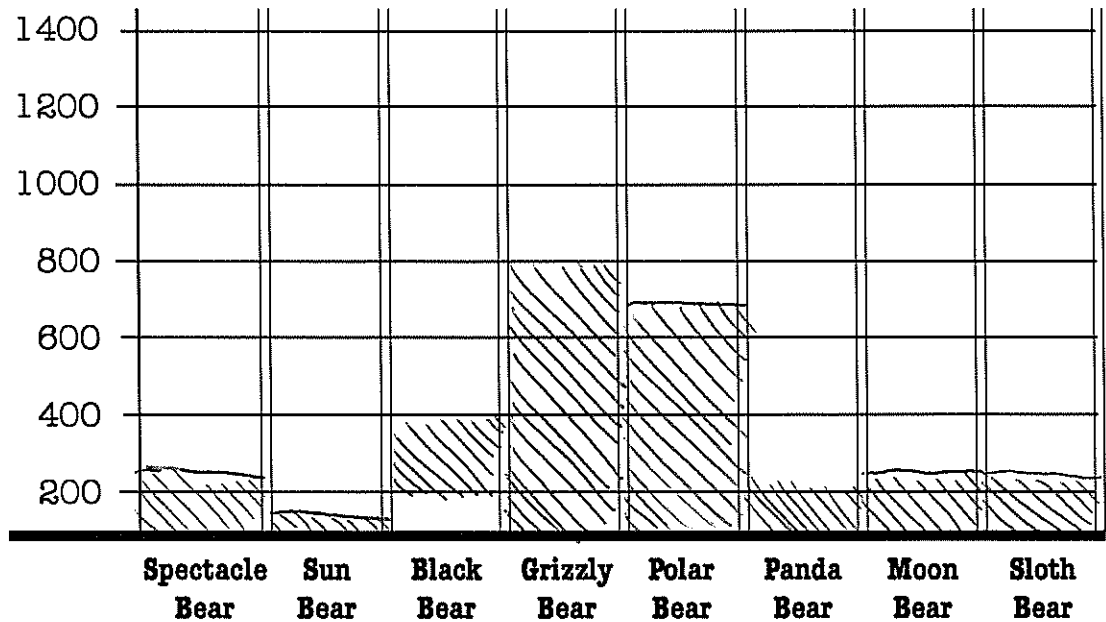
DIRECTIONS:

Use the resources available to locate the length of the eight bear species. Place their measurement on the graph.



DIRECTIONS:

Find the weight of the eight bear species and graph them accordingly.



How Does the Bear Measure Up? (part II)

REFERRING TO YOUR GRAPHS ON THE PREVIOUS PAGE, ANSWER THE FOLLOWING QUESTIONS:

CIRCLE THE BEST ADJECTIVE:

THE SPECTACLED BEAR IS SHORTER OR TALLER THAN THE BLACK BEAR!

THE PANDA BEAR IS HEAVIER OR LIGHTER THAN THE BLACK BEAR!

CREATE YOUR OWN SENTENCE USING ONE OF THE FOLLOWING ADJECTIVES: TALLER, SHORTER, HEAVIER, OR LIGHTER:

WHICH IS THE SHORTEST BEAR?

SUN BEAR

HOW TALL IS THE TALLEST BEAR?

POLAR

WHAT 2 ANIMALS ARE CLOSEST IN HEIGHT?

moon

sloth ? spectacle

WHAT IS THE HEAVIEST BEAR?

Grizzly

WHAT BEAR ARE YOU CLOSEST IN HEIGHT?

depends on child

WHAT BEAR ARE YOU CLOSEST IN WEIGHT?

depends on child

USING THE BEAR MEASUREMENT POST:

HOW TALL ARE YOU?

depends on child

WHO ARE YOU MOST SIMILAR TO IN HEIGHT?

depends on child



Activity #6 - Can you tell us apart?

Wildlife biologists look for physical characteristics to tell a grizzly and black bear apart much like detectives look for clues to solve crimes. How good of a detective are you?

OBJECTIVE:

Students will:

identify the differences between a black and grizzly bear.

MATERIALS YOU NEED:

- 🐾 Build a Bear felt board
- 🐾 Two pictures of Bears
- 🐾 Two wood bear profiles
- 🐾 Sand paper rubbings of bears
- 🐾 Bear pelt
- 🐾 Claws

STUDENT WORKSHEETS:

Why the grizzly got its hump? (student workbook pg.18)

Build a Bear (s.w. pg.19)

Compare and contrast-venn diagram (s.w. 20,21)

DOING THE ACTIVITY:

1. Ask the students if they know how to tell the difference between the black and grizzly bear.

Show the **two wood profiles of the bears** from the bear box and ask them to identify what they see different between the two. They should notice the hump of the grizzly ear and also a concave or dish shaped profile of the face. The black bear does not have a dish shaped face but instead a straight face profile. Show the **two pictures of the bears** from the bear box to look for these differing characteristics. Students can do the **sandpaper rubbings** of the two bears located in the bear box.

2. Discuss with students why they think the grizzly bear but not the black bear has a hump.

Have them develop a story *Why the Grizzly Got its Hump* in their student workbook. Have them share their story with the rest of the class. After they have share their stories discuss the following information. Grizzly bears have longer slightly curved claws, good for digging for roots, berries and insects and for making their den. In fact, because the grizzly does so much digging it has developed a very strong muscle on its back...its hump! Black bears, on the other hand, have shorter curved front claws, perfect for climbing trees with but are less effective for digging. Therefore black bears don't dig as much as grizzly bears and don't develop a hump. Show students the claws from the bear box.

3. Use the Build a Bear felt board from the bear box. Have students also fill out the student worksheet *Build a Bear* as you complete the felt board in class. Place all of the felt vocabulary words in the corner box. Decide what type of bear you will build (grizzly or black). Have the students take turns adding a hump or not, head profile and completing the sentences with the words provided. Be sure they have the yarn pointed in the right places too.

4. Discuss the fact that grizzlies and black bears both come in a variety of color phases, ranging from blonde to brown to black. For this reason, coat color is not a reliable way to tell the two species apart.

Size is also not of much help in distinguishing grizzlies from black bears. In both species, size varies widely and is, related to the animal's sex and age. Young animals will most likely be smaller than fully grown adults, and adult females are typically smaller than adult males of the same species.

Show the grizzly pelt from the bear box. Look at the long claws, thick dense fur, and its color.

- Long hairs across the shoulders are called guard hairs.
- As summer progresses, hair can beach out and bears look more and more blonde.
- The pelt in the bear box is a grizzly bear. The best clue is its long claws. The size is actually similar to a black bear, this is the pelt of a young grizzly bear. The color is typical of grizzly bears but black bear in the North Cascades can be very similar in color.

Build a Bear

FILL IN THE BLANKS USING THE VOCABULARY WORDS FROM BELOW:

BEARS HAVE SHORT STUBBY t a i l s.

BEARS HAVE POWERFUL l e g s. SOME BEARS CAN RUN AS FAST AS A h o r s e.

B l a c k BEARS FACE HAS A STRAIGHT FACE.

BEARS HAVE SMALL e a r s BUT THEIR HEARING IS VERY GOOD.

BEARS HAVE STRONG JAWS AND SHARP t e e t h.

d i s h BEAR'S FACE IS DISH SHAPED.

BEARS HAVE LONG, SHARP c l a w s, WHICH ARE GOOD FOR d i g g i n g AND SCRATCHING.

BEARS HAVE A KEEN SENSE OF s m e l l. THEIR n o s e s ARE VERY SENSITIVE.

GRIZZLY BEARS HAVE A PROMINENT h u m p ON SHOULDERS.

VOCABULARY WORDS:

TAILS :

GRIZZLY :

DIGGING :

LEGS :

EARS :

SMELL :

HORSE :

TEETH :

NOSES :

BLACK :

CLAWS :

HUMP :



Activity #7-Bear Research

Scientists are fascinated by the ways a bear's body functions during hibernation and. Black bears are being studied in research stations to learn more about how they can help humans.

OBJECTIVE:

Students will:

retell the main points of a health and bear research article.

MATERIALS YOU NEED:

♥ "Bear Dreams ...Human Dreams" in the Everywhere Bear pp. 18-20 (optional)

STUDENT WORKSHEETS:

Retell the article (student worksheet pg. 22)

Your Health and Bear Research (s.w. pgs.23,24)

Retell the article (s.w. pg. 25)

TEACHER WORKSHEET:

Your Health and Bear Research (teacher workbook pgs. 33,34)

KEY VOCABULARY:

bile, ursodeoxycholic acid, kidneys, osteoporosis, cardiovascular, cholesterol, obesity

DOING THE ACTIVITY:

1. Have students read *Your Health and Bear Research* and complete *Retell the article* on the next page of the student workbook.
2. Optional: pass out a blank retell the article and share the story "Bear Dreams...Human Dreams" in the Everywhere Bear pp.18-20 and have students retell this article.

YOUR HEALTH AND BEAR RESEARCH

Researchers are fascinated by the ways a bear's body functions during hibernation. Black bears are being studied in research stations to learn more about how they can help humans. Since black bears are more plentiful and are easier to work with, scientists prefer using them rather than grizzlies.

Bear research has already produced one substance that helps humans - **ursodeoxycholic acid**. This acid is found in the **bile** juice of hibernating bears. The acid is now used to dissolve **cholesterol** gall stones in humans. **Ursodeoxycholic acid** is being made synthetically in the lab so that a larger amount is available to doctors without having to extract it from live bears.

1. KIDNEYS

Humans **kidneys** serve as blood scrubbers - filtering out poisonous wastes in the body, one of which is **urea**. When kidneys stop working correctly due to disease, these toxins can build up, causing illness and death. People with kidney diseases must undergo dialysis, or artificial cleansing of the blood, usually three times a week.

Bears in hibernation do not urinate to get rid of the filtered-out toxins, like **urea**. They burn fat, rather than protein during their long sleep. What little **urea** produced from the small amount of protein being burned up is apparently recycled through the body.

With this knowledge, scientists have developed a special diet for kidney patients. The diet contains low amounts of water and small amounts of protein. On this diet, kidney disease patients find they can go as long as ten days between dialysis treatments.

2. OSTEOPOROSIS AND OTHER BONE DISEASE

In order to keep your bones solid and strong, you must exercise. People who are inactive for long periods of time slowly lose not only muscle mass, but also experience a loss of bone mass. The bones become softer and weaker. In addition, many older people, especially women, suffer from a disease called **osteoporosis**, which causes the bones to become less dense and very brittle and easy to break.

While bears hibernate they are inactive for four to seven months, yet they come out of the den with no loss of bone or muscle mass - in fact may times their bone mass and muscle mass grows while hibernating!



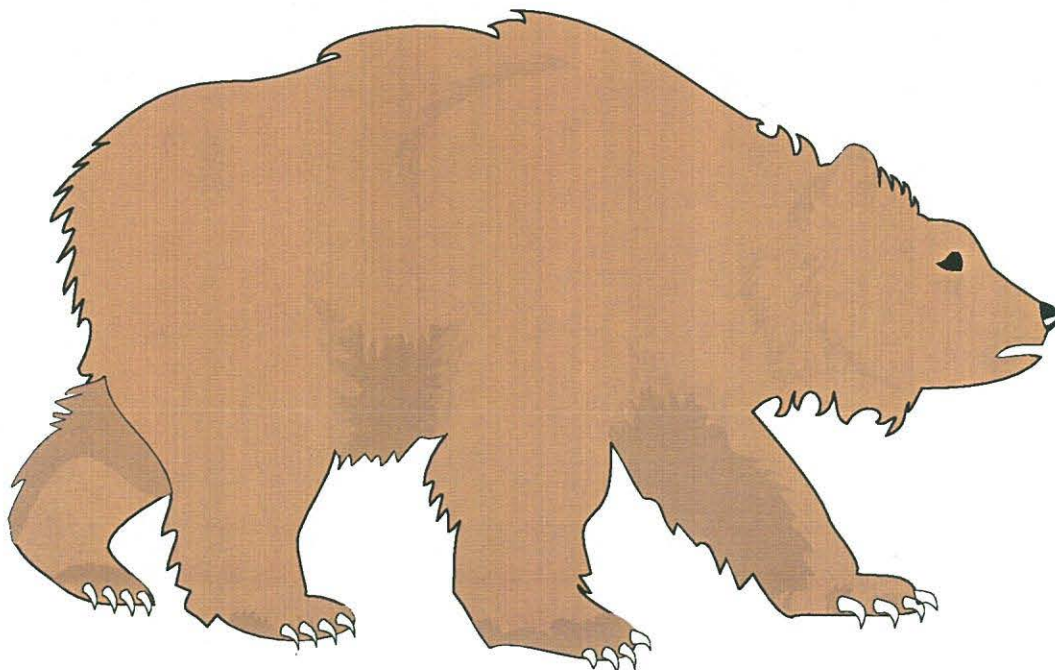
Scientists are examining bear blood carefully in an effort to find a new substance which allows the bear to recycle available calcium and phosphorus into healthy bone. They know that the urea available in the body is being recycled into proteins which build strong bones and muscles. Once they find the link between the processes, scientists may be able to find a cure for bone disease. In addition, their findings may help astronauts from suffering bone and muscle loss caused by long periods in low gravity environments.

3. CARDIOVASCULAR DISEASE

Scientists have found a link between a high fat diet and heart and cardiovascular diseases in humans. Bears eat huge amounts of fat and burn fat during hibernation, yet they have never been found to have cholesterol buildup in their blood, and don't suffer from hardening of the arteries. Scientists are trying to find out why in order to help people who suffer from cardiovascular disease.

4. OBESITY AND WEIGHT LOSS PROBLEMS

Bears eat tremendous amounts of food in the summer and fall to develop layers of fat in preparation for hibernation. While sleeping, their bodies metabolizes (or burns) this fat for energy and they lose 20 to 27% of their body fat before coming out again in the spring. Scientists are looking for a hormone or another substance which controls this cycle of feeding and fasting in hopes they can help people who are obese or suffer chronic weight loss problems.



Activity #8-Be Bear Aware

There are proper practices that we should follow when we are in bear country.

OBJECTIVE:

Students will:
create a good and bad bear camp.

MATERIALS YOU NEED:

- Bear Aware booklet
- small posters of what to do and not do in bear country

STUDENT WORKSHEETS:

Good Camp, Bad Camp (student workbook pg. 26)
How not to become a bear's lunch (s.w. pg. 27)

TEACHER WORKSHEET:

How not to become a bear's lunch (teacher workbook pg. 36)

KEY VOCABULARY:

habituated

DOING THE ACTIVITY:

1. Discuss with students about some of the things they think they should and should not do when they are traveling or camping in bear country. **Read Bear Aware from the bear box to the class.** Discuss what are the right and wrong things to do. Review the list in the workbooks *How not to become a Bears Lunch*.

2. Have students draw and write or tell a story about how to travel and not travel in bear country.

Option A: Have all students draw all the wrong things they could do in bear country. Then have them draw all the right things.

Option B: Have half the class draw bad camps and share all the bad things through a story they tell the rest of the class. The class has to identify all the wrong things they did. Then have the other half of the students show their drawings of good clean camp and have them tell a story of their camping adventure. The whole class is to list all the right things they did.

3. Have each student write a story about their trip into bear country and how they did things correctly so as not to become a bears lunch.

HOW NOT TO BECOME A BEAR'S LUNCH:

1. Store food properly - bear proof containers should be suspended high up between two trees.
2. Store all food well away from sleeping site.
3. No bedtime snacks in your tent - leave all food items, including candy, gum, and toothpaste, out of your tent.
4. Pay attention to bear warning signs in National Parks - don't go into areas where bear populations are high.
5. Pack out all garbage - garbage eating bears become habituated bears and become dangerous bears.
6. When hiking in bear country make noise by talking and whistling. This will warn bears ahead of your presence and give bears a chance to move peacefully away.
7. Pay attention - look for scat, tracks, and tree markings. If these signs are seen, you are in a bear's territory and you may want to choose another route.
8. If you see a bear, keep your distance - the closer you get to a bear the more threatened he or she may feel.
9. If you come near a bear with a food supply, act submissive and back away.

Activity #9=Chow Down!

Before Bears go into hibernation they need to build up as many fat calories per day, in fact they consume over 20,000 calories a day to stock up for the long winter!

OBJECTIVE:

Students will:

design a menu that incorporates at least 20,000 calories.

MATERIALS YOU NEED:

• Classroom set of McDonalds Nutrition Facts

• Big Mac poster

STUDENT WORKSHEETS:

Chow Down! (student workbook pg. 28)

Mac Attack (s.w. pg.29)

KEY VOCABULARY:

hyperphagia

DOING THE ACTIVITY:

1. Discuss with your students why we need food, ie for survival, to keep our energy, for fat, etc. Bears before they go into the den for the long winter have to eat tremendous amounts of food, in fact 20,000 to 36,000 calories a day. Discuss why this is important. Introduce the word hyperphagia as the term used before a bear goes into hibernation and is eating huge quantities of food.
2. Distribute to students or teams of students the **McDonalds Nutrition facts** and have them complete worksheet *Chow Down*. They will design a menu and amount of calories for themselves on a normal eating day (breakfast, lunch an diner). They will then design a menu that consumes at least 20,000 calories.
3. Have them complete the *Mac Attack worksheet*. Once they figure out the number of **Big Macs** show them the poster of the amount to help them see visually just how many that is! Also demonstrate the amount of urine with a gallon jug. (Then use the water to give everyone a drink in the class or water plants or something else useful to demonstrate you are not being wasteful with it!)

Activity #10-Jaws

Animal skulls can tell us a lot about an animal, such as what they like to eat, if they are prey or predator, and the size of the animal.

OBJECTIVE:

Students will:

observe a bear skull and identify its tooth structure.

MATERIALS YOU NEED:

bear skull

STUDENT WORKSHEETS:

Jaws (student workbook pg. 30)

Color my Jaws (s.w. pg.31)

TEACHER WORKSHEET:

Background Information (teacher workbook pg. 39)

Jaws (t.w. pg.40)

KEY VOCABLARY:

canine, molars, incisors, carnassial, omnivore, herbivore, carnivore, predator, prey

DOING THE ACTIVITY:

1. Have the students examine the **bear skull** in the bear box. Please have them handle it VERY gently because it is extremely fragile. Have them look carefully at the tooth structure. Using their *Jaws worksheet* in the student workbook have them identify the different teeth on the skull.
2. Have students examine their own teeth. Where are their canines? Molars? Incisors?
*Which teeth do they use to tear meat off of a chicken bone?
*Which teeth do they use to grind up the vegetables they eat?
*Do they have in sharp pointed teeth?
3. Be sure to introduce the new vocabulary words: canine, incisors, carnassial, and molars (see next page *Jaws* for diagram).
4. Have students complete *Color my Jaw* worksheet.
5. Share background information with students on next page.

BACKGROUND INFORMATION:

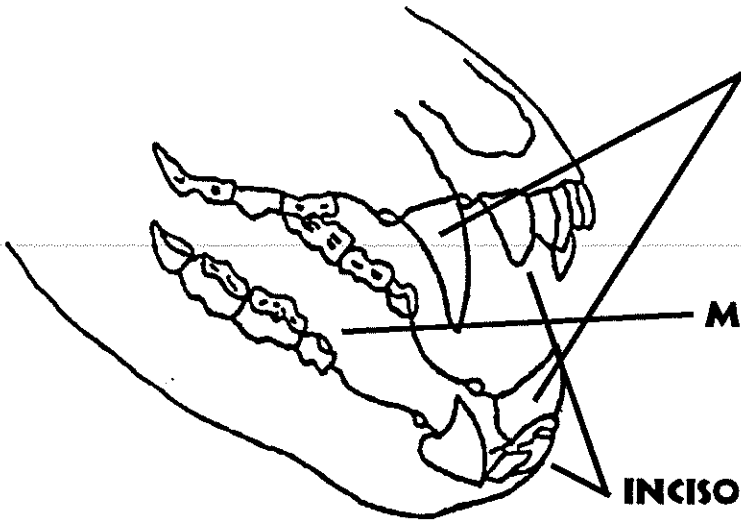
The rest of the skull tells us other clues about the animal. Where are the eye sockets located? If they are on the side of the head they denote an animal that is preyed upon by other animals. It is able to see its predators and danger coming from behind. Eye sockets toward the front of the head are important for animals that need to perceive depth and are not as worried about things sneaking up on them.

Animals that eat primarily meat are called **carnivores**. Most carnivores have long, pointed **canines** that they use to grab and kill their prey. They also have **carnassial** teeth which are sharp cheek teeth that cut like scissors when the animal closes its jaws. Wolves have very sharp **carnassials**. Animals that eat plants and meat are called **omnivorous**. They have flatter, less scissor like **carnassials**. They also tend to have larger rear **molars**, which help grind their food. An example of an **omnivore** is a bear. An **herbivore** eats only plants. It does not have sharp **carnassial** teeth or **canines** but has plenty of **molars** to grind plants. A good example of an **herbivore** is a deer.

The bears cheek teeth are called **molars** and are broad and flat on top, for mashing and grinding plant food. The front teeth are large **canines** and smaller **incisors** and are pointed for catching and killing **prey**. Bears except for people are the only large **predators** that regularly eat both meat and plants. For this reason, they have both meat-eating and plant-eating teeth in their mouths, much like humans. Bears eat meat if they can get it (especially fish) but the majority of their diet is made up of plants such as berries and roots.

JAWS

GRIZZLY JAW STRUCTURE AND TEETH



CANINE (kay-nine)

Used for catching and killing prey. Also used for ripping meat from carcass.

MOLARS (mow-lers)

Used for smashing and grinding plant food.

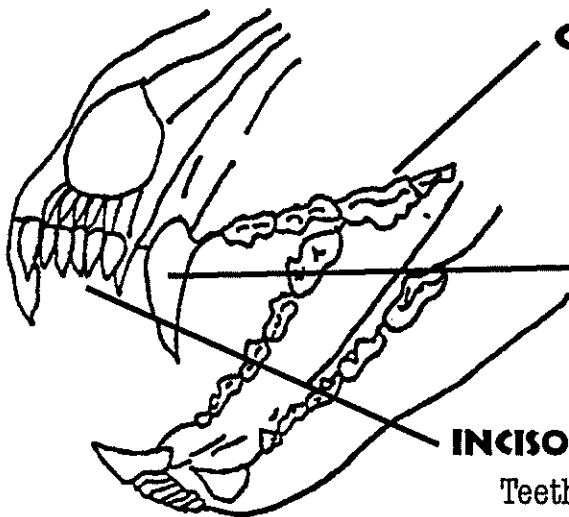
INCISORS (in-size-ors)

Used for catching and killing prey. Also used for ripping meat from carcass.

How are your teeth the same or different from wolves and bears?

We have incisors, molars and canines
but not carnassials. We are omnivores too.

WOLF JAW STRUCTURE AND TEETH



CARNASSIAL (kar-nas-ee-al)

Used for chewing into smaller pieces for swallowing. How are these different from the bear's molars?

CANINE (kay-nine)

Teeth used to grab and hold onto prey.

INCISORS (in-size-ors)

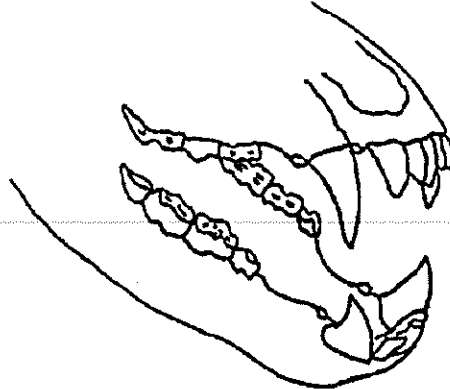
Teeth used to pick meat off bones. Where are your incisors? What do you use them for?

Color my teeth

COLOR MY MOLARS GREEN
COLOR MY INCISORS BLUE

COLOR MY CANINES ORANGE
COLOR MY CARNASSIALS RED

BEAR JAW

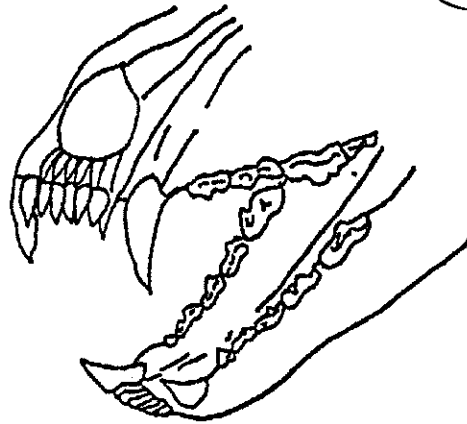


With my molars and canines I eat both plants and meat.

I'm called a(n)

Circle the best answer: herbivore, carnivore, omnivore

WOLF JAW

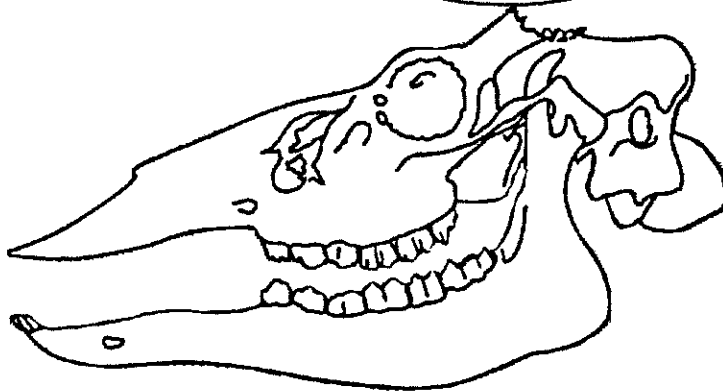


With my sharp carnassials I eat mostly meat.

I'm called a(n)

Circle the best answer: herbivore, carnivore, omnivore

DEER JAW



With my molars I eat mostly plants

I'm called a(n)

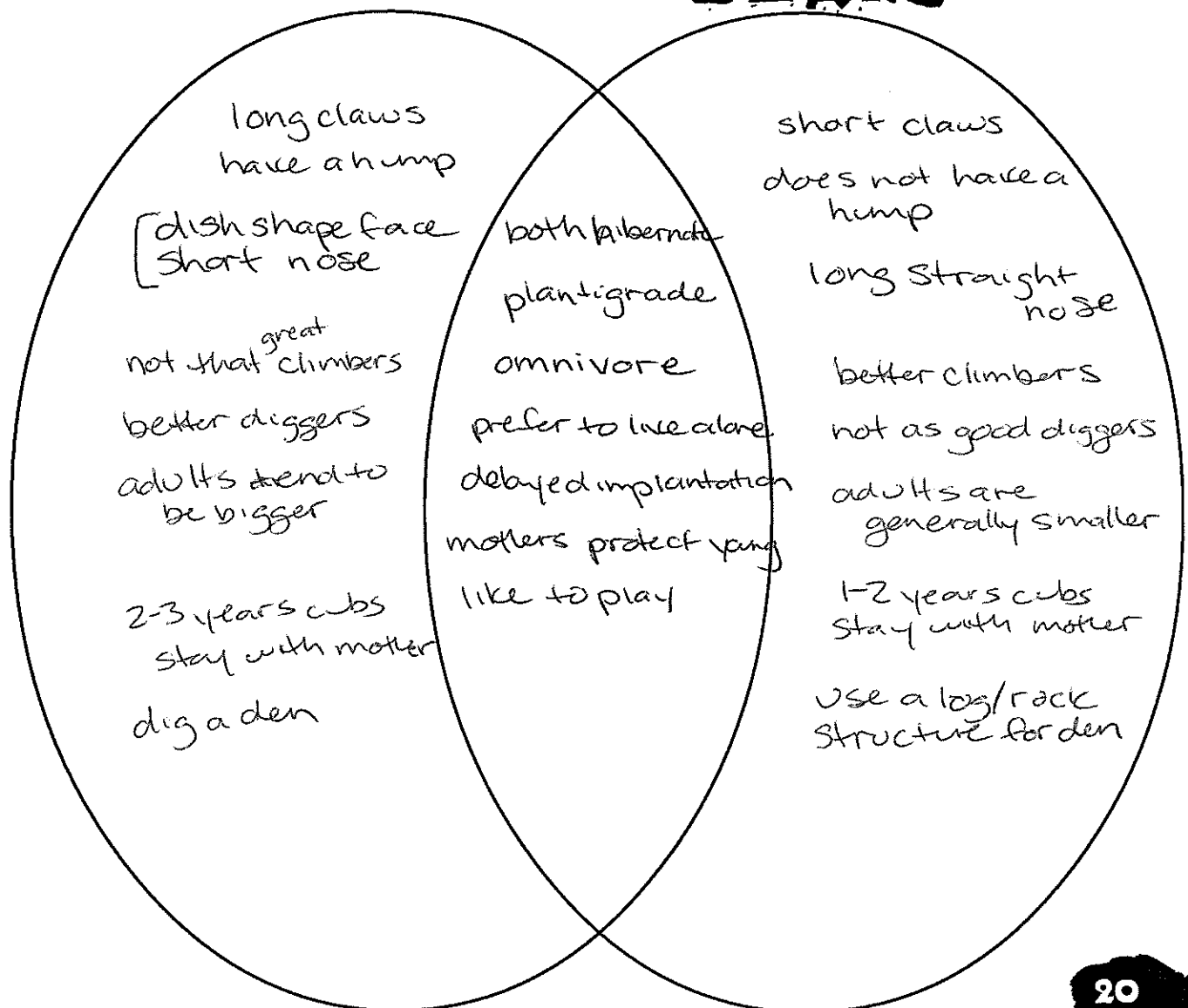
Circle the best answer: herbivore, carnivore, omnivore

COMPARE AND CONTRAST

Grizzly Bears and Black Bears have similarities and differences in personality, appearance, and behavior. There are also some similarities and differences between wolf pack behavior and human family behavior. Write down all the things you know about the grizzly bear personality, appearance, behavior, and communication. Do the same for black bears. In the section where both overlap list the things that are much the same for both bears.

GRIZZLY BEARS

BLACK BEARS

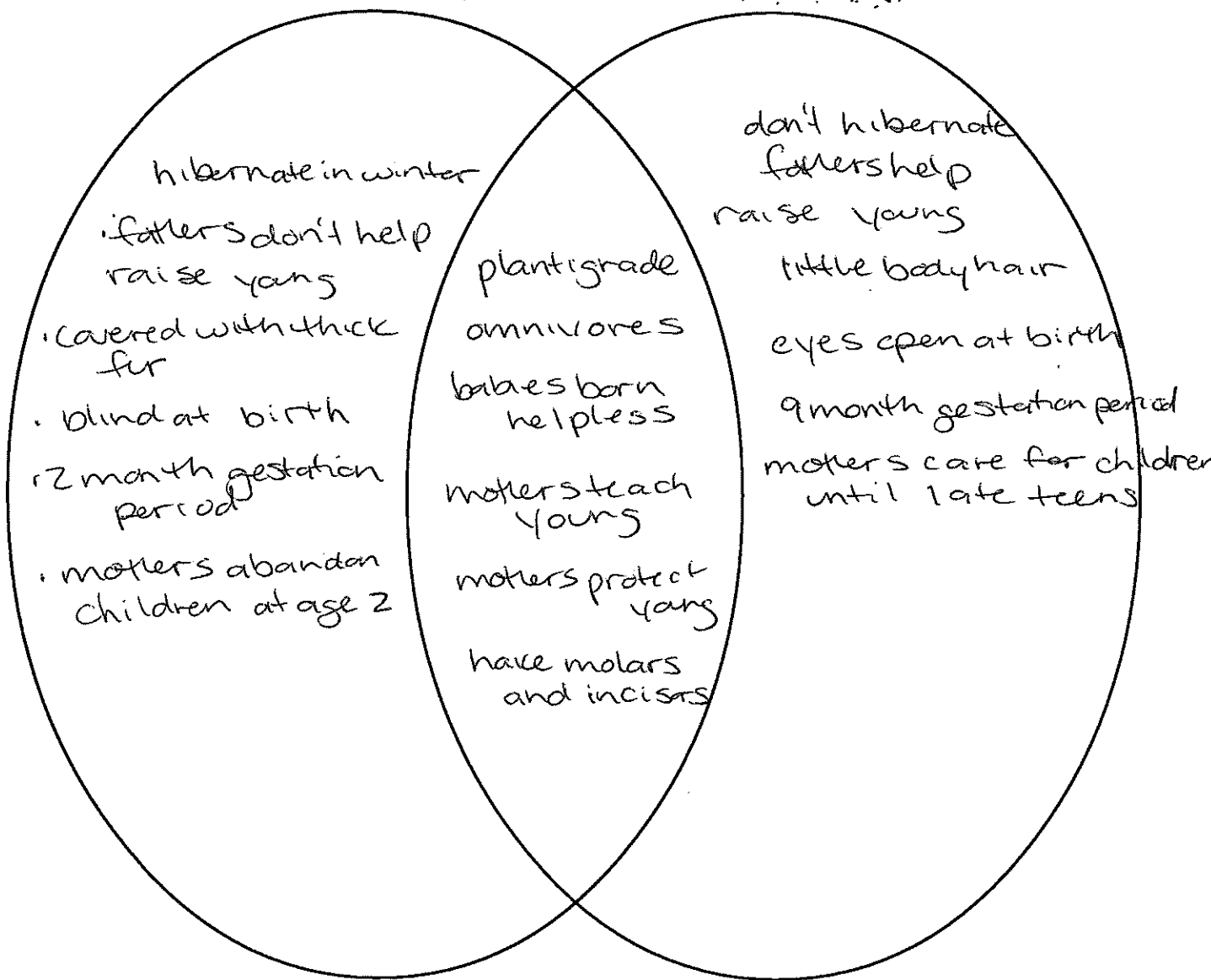


COMPARE AND CONTRAST

Bears and humans have similarities and differences in personality, appearance, and behavior. Write down all the things you know about bear personality, appearance, behavior, and communication. Do the same for humans. In the section where both overlap list the things that are much the same for both bears and humans.

BEARS

HUMANS



Activity #11-Making Tracks

The track of an animal is a good clue to determine who walked this way.

OBJECTIVES:

Students will:

- examine the two bear tracks from the bear box
- measure bear and grizzly tracks.

MATERIALS YOU NEED:

- 2 tracks from bear box
- 2 big wood tracks
- measuring sticks

STUDENT WORKSHEET:

- Grizzly Bear and Black Bear Tracks* (student worksheet pg.32)
- Grizzly Track* (s.w.33)
- Bear Tracks* (s.w.34)
- The Bear Track Facts* (s.w. pg.35)

KEY VOCABULARY:

Plantigrade





DOING THE ACTIVITY:

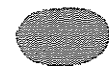
1. Discuss with students the type of track they leave, with shoes on and off. We do all make the same track?
2. Ask students that have cats or dogs or other animals if they have studied their pets tracks. It might be a good homework assignment to draw their pet's track.
3. Discuss what they think the track looks like of a bear. Do they think the black and grizzly bear track look the same or are different?
4. Show them the two tracks from the bear box...a black bear and grizzly bear. Have them guess which track belongs to which animal. Discuss the fact that bears walk on their soul with their heel toughing the ground, we call this plantigrade. Humans are considered plantigrade too.
5. Demonstrate how one can tell the difference between the two tracks by using the line test. Refer to *student worksheet page 32* to lead this discussion. Use the big wood tracks in the bear box. Have students determine which track belongs to which test by utilizing the line test.
6. Have students complete *student worksheet pgs. 33-35*. You could also have students measure the tracks from the box and their pet's tracks too.



DIFFERENCE BETWEEN GRIZZLY BEAR AND BLACK BEAR TRACKS

NOTES TO CONSIDER:

-  Less arc in toes compared to the black bear.
-  Toes are closer together compared to the black bear.
-  Grizzly bears have longer claws compared to the black bear.
-  Draw a line from the lowest point of the outside toe (1), through the highest point on the front edge of the bear foot pad (2), and to the inside toe (3). If it is a grizzly bear the inside toe will be above the line. If it is a black bear the inside toe print will be below the line.



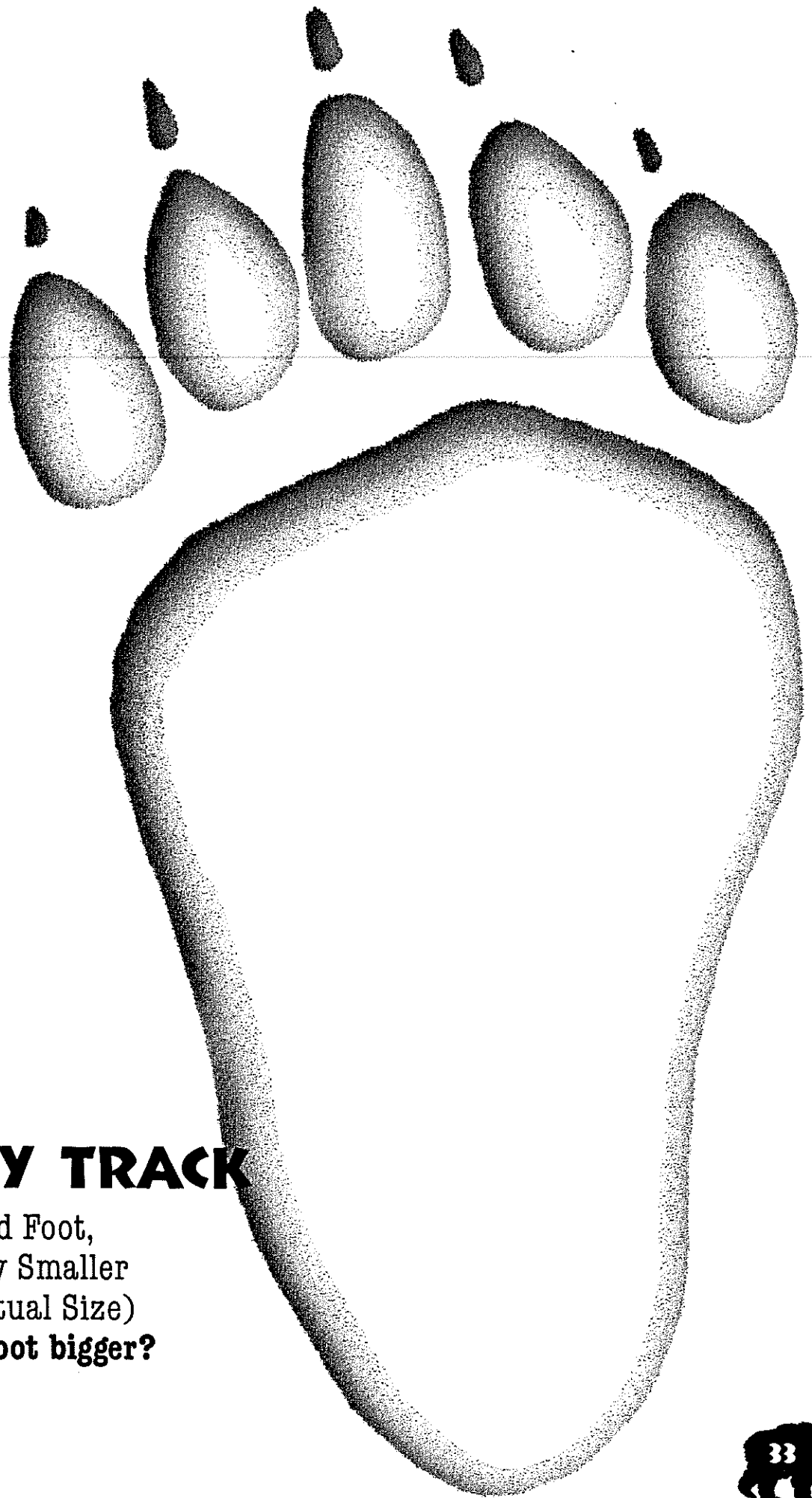
**GRIZZLY
TRACK**

left front



**BLACK BEAR
TRACK**

left front



GRIZZLY TRACK

(Hind Foot,
Slightly Smaller
than Actual Size)
Is your foot bigger?

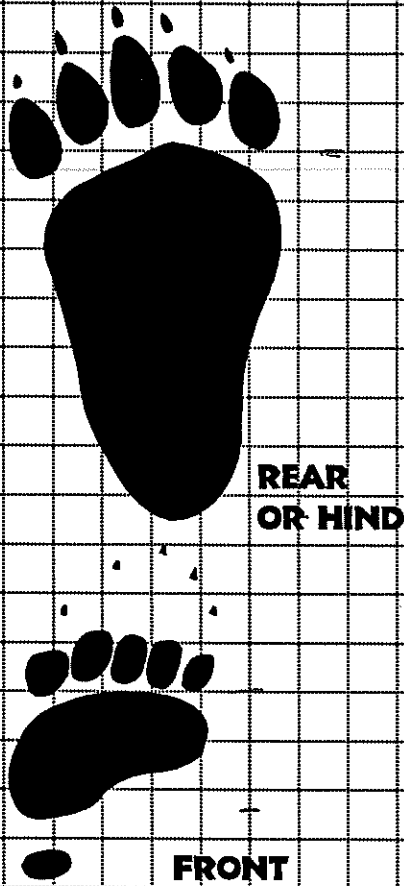


BEAR TRACKS

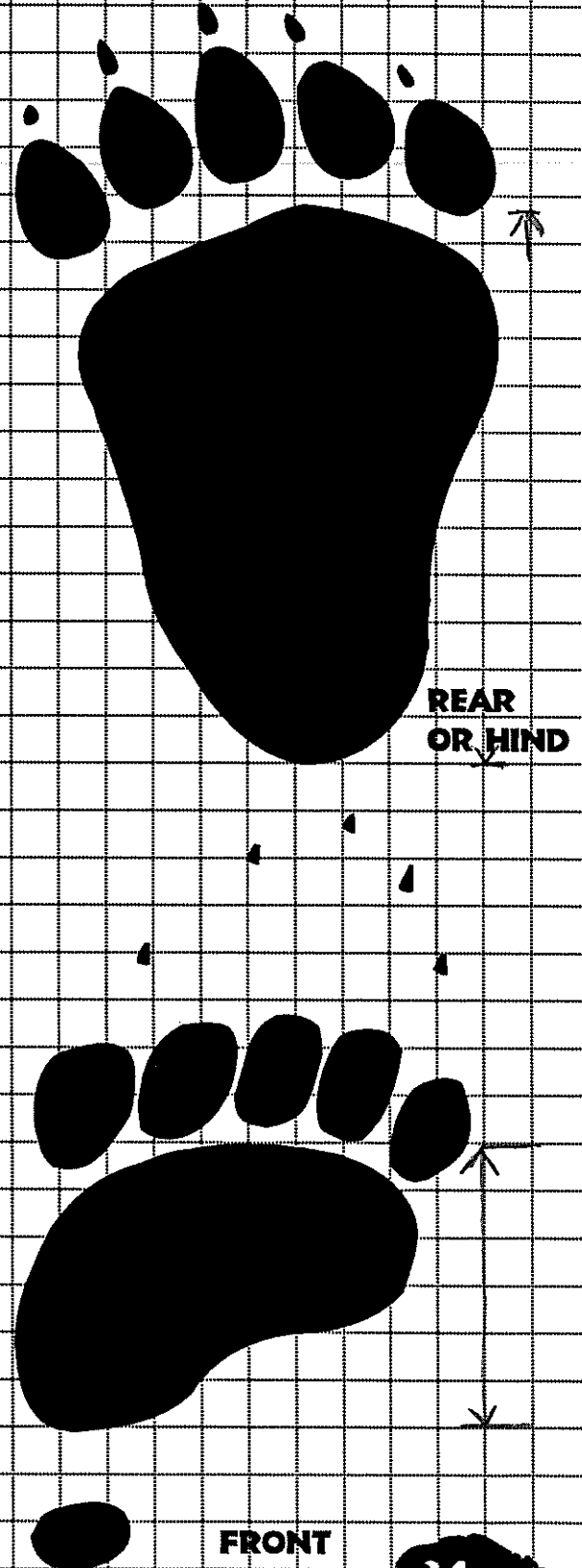
BLACK BEAR



GRIZZLY BEAR






ALASKA BROWN BEAR







Black Bear Front.....	<u>1 3/4</u> inches
Black Bear Rear.....	<u>5 1/4</u> inches
Grizzly Bear Front.....	<u>2 1/2</u> inches
Grizzly Bear Rear.....	<u>7 1/2</u> inches
Alaska Brown Bear Front	<u>6</u> inches
Alaska Brown Bear Rear	<u>11 3/4</u> inches

EACH LINE REPRESENTS ONE INCH







THE BEAR TRACK FACTS

-  Bears appear "pigeon-toed" when walking.
-  In a real bear track, the heel pad of the front foot usually doesn't show.
-  A human's little toe is on the outside of the foot.
A bear's smallest toes are on the inside of the foot.

THINGS TO REMEMBER WHEN LOOKING AT BEAR TRACKS

-  A grizzly front track will show claw marks farther from the pad prints than a black bear.
-  Grizzly toe pad prints sometimes appear like they are touching each other.
-  A young grizzly track may look like the black bears track.
-  Tracks may appear larger than they really are due to the type of soil or snow and the age of the track.

QUESTIONS:

-  What is the difference in the front foot track length of the grizzly bear and the black bear? Between a grizzly and the Alaska brown bear?
Grizzly front track is larger than black bear Grizzly is larger
-  Measure the length of your bare foot print. depending on child
-  What is the difference between your foot print and a black bear?
depends on child
-  What is the size difference between your foot print and a grizzly?
depends on child
-  Compare the width of a grizzly and a black bear front foot.
Grizzly Bear width is larger
-  Compare the width of your foot and a grizzly's rear foot.
depends on child







BEAR COMMUNICATION


Like wolves, bears use both vocalization and body language to communicate with other members of their species. Humans should be aware of the way bears communicate, as this awareness could prevent an attack.

STANDING ON HIND LEGS:





The bear is curious, and is trying to get a better idea of what is in front of him. This is not normally an aggressive posture.

STANDING ON ALL FOURS:




-  Turned sideways — signaling "I don't want to fight."
-  Lowering of head — a threat to another creature to back off.
-  Hair rising on back of neck — a sign he is warning the creature disturbing him.
-  Ears pinned back against head, flattened to the neck — sign of increasing aggressiveness.
-  Voice — whuffs or snorts— a strong warning of possible attack.
-  Voice — growls, jaw popping, teeth clicking — attack is **IMMINENT**.

 **Grizzlies kill fewer people than do lightning, bee stings, or snake bites.**

When in grizzly country, you are in danger of being attacked **IF** you do any of the following:

-  Try to get too close to a bear to photograph it
-  Get too close to a mother bear and cubs
-  Surprise a bear near his food cache
-  Surprise a female with cubs

Aggressive behavior is used by bears to:

-  Protect themselves and their cubs
-  Obtain or defend a food source
-  Repel other bears during breeding season to establish dominance

 **When grizzlies fight with each other, fights rarely end in death or serious injury.**

One bear will signal defeat and leave the scene.

BONUS: Find out what a habituated bear is. Why should it be more dangerous for people to hike in areas that are populated with habituated bears?



BEAR LANGUAGE

DIRECTIONS:

Check off each direction as you complete it.

1. Look up the word "bear" in your dictionary

2. In the blanks below, write three different definitions of "bear" used as a noun (n). ^{from} websters - MAY VARY

bear (n) 1. large heavy mammal having long shaggy hair

bear (n) 2. a surly, uncouth, or shambling person

bear (n) 3. one that sells securities or commodities in expectation of a price decline

3. On the lines below, use each "bear" (n) in an original sentence that indicates the meaning of each word.

1. _____

2. will vary depending on child

3. _____

4. Now look for three different meanings of the word "bear" used as a verb (v). On each of the blanks below write a definition of "bear" used as a verb (v).

bear (v) 1. to move while holding up and supporting

bear (v) 2. to be equipped or furnished with

bear (v) 3. to hold in the mind

5. On the lines below, use each "bear" (v) in an original sentence that indicates the meaning of each word.

1. _____

2. answers/sentences will vary

3. _____

6. Place a check if you proof read your sentences to make sure each sentence begins with a capital, has words spelled correctly, and has a period at the end of the sentence.



BEARS: TRUE OR FALSE

DIRECTIONS:

Read the statements below. If the statement is true, place a "T" in the box. If the statement is false, place a "F" in the box and rewrite the statement to make it true.

T 1. Bears are not true hibernators.

T 2. Bears are omnivorous.

T 3. Grizzly bears are generally larger than black bears.

F 4. Grizzly bears, or males, help take care of the cubs.
The males do not take care of their cubs

T 5. Black bears are not always black.

F 6. Grizzly bears are always brown. *Not true, can be tan, nearly black to blonde*

T 7. Grizzly bears have a good sense of smell.

T 8. Grizzly bears live in the Northwestern part of North America.

T 9. There are more black bears in North America than there are Grizzly bears.

F 10. Black bears and grizzly bears require the same type of habitat. *Sometimes can have same habitat. Grizzly bears can be found more often in open habitat and black bears in forested areas*

F 11. Grizzly bears like to be around people and development. *Grizzly bears tend to avoid people*

T 12. Grizzly bears are plantigrade animals.

T 13. There are more grizzly bears in Alaska than anywhere else.

T 14. Brown bears and grizzly bears are the same species.

GRIZZLY

DIRECTIONS:

Fill in all the blanks by answering the clues below. If you get them all right, you will find the hidden words that tell something unique about a female grizzly.

WORD LIST

endangered
stand
scavengers
cannibal
mother
plantigrade
grizzly
fairy tale
dens
day bed
range
habitat
female
growl
dish
predator
bulbs
mate
scat

- | | | | | | | | |
|-----|---|---|---|---|---|---|---|
| 1. | | D | A | Y | B | E | D |
| 2. | | D | E | N | S | | |
| 3. | F | A | L | R | Y | I | A |
| 4. | | R | A | N | G | E | |
| 5. | G | R | I | Z | Z | L | Y |
| 6. | | F | E | M | A | L | E |
| 7. | | D | I | S | H | | |
| 8. | P | L | A | N | T | L | G |
| 9. | | | | | | M | D |
| 10. | | | | | | P | R |
| 11. | | B | U | L | B | S | |
| 12. | | | | | | C | A |
| 13. | S | C | A | Y | E | N | G |
| 14. | | | | | | M | A |
| 15. | | | | | | S | C |
| 16. | | | | | | S | T |
| 17. | H | A | B | I | T | A | T |
| 18. | | | | | | G | R |
| 19. | | | | | | E | N |

- Where the grizzly rests between meals and traveling
- Grizzlies hibernate in these
- "Goldilock and the Three Bears" is a _____
- The area in which a grizzly lives
- An endangered bear in North America
- Opposite of male
- A grizzly face is _____ shaped
- Walking on soles of feet rather than toes
- Cubs stay with the _____ up to two years
- A grizzly can be a _____ when he kills other animals for food.
- They eat the roots or _____ of many plants
- One who eats those of his own species
- Ravens, coyotes and grizzlies can all be _____ when they eat carrion.
- Boars and sows do this to produce offspring
- Bear droppings
- To smell or see better a grizzly may _____ on his hind feet.
- The area in which an animal or plant lives
- A warning sound used by a bear about to attack.
- The grizzly is on this list in North America.

Extra Credit: Find the definition of each word in your student glossary. Write a sentence using each word.





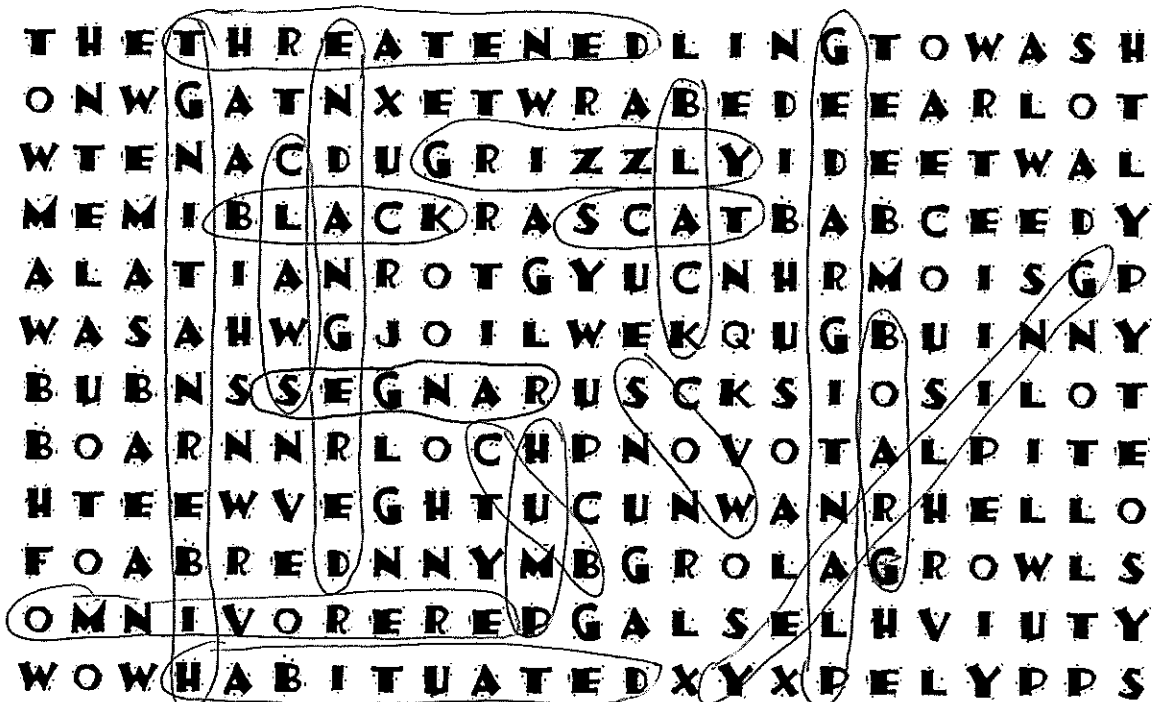
GRIZZLY



WORD FIND

DIRECTIONS:

Words can be found backwards, up, down, or diagonal.



✓ THREATENED

✓ HUMP

✓ HABITUATED

✓ ENDANGERED

✓ CUB

✓ OMNIVORE

✓ GRIZZLY

✓ PLANTIGRADE

✓ BOAR

✓ SCAT

✓ CLAWS

✓ SOW

✓ YEARLING

✓ RANGES

✓ BLACK

✓ HIBERNATING



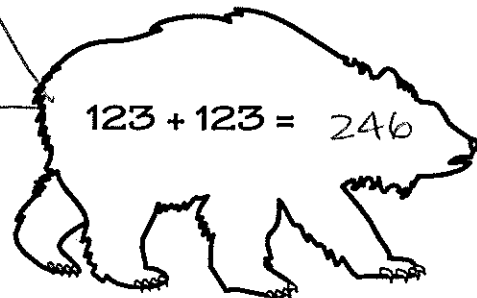
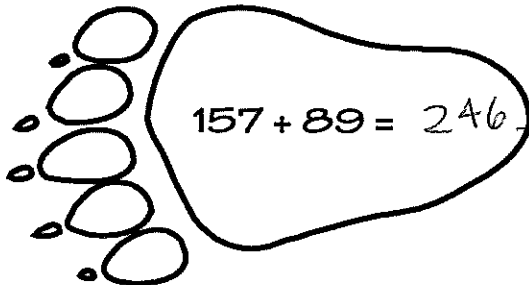
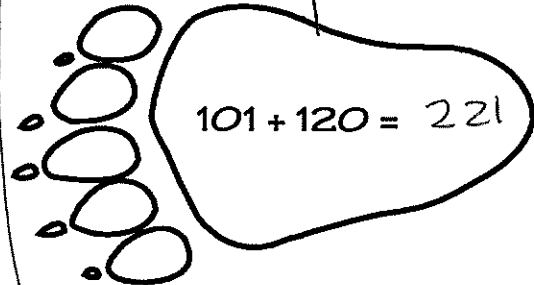
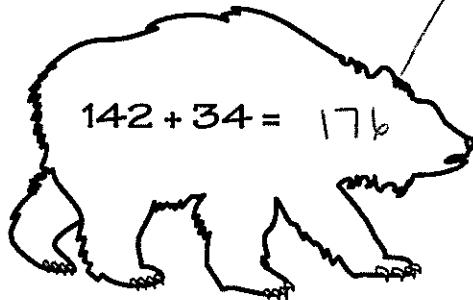
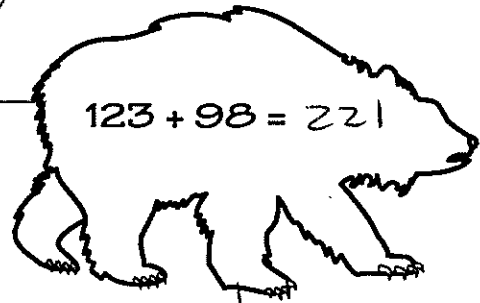
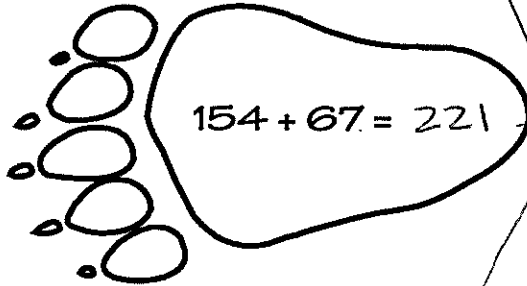
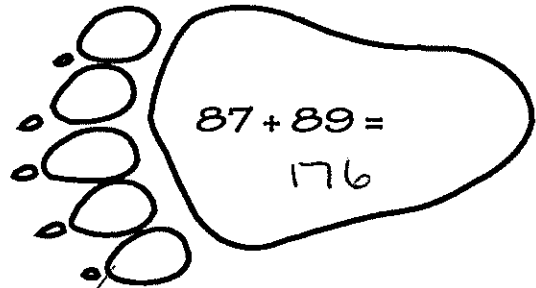
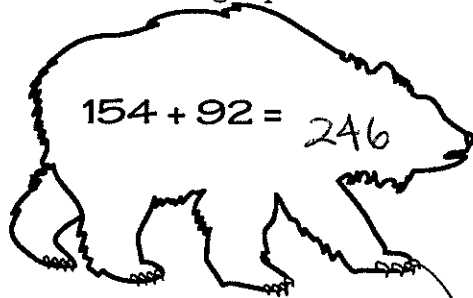
Extra Credit: Find the definition of each word in your student glossary. Write a sentence using each word.



BEAR MATH ADDITION

DIRECTIONS:

Once you have done the math, match the bears and tracks.
Please show your work on a separate sheet of paper
if there is not enough space available.

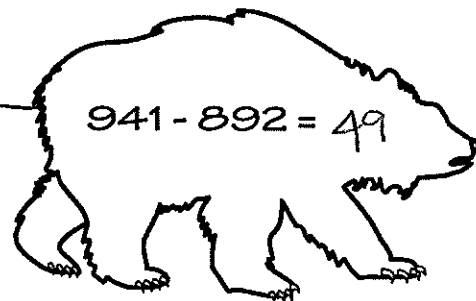
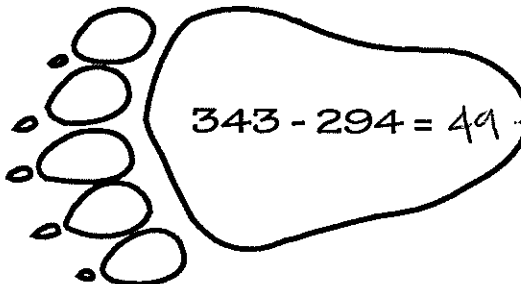
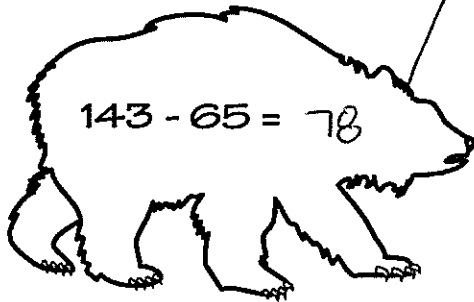
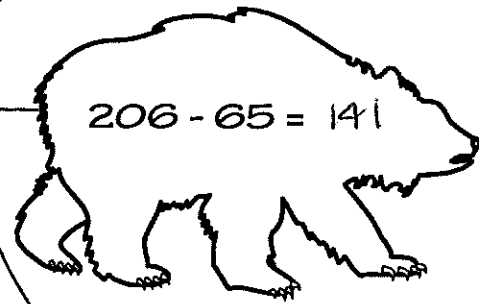
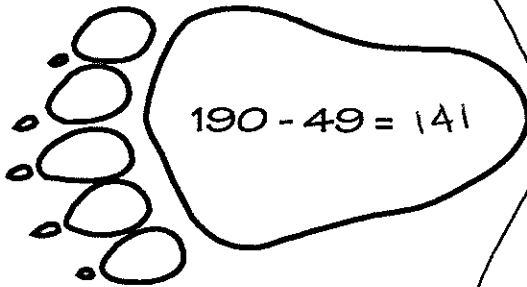
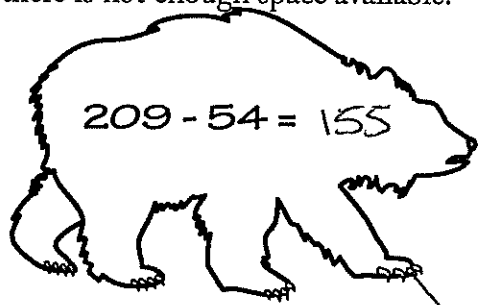


BEAR MATH SUBTRACTION

DIRECTIONS:

Once you have done the math, match the bears and tracks.

Please show your work on a separate sheet of paper if there is not enough space available.

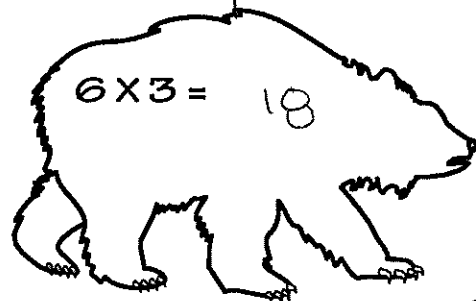
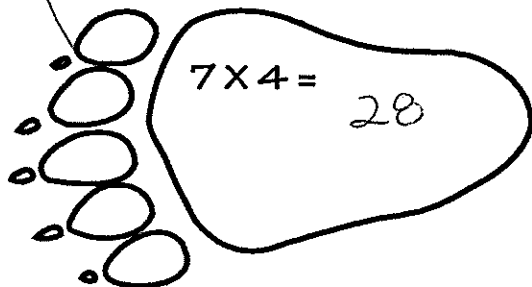
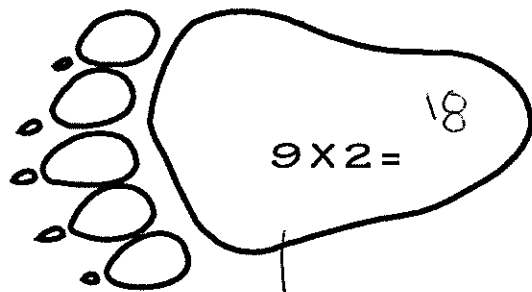
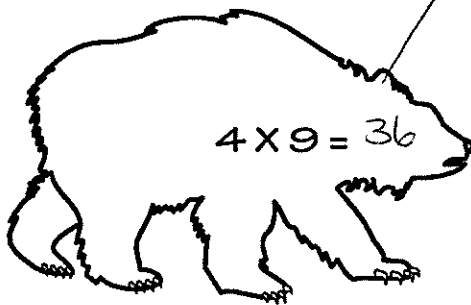
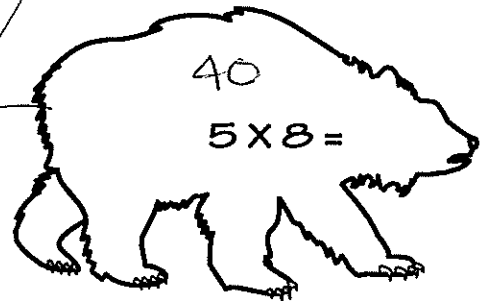
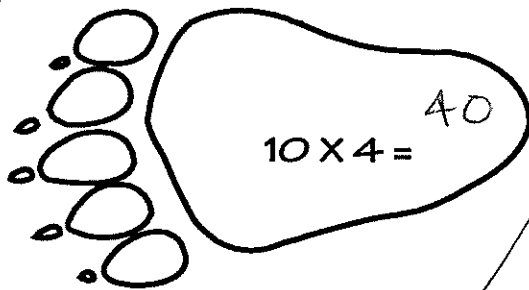
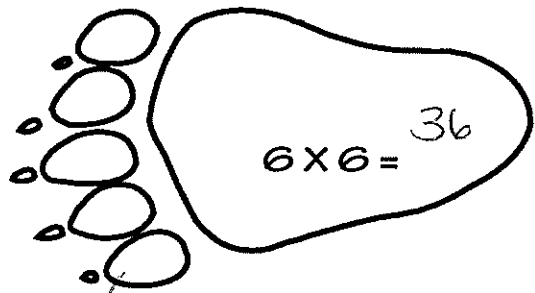
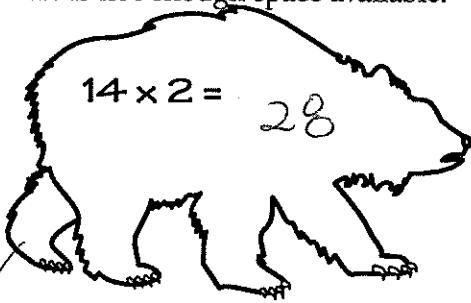


BEAR MATH MULTIPLICATION

DIRECTIONS:

Complete the math and match bears and tracks.

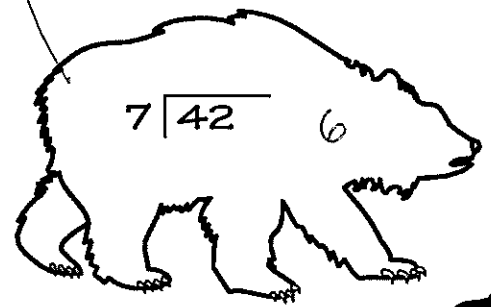
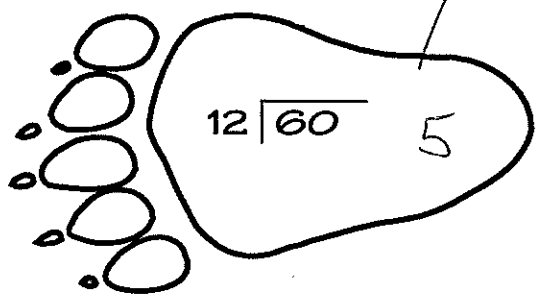
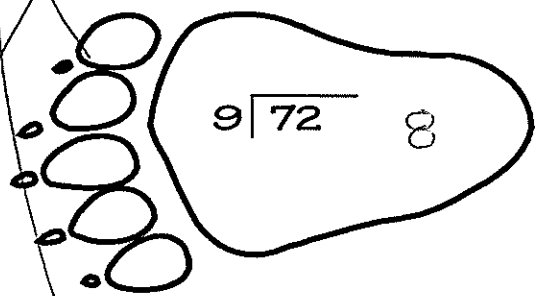
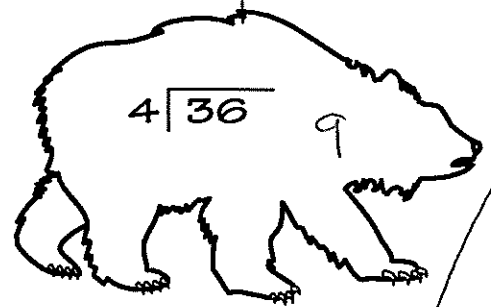
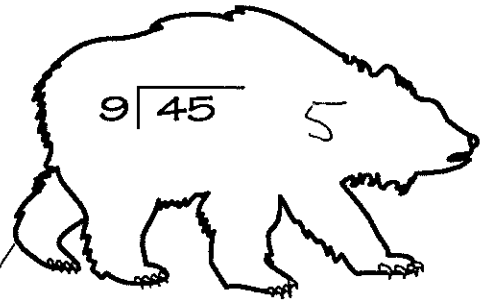
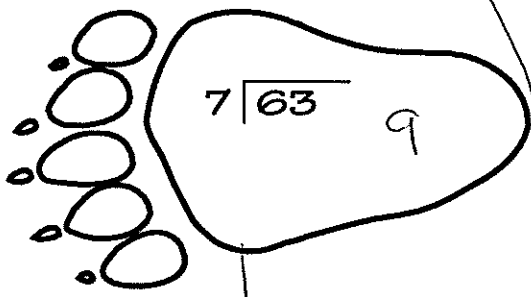
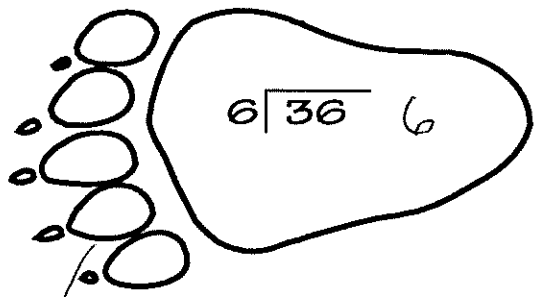
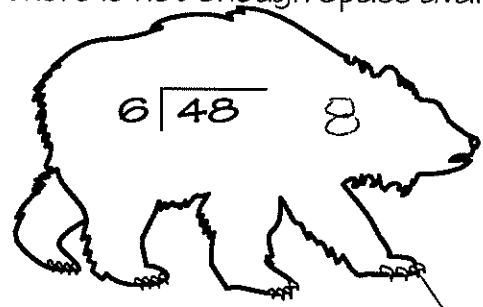
Please show your work on a separate sheet of paper
if there is not enough space available.



BEAR MATH DIVISION

DIRECTIONS:

Once you have done the math, match the bears and tracks.
Please show your work on a separate sheet of paper
if there is not enough space available.



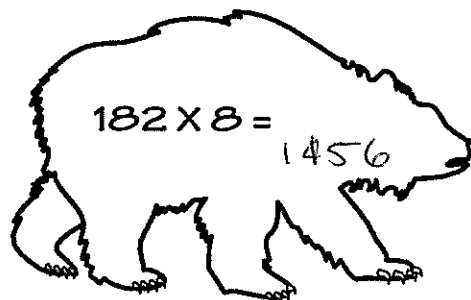
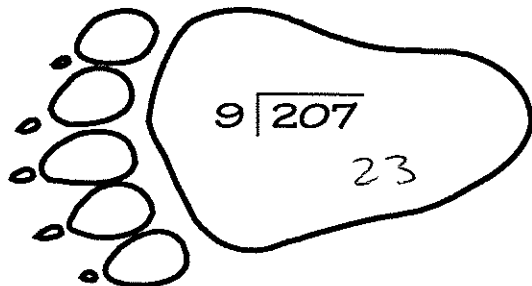
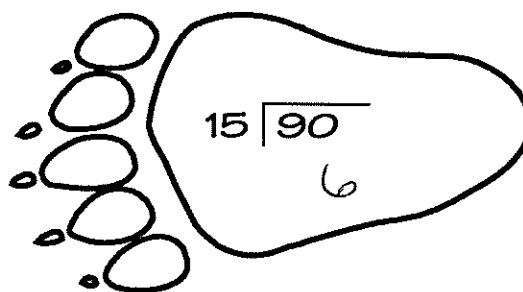
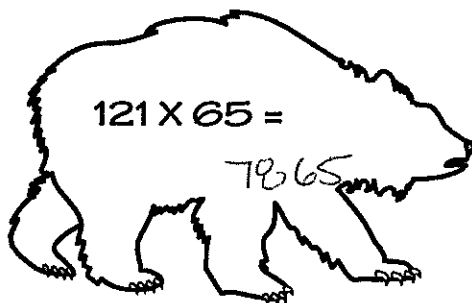
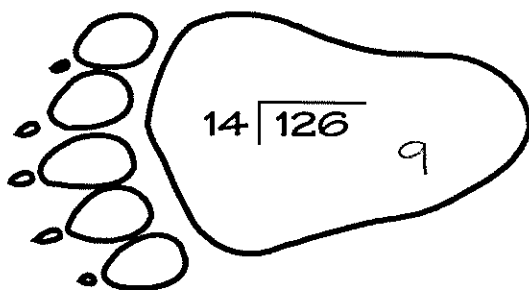
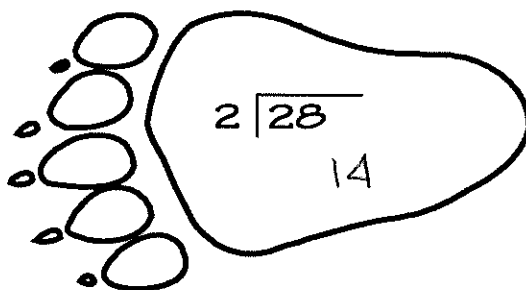
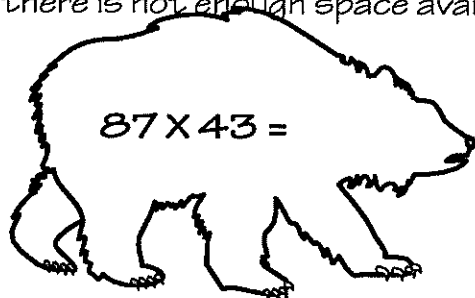
BEAR MATH

MULTIPLICATION

AND DIVISION

DIRECTIONS:

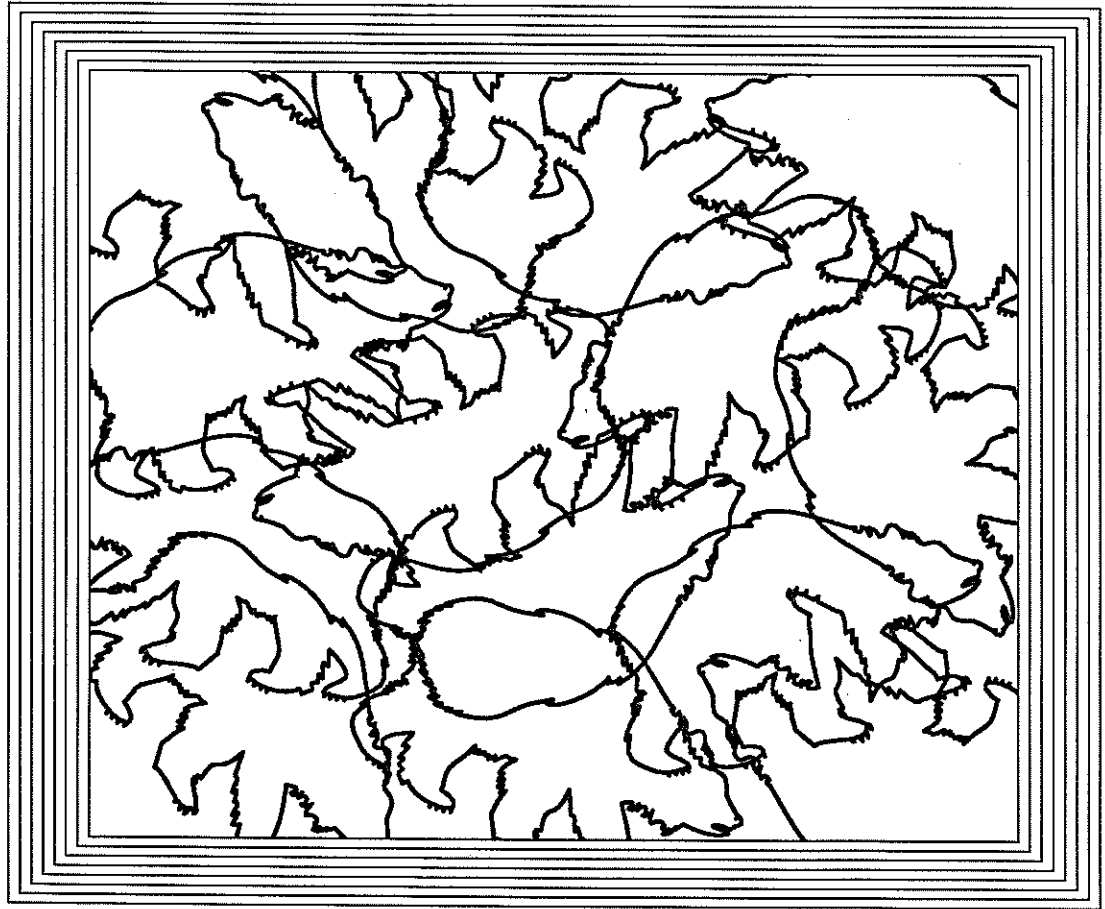
Complete the math, are there any matches? **NO!**
Please show your work on a separate sheet of paper
if there is not enough space available.



HOW MANY GRIZZLIES CAN YOU SEE?

DIRECTIONS:

Count how many completed grizzlies you can spot in this square. Be careful and make sure to count those that overlap.



TOTAL NUMBER OF GRIZZLIES:

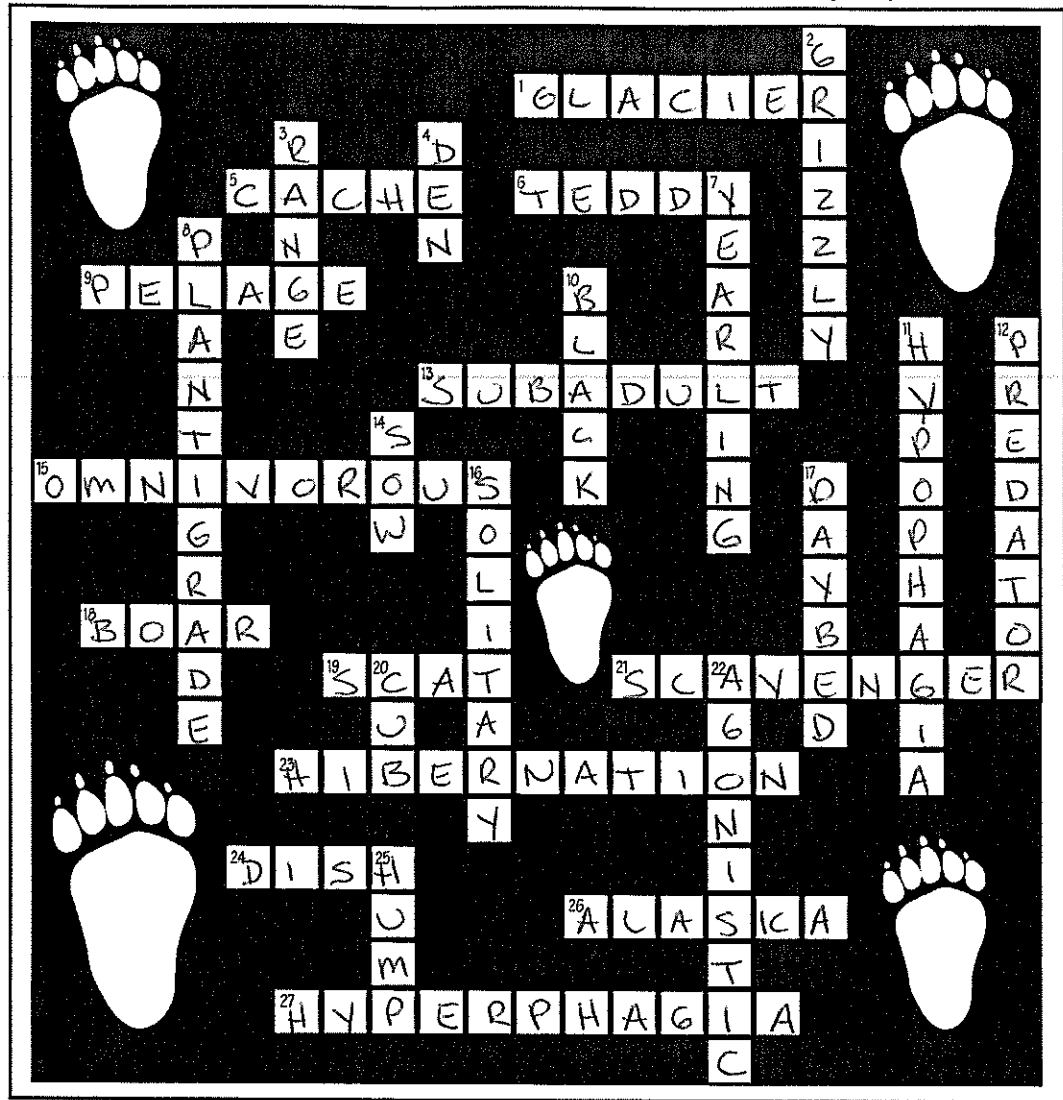


we have no idea!! :)

BEAR CROSSWORD

WORD LIST

glacier
 cache
 Teddy
 pelage
 subadult
 omnivorous
 boar
 scat
 scavenger
 hibernation
 dish
 Alaska
 hyperphagia
 plantigrade
 range
 den
 sow
 black
 yearling
 grizzly
 solitary
 cub
 hump
 predator
 hypophagia
 day bed
 agonistic



DOWN:

2. Another name for a brown bear
3. The area a bear travels
4. The place in which a bear hibernates
7. A bear that is one year old or a little older
8. A word to describe how a grizzly (or human) walks
10. A common American bear, the _____ bear
11. The period right after a bear comes out of hibernation, when they still use stored fat for energy, even though they are beginning to eat spring food
12. An animal that kills other animals for food
14. A female adult bear
16. Alone
17. A place where grizzlies sleep during the day
20. A young bear, under a year old
22. Aggressive behavior
25. One distinguishing mark of the grizzly

ACROSS:

1. A large national park in N.W. Montana where grizzlies be found
5. Partially buried food supply
6. A toy bear named from a former U.S. President
9. An animal's fur coat
13. A young grizzly
15. Name for a creature that eats both plants and animals
18. Name of a male bear
19. Undigested seeds can be found in the bear's _____
21. An animal that eats carrion
23. A bear's winter sleep
24. Shape of a grizzly's nose
26. The state with the largest population of grizzlies
27. The period right before hibernation when bears are eating less.

Use your student glossary to help you define any words.



TEACHER GLOSSARY

ADAPTATION: A change in behavior or physical characteristics of a plant or animal that enables it to survive in its environment.

AGONISTIC: Aggressive behavior, used by bears and wolves to chase away threatening people or animals.

ALPHA: The female leader and male leader of a wolf pack.

ALPINE: High level land, characterized by stunted trees, low growing shrubs, and flowers; covered by snow much of the year.

ARTIC: The area surrounding the North Pole.

BETA: The second most important male or female in a wolf pack; they are submissive only to the alpha wolves.

BLACK BEAR: *Ursus americanus*, a bear found over much of North America, smaller than a grizzly, with a longer face and no shoulder hump.

BOAR: A male bear

CACHE: Buried or partially buried meat stored for eating later. This method is used by bears and wolves.

CANINE: Teeth used to grab and hold onto prey.

CARNASSIAL: The back teeth of a carnivore used for chewing meat.

CARNIVORE: Any meat-eating animal.

CARNIVOROUS: Meat eating (adjective)

CARRION: The flesh of dead animals

CLAWS: The long sharp "toenails" used by grizzlies for digging.

CUB: A young bear



DAYBED: A protected bed where a bear rests when it is not traveling, feeding, or hibernating.

DELAYED IMPLANTATION: The mechanism by which a fertilized egg does not attach to the uterine wall until the bear's hibernation.

DEN: 1. Where the bear hibernates. 2. A secure dug out room in which a female wolf gives birth to her pups; also the place where the pups spend the first few weeks of their lives.

DIGITIGRADE: The manner in which an animal walks on just the toes of his feet, like dogs and wolves do.

DISH FACE: One of the distinguishing characteristics of a grizzly; a concave dip in the nose.

ECOSYSTEM: A community of living organisms interacting with their environment and each other to form a unified whole.

ENDANGERED: Population of a species is so low that extinction is possible.

EXTINCT: No longer existing.

GESTATION: The period of pregnancy between mating and birth.

GRIZZLY: *Ursos arctos*, a large brown bear of North America.

HABITAT: The environment in which an animal lives.

HABITUATION: Becoming accustomed to human presence; losing fear of humans.

HERBIVORE: An animal who only eats plants.

HIBERNATION: A state of lowered metabolism in wintertime, during which a bear rests in his den, neither eating nor urinating or defecating.

HUMP: A large mass of muscle above the grizzly's shoulders, characteristic of the grizzly.

HYPERPHAGIA: Metabolic change leading to hibernation; eating less, lethargic.

HYPOPHAGIA: The period right after a bear comes out of hibernation; eating sparingly, still metabolizing body fat for energy.

INCISOR: The front teeth used for catching and killing prey.



ISOLATION: Being alone, not being bothered by human presence; one of the seven requirements of grizzlies.

LITTER: A group of wolf pups, the average litter size is six pups.

LUPUS: The scientific name for wolf (*canis lupus*).

MOLAR: The back teeth used for smashing and grinding food.

OMEGA: Lowest ranking wolf in the pack.

OMNIVORE: Any animal that eats both animal and plant foods.

PACK: A group of wolves who live together, hunt together and socialize with each other.

PELAGE: Another name for the fur coat of an animal.

PLANTIGRADE: Walking on the soles of the feet, as does a grizzly; a human does also.

PREDATOR: Any animal that hunts and kills another animal for food.

PREY: Any animal that is hunted or killed by another animal.

RANGE: The area an animal travels to find food and mates.

RENDEZVOUS SITE: A safe area where a wolf pack rests between hunts.

RUB-MARKING: Where bears bite, claw, or rub trees to indicate to other bears that they have been there.

SCAPEGOAT: The outcast, or lone wolf. This is a wolf that is not accepted by any other wolf in the pack. He usually leaves the pack on his own, or is forced to leave—may become a lone wolf, or might join another pack.

SCAT: An animal's excrement (poop!).

SCAVENGER: Any bird or animal that eats the remains (carrion) of a previously killed animal.

SLEEPING CHAMBERS: The part of the den where the bear hibernates and gives birth to cubs.

SOW: A female bear



SPECIES: Scientific classification of living creatures.

STALK: The act of sneaking closer to prey before rushing in to attack.

SUB-ALPINE: Mountain land slightly lower in elevation than alpine regions, characterized by taller trees, more plant growth, and steep mountain meadows. This region remains snow-free slightly longer than the alpine regions.

SUBMISSION: 1. Sign of non-aggression, or unwillingness to fight. 2. A behavior that indicates a low place in the wolf pack order of importance.

SUB-SPECIES: A scientific classification just below species; for instance, a Kodiak brown bear is a sub-species of *Ursos arctos*

TEMPERATE: The land areas below sub-alpine, usually lower mountain valleys. These areas are snow-free much longer each year than alpine or sub-alpine areas. These areas are characterized by a variety of plant and animal life, shorter winters, and abundant water.

TERRITORY: 1. The area of an animal's range which that animal will defend against intruders. 2. The area a wolf pack will defend against intrusion by other wolves. Territories are a smaller part of the wolves' range.

THREATENED: A species that may become endangered if their numbers and habitat continue to decline.

TRACK: The foot print left by an animal.

TUNDRA: Cold, treeless plains of the arctic and subarctic regions.

TUNNEL: A narrow chamber leading to the larger sleeping chamber in a den.

UNGULATE: Any hoofed mammal, such as a deer, elk, moose, caribou, or mountain sheep.
Common prey of wolves.

VEGETATION: Any kind of plant growth.

YEARLING: Any wolf between the ages of one and two.



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Erds, Richard and Ortiz, Alfonso. "American Indian Myths and Legends." New York: Pantheon Books, 1984.

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Herrero, Stephen. "Bear Attacks: Their Causes and Avoidance". Lyons and Burford, 1985.

Hoshino, Michio. "Grizzly". San Francisco: Chronicle Books, 1987.

Mayo, Gretchen Will. "North America Indian Stories". New York: Walker and Company, 1987, 1990.



Murie, Olaus J. "A Field Guide to Animal Tracks". Boston: Houghton-Mifflin, 1954, 1974.

Olson, Lance. "Great Bear Foundation Field Guide to the Grizzly Bear". Seattle: Sasquatch Books, 1992.

Peacock, Doug. "Grizzly Years". New York: Henry Holt and Co., 1990.

Rennicke, Jeff. "Bears of Alaska in Life and Legend". Boulder, Colorado: Roberts Rinehart, INC. Publishers, 1987.

Rockwell, David. "Giving Voice to Bear". Niwot, Co.: Roberts Rinehart Publishing, 1991.

Servheen, Christopher and Mills, Judy. "The Asian Trade in Bears and Bear Parts: Traffic U.S.A." Wash.. D.C. : World Wildlife Fund, 1991.



BEAR BOOKS

BEARS IN THEIR WORLD

Bauer, Erwin. New York: Outdoor Life Books, 1985, 254 pages, \$32.95.

This volume extensively covers the various aspects of North American bears: the black, the grizzly (or brown), and the polar. In addition, it includes many excellent action photographs of bears in full color. The author also addresses conservation and extinction issues. Grade 4 through adult.

TRACK OF THE GRIZZLY

Craighead, Frank C. Jr. San Francisco: Sierra Club Books, 1982, 261 pages, \$14.95.

This easy-to-read softcover book covers hibernation, denning, mating, and hierarchy as well as bureaucratic issues related to the grizzly. Although limited to the grizzly, it is a useful resource. Grade 5 through adult.

BEARS OF THE WORLD

Domico, Terry, and Mark Newman. New York: Facts on File, 1988, 189 pages, \$29.95.

This excellent book provides detailed information on eight species of bears. It carefully reviews each individual species in regard to food, reproduction, habitat needs, as well as specific characteristics. There is also a chapter devoted to safety. The pictures accompanying each section are gorgeous. Range maps are not all accurate. Grade 6 through adult.

GOLDBLOCKS AND THE THREE BEARS

This timeless children's story can be found in many versions, the price and publisher varying with the version. This book, as well as Winnie-the-Pooh, illustrates well the myth of bears. Grade 1 through adult.

BEG ATTACKS THEIR CAUSES AND AVOIDANCE

Herrero, Stephen. Piscataway, NJ: Winchester Press, 1985. 287 pages, \$9.95.

Although the author gives background information on attacks and their avoidance in this softcover book, it is the personalized stories of real life bear encounters that make this fascinating reading. These accounts are especially helpful when considering safety issues for both bear and humans. The chapter on bear management addresses several unresolved management questions. Grade 6 through adult.

THE WILD BEARS

Laycock, George. New York: Outdoor Life Books, 1986, 272 pages, \$19.95.

This softcover book tells about the grizzly and the black bear in storybook format. It includes stories of conflicts between bears and humans. Grade 5 through adult.

LOOKING AT THE GRIZZLY: FACTS, FOLKLORE, PHYSIOLOGY IN BIOLOGUE

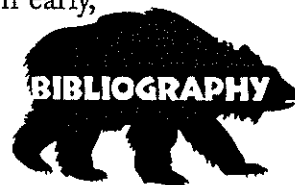
Teton Science School, Kelly, WY: W. 1987, Vol. 1, No. 3, 15 pages, \$2.00.

This issue of Biologue provides excellent background information on certain aspects of grizzlies such as prey, food, habitat, and myths. Grade 5 through adult.

WINNIE-THE-POOH

Milne, A. A. New York: E. P. Dutton, 1988, 176 pages, \$9.95.

Just a quick glance through this timeless children's storybook rekindles thoughts about Pooh's cute antics. It blends myth and reality and helps explain how people regard bears from their early, formative years. Grade 4 through adult.



GUARDIAN OF THE FOREST: A HISTORY OF THE SMOKEY-THE-BEAR PROGRAM

BEARMAN: EXPLORING THE WORLD OF BLACK BEARS

Pringle, Laurence. New York: Charles Scribner's Sons, 1989, 42 pages, \$13.95.

This book is about Lynn Rogers, the "Bearman," and how he got interested in bears, especially black bears. Pringle also discusses many important facts about the habits of the black bear in an easy, but factual, style. In addition, he includes many of Rogers' personal photos. Grade 4 through adult.

AMERICAN BEARS

Roosevelt, Theodore. Edited by Paul Schullery. Boulder, CO: Colorado Associated University, 1983, 193 pages, \$8.95.

Schullery captures the spirit of Roosevelt's early years as a hunter in this edited version of Roosevelt's writings. Good background information about the bears and hunting philosophy of the early 1900s. Grade 6 through adult.

THE SACRED PAW

Shepard, Paul and Barry Sanders. New York: Milking Penguin Inc., 1985, 243 pages, \$17.95.

The authors tell about bears in nature, myth, and literature in an easy-to-read, interesting style. Grade 6 through adult.

THE WORLD OF THE BLACK BEAR

Van Wormer, Joe. New York: J. B. Lippincott Co., 1966, 163 pages, no longer in print.

This book, although no longer in print, provides excellent background information on the black bear. It is worth a trip to the library to use as a resource. Grade 5 through adult.

BEARS

Wexo, John Bonnett. San Diego: Wildlife Education, Ltd., 1987, 18 pages, \$2.95.

This succinct 18-page booklet in the Zoobooks series briefly describes the major bear species with wonderful color graphics and map locations. Grade 4 through adult.



BEAR

RECORDS, FILMS, VIDEOS

SYMPHONY NO. 82 IN C, THE BEAR

Haydn, Joseph, composer; performed by the Academy of St. Martin-in-the-Fields; directed by Neville Marriner, \$9.98. This record can provide background music while students work on the various bear projects. Grade 6 through adult.

GRIZZLY AND MAN: UNEASY TRUCE

Audubon, 60 minutes, \$39.95 video.

This video explores the question of whether man and grizzly can peacefully co-exist. It also examines solutions for the preservation of the grizzly. Grade 6 through adult.

THE GRIZZLIES

National Geographic, 60 minutes, \$39.95

This video examines the myth, legend, reality, and future of the grizzly bear. Grade 4 through adult.

ALL AMERICAN BEAR

Nova, 60 minutes, \$39.95.

This video on black bear hibernation as well as a year in the life of a bear is available for purchase. Grade 5 through adult.

BEAR COUNTRY

Walt Disney Productions, 1952. 31 minutes, \$250 video, \$655 16 mm.

This classic in the "true-life adventure" series focuses on the black bear of the Rocky Mountains. Although anthropomorphic at times, the presentation is still fresh and entertaining and still accurately portrays the world of the black bear. Grade 2 through 6.





THE BEAR DEN

Video Guide

Launched January 21, 1996

Last update August 13, 1996

WELCOME!

The Bear Den Video Guide provides a listing of videos, of which I am currently aware, that pertain specifically to bears. The brief description of the contents of the video are my own. All are available in VHS format.

I am sure the list is not complete and welcome any additions. Please send as much information as you have to [the editor](#) for inclusion on this page.

All American Bear

1988, Nova Video Library/Vestron Video, approx. 60 minutes.

An excellent in-depth examination of all aspects of the life cycle and behavioral patterns of the black bear.

The Bear

1990, Columbia Tristar Home Video, approx. 92 minutes.

A commercial movie detailing the adventures of an orphaned grizzly cub and adult male grizzly. The setting is British Columbia, Canada in the late 1800's.

Bears and Man

1991, National Film Board of Canada, approx. 26 minutes.

A description of the Parks Canada bear-management program in Canada's mountain national parks.

The Biggest Bears

1994, Sky River Films, approx. 22 minutes.

An excellent video for children (ages 2 to 8). This film captured the "Best Children's Program" category at the 17th Annual International Wildlife Film Festival in 1994.

Ghost Bear

1994, BBC and 1995, PBS-WNET, approx. 60 minutes.

A good video about Kermode Bears - "white" American black bears.

Giant Bears of Kodiak Island

1994, National Geographic Video/Tristar Home Video, approx. 60 minutes.

An excellent treatise on the Kodiak brown bear and the current problems hindering its long-term survival on this island refuge.

The Great Bears of Alaska

Discovery Video Library

The Great Bears of North America

Busch Productions, approx. 55 minutes.

An in-depth look at the three bear species of North America. The film uses only scenes shot in the wild plus animation to illustrate the evolution of bears, bear physiology, etc.

The Great Bears of Yellowstone

Busch Productions, approx. 10 minutes.

A short film which was produced for use in the Yellowstone National Park Visitor Center.

Highlights include an explanation of the differences between grizzlies and black bears.

Grisan

1993, Gone Wild Video, approx. 50 minutes.

An excellent video was taped entirely on location in Denali, Katmai, Jasper and Yellowstone National Parks.

The Grizzlies

National Geographic Video/Vestron Video

Grizzly and Man: Uneasy Truce

1988, National Audubon Video/Vestron Video, approx. 60 minutes.

This video examines whether, in the long term, man is prepared to ensure policies of habitat protection, hunting restrictions, etc. which will allow the grizzly to survive, primarily in the continental United States.

Island of the Ghost Bear

Currently being shown on a number of PBS stations across North America.

This film follows a young "spirit bear" for several seasons. Known as the Kermode Bears, they are a rare white phase of the American black bear. They are found only off the coast of British Columbia, Canada.

Kindness Kills

1984, Lorne Greene's New Wilderness Inc./Prism Entertainment, approx. 30 minutes.

Using Banff National Park, Canada as the setting, this video highlights the problems created when bears become addicted to human handouts and garbage.

Living Among Ice Bears

1993, A Naturalist World - James Halfpenny, approx. 16 minutes.

This film highlights the management problems which occur when polar bears are stranded on shore waiting for freeze-up. A good film about bear management in the far north.

Polar Bear Alert

1982, National Geographic Video/Vestron Video, approx. 60 minutes.

This film examines the life of the polar bear plus its co-existence with the residents of Churchill, Manitoba, Canada who live part of each year with the bears in close proximity.

Save the Panda

1983, National Geographic Video/Vestron Video, approx. 60 minutes.

A detailed look at the extraordinary efforts being taken to save the Giant Panda from extinction in China and around the world.

Secrets of the Wild Panda

1994, National Geographic Video/Vestron Video, approx. 60 minutes.

An excellent film that reveals a great deal of previously unknown information about this endangered bear.

When Bears Go Fishing

Mother Nature Tales of Discovery Series

Created for children ages 4-12.

Also, another reminder that you can contribute to this page. I am sure my list of videos specifically about bears is not complete and welcome any additions you may be aware of.

Please send your information to [the editor](#).

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THE BEAR DEN

Book Shelf

Launched January 21, 1996

Last update October 20, 1996



The Bear Den Book Shelf is provided as a beginning source point for those interested in searching the readily available public literature to learn more about bears.

These listings, while relatively large in size and scope, are not to be considered as an exhaustive compendium of published books, reports, etc. specifically related to bears.

For those wishing to order any of the books listed from your local book dealer, the International Standard Book Number (ISBN) is provided when known. Also, don't hesitate to consult with your local librarian on the use of inter-library loans to get books not in their collection.

To suggest possible books and other written materials to be included, please contact Don Middleton, dmiddlet@portage.net.

Similarly, if you have any information to complete or correct the information I have provided about a particular book, please forward it to me.

Anderson, Tom. **Black Bear Seasons in the Wild**. Stillwater, Minnesota: Voyageur Press, 1992.

ISBN 0-89658-203-5

Excellent text and photographic treatise on the American black bear.

NEW Bass, Richard. **The Lost Grizzlies**. New York, New York: Houghton Mifflin, 1995.

ISBN 0-395-71759-0

This book details recent efforts to see if the grizzly is still present in Colorado.

Bauer, Erwin. Bear in Their World. New York: Outdoor Life Books, 1985.

ISBN 0-696-11094-6

An in-depth review of the black, brown/grizzly and the polar bear.

Brown, David. The Grizzly in the Southwest: Documentary of an Extinction. Norman, Oklahoma: University of Oklahoma Press, 1985.

ISBN 0-8061-1930-6

Brown, David and Murray, John. The Last Grizzly and Other Southwestern Bear Stories. University of Arizona Press, 1988.

ISBN 0-8165-1067-9

Brown, Gary. Great Bear Almanac. New York: Lyons and Burford Publishers, 1993.

ISBN 1-55821-210-8

NEW **Brown, Gary. Safe Travel in Bear Country. New York: Lyons and Burford Publishers, 1996.**

ISBN 1-55821-349-X

A great book for anyone wondering how to coexist with bears when camping, fishing, hiking and more.

Carey, Alan. In the Path of the Grizzly. Flagstaff, Arizona: Northland Press, 1986.

ISBN 0-87358-394-9 (softcover)

A photographic record of the grizzly is combined with the author's observations on the bear's behavior for a glimpse into the life of the grizzly.

Chadwick, D. H. "Grizz": of Men and the Great Bear. National Geographic 169(2): 182-213, 1986.

Clark, Tim and Casey, Denise (editors). **Tales of the Grizzly**. Homestead, Wyoming, 1992.

ISBN 0-943-972-14-0

A historical account of the grizzly bear in North America.

Craighead, Frank Jr. **Track of the Grizzly**. San Francisco: Sierra Club Books, 1979, 1982.

ISBN 0-87156-322-3

A seminal book describing the pioneering research project tracking bears in Yellowstone National Park.

NEW Craighead, John; Sumner, Jay; and Mitchell, John **The Grizzly Bears of Yellowstone: Their Ecology in the Yellowstone Ecosystem, 1959-1992**. Washington, D.C.: Island Press, 1995.

ISBN 1-55963-456-1 (cloth)

This book summarizes 35 years of grizzly bear research in Yellowstone by the Craighead's including hundreds of tables and charts.

Cramond, Mike. **Killer Bears**. Outdoor Life Books/ Charles Scribner's Sons: New York, 1981.

ISBN 0-684-17285-2 (hardcover)

A detailed investigative reporter-type book on a number of bear encounters.

Cramond, Mike. **Of Man and Bears**. Norman, Oklahoma: University of Oklahoma Press, 1986.

ISBN 0-8061-1948-9 (hardcover)

A follow-up to his earlier book with more emphasis on co-existing with bears.

Domico, Terry. **Bears of the World**. New York: Facts on File, 1988.

ISBN 0-8160-1536-8 (hardcover)

An authoratative text and photographically rich review of the eight bear species around the world.

Dufresne, Frank. **No Room for Bears: A Wilderness Writer's Experience with a Threatened Breed.** Anchorage, Alaska: Alaska Northwest Books, 1991

ISBN 0-88240-414-8

Fair, Jeff and Rogers, Lynn. **The Great American Bear.** Minocqua, Wisconsin: NorthWord Press, 1990.

ISBN 1-55971-079-9 (hardcover)

A superb review of the behaviour and biology of the American black bear.

Ford, Barbara. **Black Bear: The Spirit of the Wilderness.** Boston: Houghton Mifflin, 1981.

ISBN

A treatise on *Ursus americanus*, the American black bear.

Great Bear Foundation. **Field Guide to the Grizzly Bear.**

ISBN 0-912365-55-2

A review of the biology and behaviour of the grizzly plus practical tips when travelling in bear country.

Greenway, Theresa. **Amazing Bears.** Knopf Books, 1992

ISBN 0-679-82769-2

From the Eyewitness Juniors series (grades 1 to 5), this children's book describes the world's bears, including the panda.

Griffith, Joseph P. **Pandas.** New York, New York: Gallery Books, 1988.

ISBN 0-8317-6720-0

A pictorial gallery with some textual information.

Grumbine, R. Edward. **Ghost Bears: Exploring the Biodiversity Crisis.** Washington, D.C.: Island Press, 1992.

ISBN 1-55963-152-X

Herrero, Stephen. **Bear Attacks: their Causes and Avoidance.** New York: Lyons and Burford Publishers; Edmonton: Hurtig Publishers, 1985, 1988.

ISBN 0-88830-279-7 (softcover)

ISBN 0-941130-87-8 (hardcover)

The definitive book on the factors leading to bear encounters and strategies to avoid and/or survive them.

Herrero, Stephen, ed. 1972. **Bears - their Biology and Management. Proceedings of the Second International Conference on Bear Research and Management, University of Calgary, November 1970.** IUCN Publications new series no. 23.

ISBN

Hummel, M., editor. **Endangered Spaces: the Future for Canada's Wilderness.** Toronto: Key Porter Books, 1989.

ISBN

1-55013-101-X

A collection of twenty-one leading conservationists on what has happened and what we must do now to protect the wilderness.

Hummel, M., editor. **Protecting Canada's Endangered Spaces.** Toronto, Canada: Key Porter Books.

ISBN 1-55013-710-7

Hunt, Joni Phelps. Bears: A Global Look at Bears in the Wild.

ISBN 0-918303-31-1

An excellent source book on bears around the world. The target audience is elementary school students.

Jing, Zhu and Yangwen, Li. The Giant Panda. New York, New York: Van Nostrand Reinhold, 1981.

ISBN 0-442-20064-1

A highly pictorial look at the giant panda produced by two Chinese researchers.

Kaniut, Larry. Alaska Bear Tales. Anchorage: Alaska Northwest Books, 1983.

ISBN 0-88240-232-3

Kaniut, Larry. More Alaska Bear Tales. Anchorage: Alaska Northwest Books, 1989.

ISBN 0-88240-232-3

Kurten, Bjorn. The Cave Bear Story: Life and Death of a Vanished Animal. New York: Columbia University Press, 1976.

ISBN 0-231-04017-2

A review of the evolution of bears with particular emphasis on the extinct cave bear.

Larsen, Thor. The World of the Polar Bear. New York: Hamlyn Publishing Group, 1978.

ISBN 1-55521-416-9

An comprehensive look at polar bears including conservation efforts. This book was reprinted in 1989.

Lynch, Wayne. Bears: Monarchs of the Northern Wilderness. Vancouver: Greystone

Books, 1993.

ISBN 1-55054-009-2

An expansive and technically superb study through word and picture of the four bear species of the northern hemisphere.

 Lynch, Wayne. **Bears, Bears, Bears.** Willowdale, Ontario: Firefly Books, 1995.

ISBN 1-895565-72-3 (hardcover)

ISBN 1-895565-69-3 (softcover.)

Targeted for juvenile readers, this is an engaging guide to the eight bear species around the world. Adults will also enjoy it.

Mathews, Downs and Guravich, Dan. **Polar Bear Cubs.** Simon and Schuster Books for Young Readers, 1989.

ISBN

This is an good introduction to polar bears.

McCracken, Harold. **The Beast That Walks Like A Man.** New York, New York: Hanover House, 1955.

ISBN

McIntyre, Rick. **Grizzly Cub: Five Years in the Life of a Bear.** Anchorage, Alaska: Northwest Books, 1990.

ISBN 0-88240-373-7

This true story follows the development of a grizzly cub in pictures and words in Denali National Park, Alaska.

McNamee, Thomas. **The Grizzly Bear.** New York: Alfred A. Knopf/Viking Press, 1984, 1990.

ISBN 0-14-012812-3

Written using "a year in the life of" format with additional historical and research information.

Manford, Frederick. Lord Grizzly. Lincoln, Nebraska: Bison Books, University of Nebraska Press, 1964, 1983.

ISBN 0-8032-8118-8

Martinka, Clifford, and McArthur, Katherine (editors). Bears - their Biology and Management. Proceedings of the Fourth International Conference on Bear Research and Management, Kalispell, Montana, 1980.

ISBN

Mathews, Downs (editor). Polar Bear. San Francisco, California: Chronicle Books, 1993.

ISBN 0-8118-0204-3

A book full of excellent photographs by Dan Guravich.

Meslow, E.C., ed. 1983. Bears - their Biology and Management. Proceedings of the Fifth International Conference on Bear Research and Management, Madison, Wisconsin, February 1980.

ISBN

Milotte, Elma and Alfred. Toklat: the Story of an Alaskan Grizzly Bear. Anchorage, Alaska: Northwest Books, 1987.

ISBN 0-88240-325-7

The true story of a mother grizzly and her three cubs living through the four seasons of the year 1940.

Murray, John. The Great Bear: Contemporary Writings on the Grizzly. Anchorage, Alaska: Alaska Northwest Books, 1992.

ISBN 0-88240-392-3

A collection of excellent essays.

 Murray, John. **Grizzly Bears: An Illustrated Field Guide.** Boulder, Colorado: Roberts Rinehart Publishers, 1995.

ISBN 1-57098-029-2

An excellent book on the biology of the grizzly and how to act when you enter the backcountry.

Olsen, Jack. **Night of the Grizzlies.** New York: Signet Books, 1969.

ISBN

A narrative description of the events surrounding the death of two different women by two different bears in Glacier National Park, Montana in 1967.

 Ovsyanikov, Nikita. **Polar Bears: Living with the White Bear.** Voyageur Press, 1996.

ISBN 1-55192-030-1

An excellent new book about all aspects of the polar bear.

Peacock, Doug. **Grizzly Years: in Search of the American Wilderness.** New York: Henry Holt and Company, 1990.

ISBN 0-8050-0448-3 (hardcover)


The author's poignant personal discovery of self is intertwined with his twenty-year study of the grizzly.

Pelton, Mike., et al., eds. 1976. **Bears - their Biology and Management. Proceedings of the Third International Conference on Bear Research and Management, Binghamton, New York, and Moscow, Russia, June 1974.** IUCN Publications new series no. 40.

ISBN

Perkins, James. **Old Mose: King of the Grizzlies.** Manitou Springs: Colorado: Herodotus Press, 1991.

ISBN

 Peterson, David. **Ghost Grizzlies: Does the Great Bear Still Haunt Colorado?** Henry Holt, New York; 1995.

ISBN

Rockwell, David. **Giving Voice to Bear: North American Indian, Myth, Rituals and Images of the Bear.** Niwot, Colorado: Roberts Rinehart Publishers, 1991.

ISBN 1-879373-48-3 (paper)

ISBN 0-911797-97-1 (hardcover)

A comprehensive review of the relationship between aboriginal North Americans and bears.

Rogers, Barbara Radcliffe. **Giant Pandas.** New York, New York: Mallard Press, 1990.

ISBN 0-792-45242-9

 An excellent book on all aspects of giant pandas including their evolution and present-day conservation efforts.

Roots, Clive. **The Bamboo Bears.** Winnipeg: Hyperion Press, 1989.

ISBN 0-920534-61-9

An excellent book about the panda bear.

 Rosing, Norbert. **The World of the Polar Bear.** Willowdale, Ontario: Firefly Books, 1996.

ISBN: 1-55209-068-X

An excellent book about all aspects of this northern bear.

Russell, Andy. **Grizzly Country.** New York: Lyons and Burford, 1967, 1985.

 ISBN 0-394-42736-X

A diverse perspective on the grizzly bear.

Russell, Charles. **Spirit Bear: Encounters with the White Bear of the Western Rainforest**, Toronto: Key Porter Books, 1994.

ISBN

A unique look at the Kermode bear, a rare white phase of the black bear found on two islands, Princess Royal Island and Swindle Island, both located of the coast of British Columbia, Canada.

Savage, Candace. **Grizzly Bears**. Vancouver, British Columbia: Douglas and McIntyre, 1990.

ISBN 0-88894-678-3 (hardcover)

Both a historical and modern perspective on the grizzly bear interspersed with outstanding bear photographs taken by a variety of wildlife photographers.

Schaller, George. **The Last Panda**.

ISBN 0-226-73628-8

With only a thousand or so giant pandas remaining in the wild, the author documents the ongoing saga to save these magnificent bears in the Wolong and Tangjiahe panda reserves.

Schaller, George; Jinchu, Hu; Wenshi, Pan; and Jing, Zhu. **The Giant Pandas of Wolong**. Chicago: University of Chicago Press, 1985.

ISBN 0-226-73643-1

An in-depth scientific study of the giant pandas who exist within China's largest panda reserve.

Schullery, Paul. **The Bears of Yellowstone**. Worland, Wyoming: High Plains Publishing Company/The Yellowstone Association, 1992.

ISBN 0-934948-00-3 (papercover) ISBN 0-934948-01-1 (hardcover)

A modern account of current conservation efforts in Yellowstone National Park.

Shepard, Paul and Sanders, Barry **The Sacred Paw: the Bear in Nature, Myth and Literature.** New York: Viking Penguin Press, 1985.

ISBN 0-14-019454-1

A discussion of the bear in nature, legend, myth, and literature.

Sterling, Ian (editor). **Bears: Majestic Creatures of the Wild** Emmaus, Pennsylvania: Rodale Press, 1993

ISBN

A comprehensive reference book with contributions from a number of bear researchers.

Sterling, Ian (editor). **Polar Bears** Ann Arbor, Michigan: University of Michigan Press, 1990.

ISBN 0-472-08108-X

 Waldrip, R. Leland. **The Last Grizzly.** Pittsburgh, Pennsylvania: Dorrance Publishing, 1995.

ISBN 0-8059-3710-2

This book details the plight of a grizzly bear that travels from the fires of Yellowstone Park into southwestern Colorado.

Walter, Tom and Aumiller, Larry. **River of Bears.** Stillwater, Wyoming: Voyageur Press, 1993.

ISBN


A detailed study of the reknowned McNeil River Brown Bear Sanctuary in Alaska. The text is richly interspersed with excellent photography.

Ward, Kennan. **Grizzlies in the Wild.** Minocqua, Wisconsin: Northword Press, 1994.

ISBN 1-55971-425-5

Wolfe, Art. **Bears: - their Life and Behaviour.** Crown Publishing Group, 1992

ISBN 0-517-58498-0

 Wood, Daniel. **Bears**. North Vancouver, British Columbia: Smithbooks/Whitecap Books, 1995.

ISBN 0-88665-333-9

Zager, Paul, ed. 1985. **Bears - their Biology and Management. Proceedings of the Sixth International Conference on Bear Research and Management**. Grand Canyon, Arizona, February, 1983.

ISBN

Zager, Paul, ed. 1987. **Bears - their Biology and Management. Proceedings of the Seventh International Conference on Bear Research and Management**, Williamsburg, Virginia, and Plitvice Lakes, Yugoslavia, February and March, 1987.

ISBN

Also, another reminder that you can contribute to this page by sending information about any book dealing specifically with bears to Don Middleton, dmiddlet@portage.net.

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NAME: _____

GRIZZLY BEARS

STUDENT WORKBOOK





KNOWLEDGE CHECK

DIRECTIONS:

Write all the things you know about grizzly bears before you start your booklet.
After you finish the unit, compare your before and after facts.

BEFORE THE FACTS...

WHAT QUESTIONS DO YOU HAVE ABOUT GRIZZLY BEARS? WRITE THEM BELOW



Bear Words

WRITE DOWN NEW AND INTERESTING VOCABULARY WORDS FROM YOUR STUDY OF BEARS.

Word

What I think the word means

Pick 3 words from your list above and write a definition of this word using a dictionary.

Word

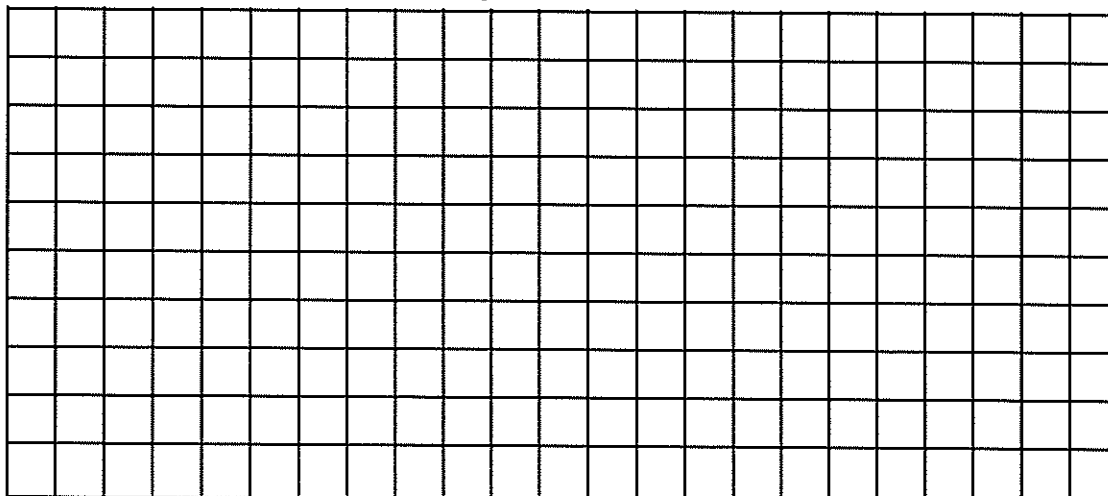
Definition

1) _____

2) _____

3) _____

Make a word search puzzle using your new words from above. You may use the puzzle grid below.

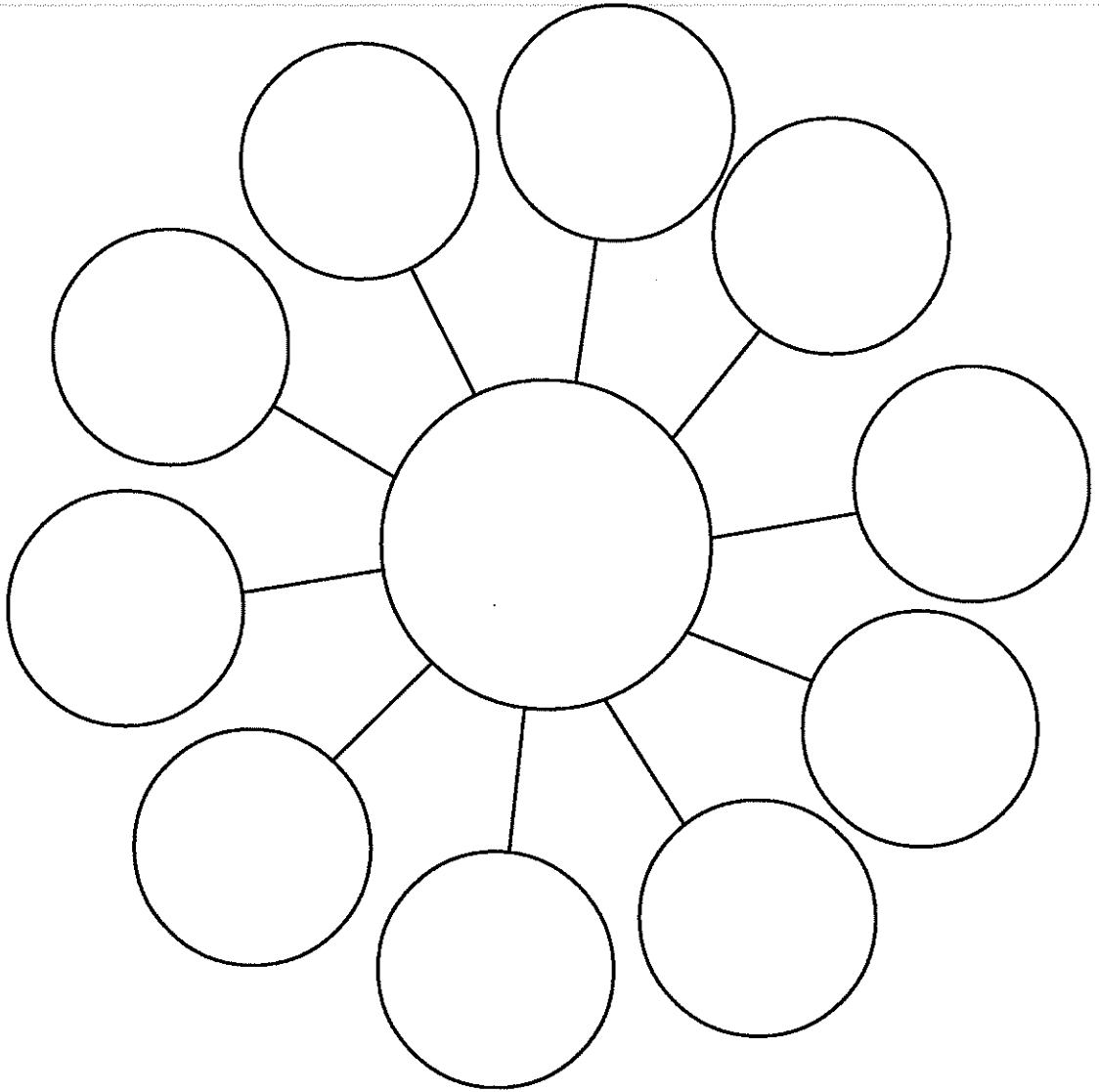


WORDS TO FIND:



Bear Word Web

WRITE BEAR IN THE CENTER OF THE WEB. IN THE CIRCLES AROUND IT WRITE WORDS YOU THINK OF THAT ARE ASSOCIATED WITH BEARS.



Bear Images

What are some movies or books you have seen that have bears in them?

After hearing or reading bear tales from other perspectives, how was the bear depicted in these stories? List five words describing how the bear was depicted in each story.

1.

2.

3.

4.

5.

What images that you wrote above are based on actual fact?

What images that you wrote above are based on fiction?

Take a survey of your family, friends and students about how they feel about bears. Ask them why they feel that way. Be sure to record all of your responses on the back of this page.





ROLE OF THE BEAR IN MYTHOLOGY AND LEGENDS

ACTIVITY 1:

Locate all the areas mentioned in the reading entitled "Mythology, Legends, and Bears" on a map or maps. Once you have found the location, name two boundaries surrounding the location.

ACTIVITY 2:

Create your *own version* of how the bear constellations were created.

* continue on a separate sheet of paper

ACTIVITY 3:

Find the constellations Ursa Major and Ursa Minor on a star chart and then find them in the night sky.

ACTIVITY 4:

Draw a picture of the two constellations.

BONUS ACTIVITY 5:

Read some other Greek, Roman, or Native American myths or legends that tell about bears or other animals. Write a short report and share the report with you class recounting the myth or legend you read.



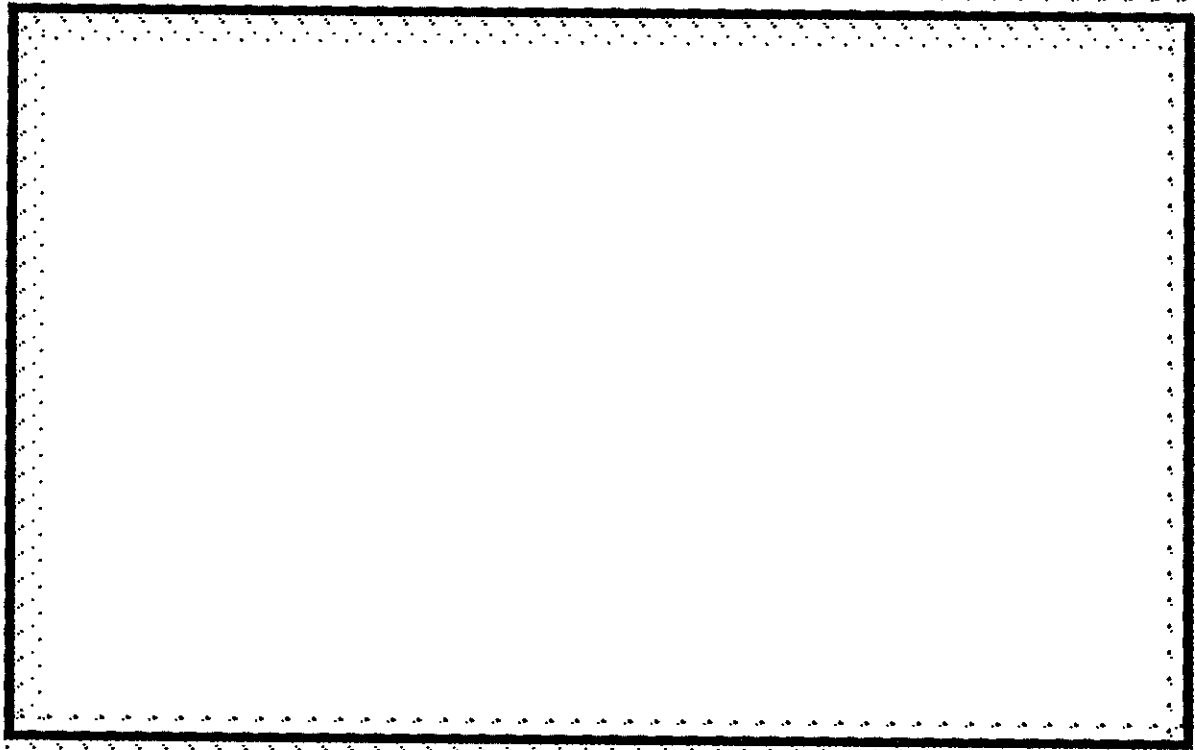
A TALE OF A TEDDY!

Back in 1902 President Theodore Roosevelt was in Mississippi to resolve a boundary dispute between that state and Louisiana. Since the President was an avid hunter, he went on a hunting trip after business was taken care of.

He and his hunting party encountered a bear cub, but he refused to shoot it, even though his hunting companions encouraged him to do so.

Newspaper reporters were quick to print a story about the incident... Morris Michton, a New York toymaker, read the article in the newspaper. It gave him an idea for a new toy — a stuffed bear. The prototype sold immediately. He made another bear, then wrote to the president asking for permission to use his nickname, “Teddy,” to sell the bear. The President gave permission to use his name, and a new toy was born! Michton began manufacturing and selling the “Teddy” Bears. They were very popular. Michton’s toy company eventually came to be known as the Ideal Toy Company. Teddy bears remain one of the most popular toys ever invented.

Draw a picture of your favorite Teddy Bear.



Go home and write down all your toys that are manufactured by the Ideal Toy Company.



TIMELINE OF A GRIZZLY BEAR'S YEAR

USE THE TIMELINE BELOW TO LIST WHAT HAPPENS TO THE BEAR DURING ONE YEAR.

MARCH	_____
APRIL	_____
MAY	_____
JUNE	_____
JULY	_____
AUGUST	_____
SEPTEMBER	_____
OCTOBER	_____
NOVEMBER	_____
DECEMBER	_____
JANUARY	_____
FEBRUARY	_____
MARCH	_____



Life Cycle of a Bear

Number in order 1-11 the sequence of the life of the bear. Cut out the strips and tape them to your timeline on the previous page.

- As the weather grew warmer, his appetite increased. The plants were growing quickly, providing him with many choices in his diet.
- In late spring, the female and male went through a friendly courtship, traveling and feeding together in a peaceful manner.
- These plants were the first food the grizzly had eaten in over four months. For the first few weeks in early spring, he traveled the slowly warming valleys, eating the small tender spring plants.
- Over the summer the boar wandered, digging roots, eating berries, and feasting happily on insects of many kinds.
- As the air grew chillier and the days became shorter he felt an insistent urge to find a den for the coming winter.
- The large male grizzly, or boar, slowly emerged from his den dug into the hillside. Bits of dry grass and evergreen needles stuck to his fur.

On a north facing slope, about one-fourth mile from his old den, he found the right place. He used his long, sharp claws and strong shoulder muscles to dig out a huge amount of dirt from the hillside.
- One day in late December two tiny cubs were born. The mother laid peacefully in her den, nursing her blind and nearly hairless cubs, while winter raged outside.
- Throughout the last part of summer, the bear steadily gained weight, continually adding to the thick layer of fat under his thick brownish-yellow coat.
- During the five months the mother was in the den, she did not eat, urinate or defecate.
- It was early spring again. The mother with the new cubs emerged from her den a few weeks later.



Seasonal Art

Draw your bear and what it is doing in each season

SPRING

SUMMER

FALL

WINTER



Where have the bears gone?

While studying the overhead map on Grizzly Bear Populations answer the following questions:

Prior to 1800, what country could bears be found?

Name three states that used to have bears prior to 1800?

What state can we find the most grizzly bears?

Do we have grizzly bears in Washington State?

Why do you think we still can find grizzly bears in Montana?

List three reasons why the bear population has declined.

1.

2.

3.

What is one thing you can do to help bear populations?



LOCATION MAPS OF THE EIGHT BEAR SPECIES

LIVES HERE



LIVES HERE



LOCATION MAPS OF THE EIGHT BEAR SPECIES

LIVES HERE



LIVES HERE



LOCATION MAPS OF THE EIGHT BEAR SPECIES

LIVES HERE



LIVES HERE



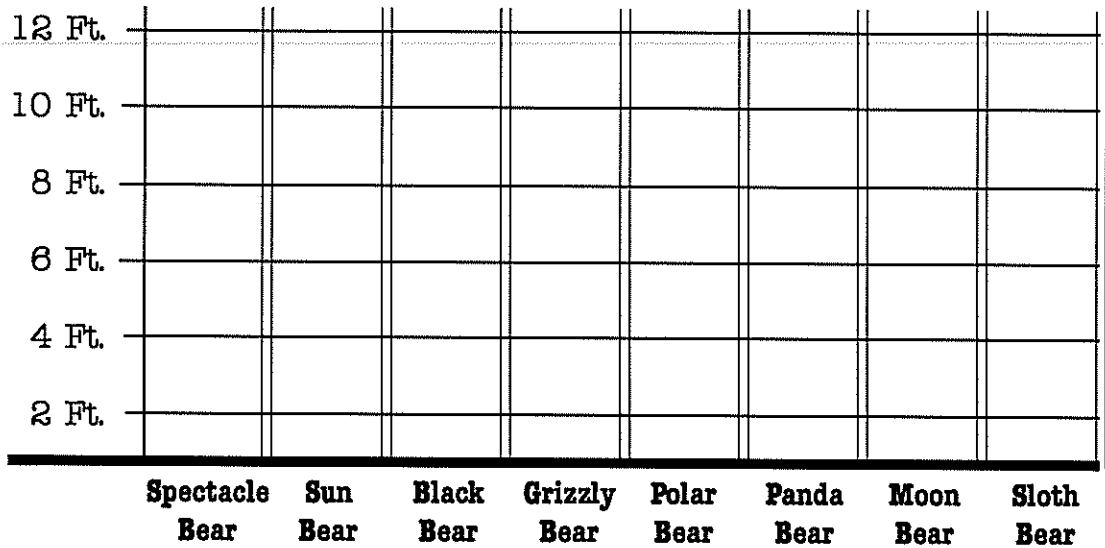
COLOR AND LABEL THE LOCATIONS OF THE GRIZZLY BEAR AND ITS CLOSE RELATIVES



HOW DOES THE BEAR MEASURE UP?

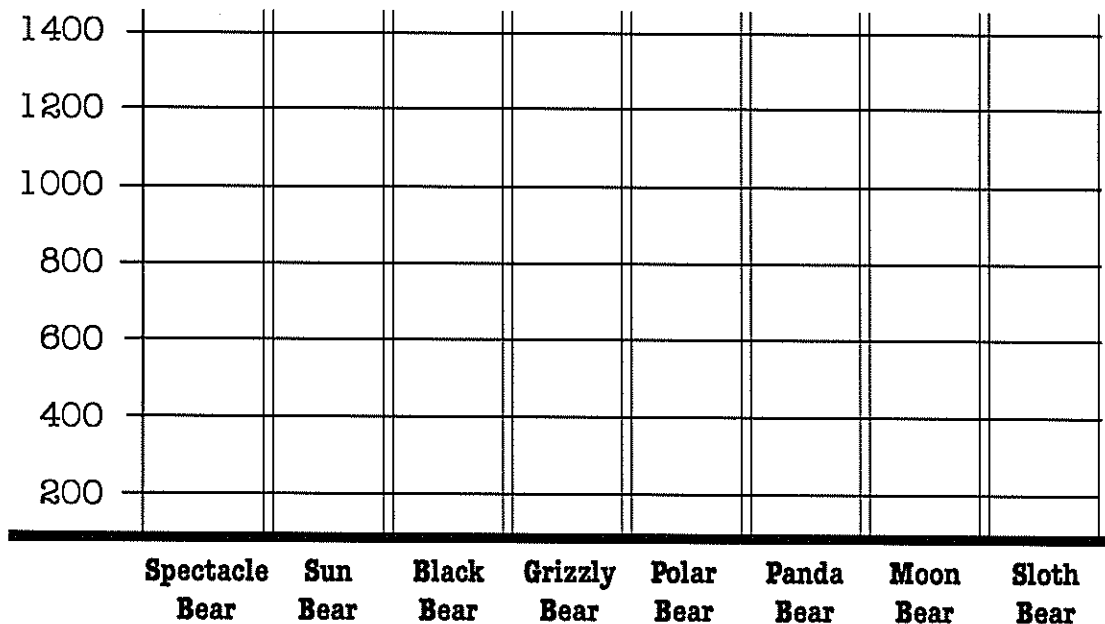
DIRECTIONS:

Use the resources available to locate the length of the eight bear species. Place their measurement on the graph.



DIRECTIONS:

Find the weight of the eight bear species and graph them accordingly.



How Does the Bear Measure Up? (part II)

REFERRING TO YOUR GRAPHS ON THE PREVIOUS PAGE, ANSWER THE FOLLOWING QUESTIONS:

CIRCLE THE BEST ADJECTIVE:

THE SPECTACLED BEAR IS SHORTER OR TALLER THAN THE BLACK BEAR:

THE PANDA BEAR IS HEAVIER OR LIGHTER THAN THE BLACK BEAR!

CREATE YOUR OWN SENTENCE USING ONE OF THE FOLLOWING ADJECTIVES: TALLER, SHORTER, HEAVIER, OR LIGHTER:

WHICH IS THE SHORTEST BEAR?

HOW TALL IS THE TALLEST BEAR?

WHAT 2 ANIMALS ARE CLOSEST IN HEIGHT?

WHAT IS THE HEAVIEST BEAR?

WHAT BEAR ARE YOU CLOSEST IN HEIGHT?

WHAT BEAR ARE YOU CLOSEST IN WEIGHT?

USING THE BEAR MEASUREMENT POST:

HOW TALL ARE YOU?

WHO ARE YOU MOST SIMILAR TO IN HEIGHT?



Build a Bear

FILL IN THE BLANKS USING THE VOCABULARY WORDS FROM BELOW:

BEARS HAVE SHORT STUBBY _ _ _ _ .

BEARS HAVE POWERFUL _ _ _ _ . SOME BEARS CAN RUN AS FAST AS A _ _ _ _ .

_ _ _ _ BEARS FACE HAS A STRAIGHT FACE.

BEARS HAVE SMALL _ _ _ _ BUT THEIR HEARING IS VERY GOOD.

BEARS HAVE STRONG JAWS AND SHARP _ _ _ _ .

_ _ _ _ BEAR'S FACE IS DISH SHAPED.

BEARS HAVE LONG, SHARP _ _ _ _ , WHICH ARE GOOD FOR _ _ _ _ AND SCRATCHING.

BEARS HAVE A KEEN SENSE OF _ _ _ _ . THEIR _ _ _ _ ARE VERY SENSITIVE.

GRIZZLY BEARS HAVE A PROMINENT _ _ _ _ ON SHOULDERS.

VOCABULARY WORDS:

TAILS

GRIZZLY

DIGGING

LEGS

EARS

SMELL

HORSE

TEETH

NOSES

BLACK

CLAWS

HUMP



COMPARE AND CONTRAST

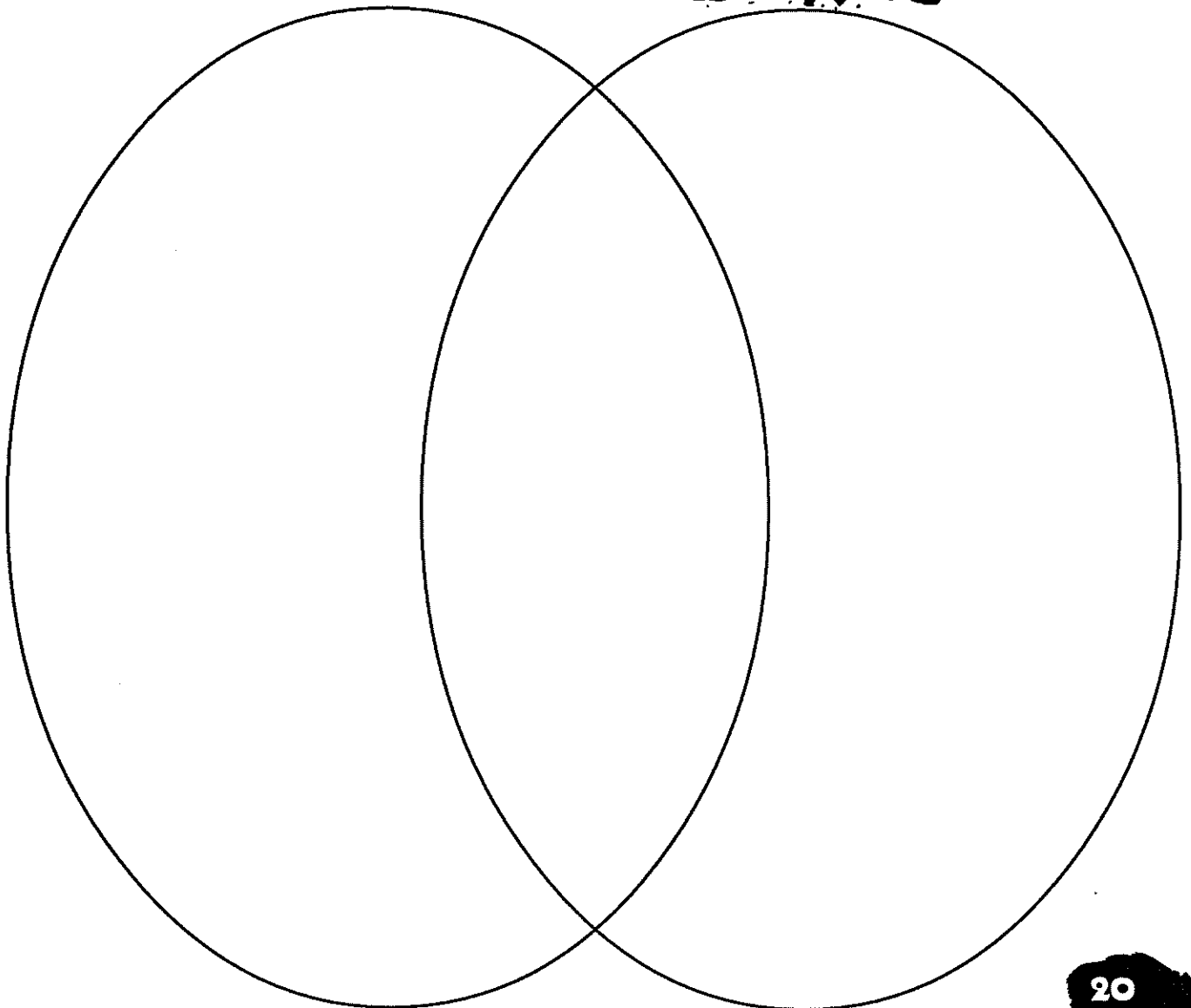
Grizzly Bears and Black Bears have similarities and differences in personality, appearance, and behavior. There are also some similarities and differences between wolf pack behavior and human family behavior. Write down all the things you know about the grizzly bear personality, appearance, behavior, and communication. Do the same for black bears. In the section where both overlap list the things that are much the same for both bears.

GRIZZLY

BEARS

BLACK

BEARS

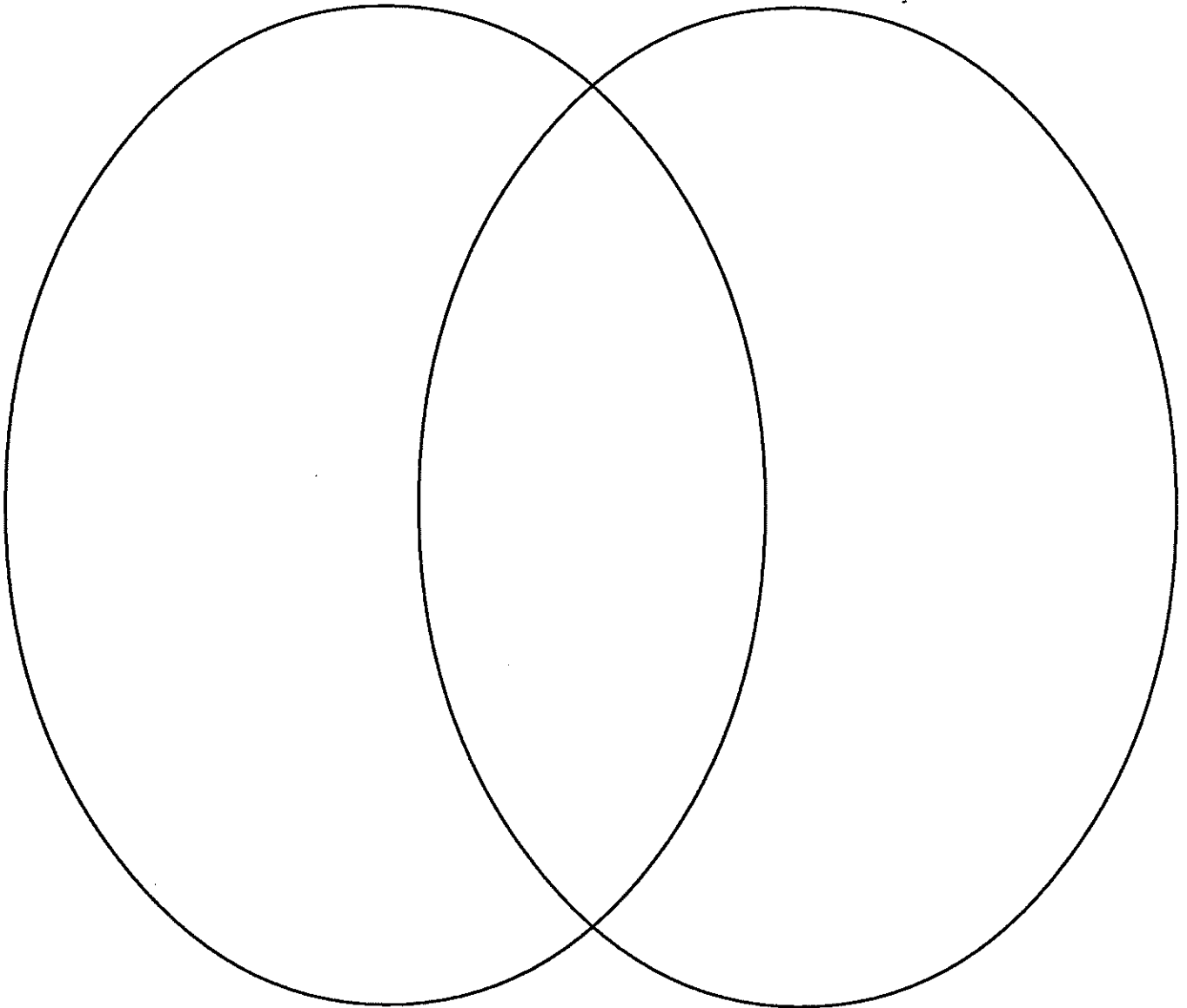


COMPARE AND CONTRAST

Bears and humans have similarities and differences in personality, appearance, and behavior. Write down all the things you know about bear personality, appearance, behavior, and communication. Do the same for humans. In the section where both overlap list the things that are much the same for both bears and humans.

BEARS

HUMANS



Retell the Article

READ "YOUR HEALTH AND BEAR RESEARCH" ON THE NEXT PAGE. IN THE CENTER SQUARE BELOW, TELL WHAT THE MAIN TOPIC OF THE ARTICLE IS ABOUT. TRY TO USE ONLY ONE OR TWO WORDS.

IN THE BOXES AROUND THE CENTER, TELL WHAT PARTS THE ARTICLE IS DIVIDED INTO. TELL TWO OF THE MOST IMPORTANT IDEAS IN EACH PART.

MAIN IDEA

1.

2.

TOPIC

MAIN IDEA

1.

2.

MAIN IDEA

1.

2.

MAIN IDEA

1.

2.

YOUR HEALTH AND BEAR RESEARCH

Researchers are fascinated by the ways a bear's body functions during hibernation. Black bears are being studied in research stations to learn more about how they can help humans. Since black bears are more plentiful and are easier to work with, scientists prefer using them rather than grizzlies.

Bear research has already produced one substance that helps humans - ursodeoxycholic acid. This acid is found in the bile juice of hibernating bears. The acid is now used to dissolve cholesterol gall stones in humans. Ursodeoxycholic acid is being made synthetically in the lab so that a larger amount is available to doctors without having to extract it from live bears.

1. KIDNEYS

Humans kidneys serve as blood scrubbers - filtering out poisonous wastes in the body, one of which is urea. When kidneys stop working correctly due to disease, these toxins can build up, causing illness and death. People with kidney diseases must undergo dialysis, or artificial cleansing of the blood, usually three times a week.

Bears in hibernation do not urinate to get rid of the filtered-out toxins, like urea. They burn fat, rather than protein during their long sleep. What little urea produced from the small amount of protein being burned up is apparently recycled through the body.

With this knowledge, scientists have developed a special diet for kidney patients. The diet contains low amounts of water and small amounts of protein. On this diet, kidney disease patients find they can go as long as ten days between dialysis treatments.

2. OSTEOPOROSIS AND OTHER BONE DISEASE

In order to keep your bones solid and strong, you must exercise. People who are inactive for long periods of time slowly lose not only muscle mass, but also experience a loss of bone mass. The bones become softer and weaker. In addition, many older people, especially women, suffer from a disease called osteoporosis, which causes the bones to become less dense and very brittle and easy to break.

While bears hibernate they are inactive for four to seven months, yet they come out of the den with no loss of bone or muscle mass - in fact many times their bone mass and muscle mass grows while hibernating!



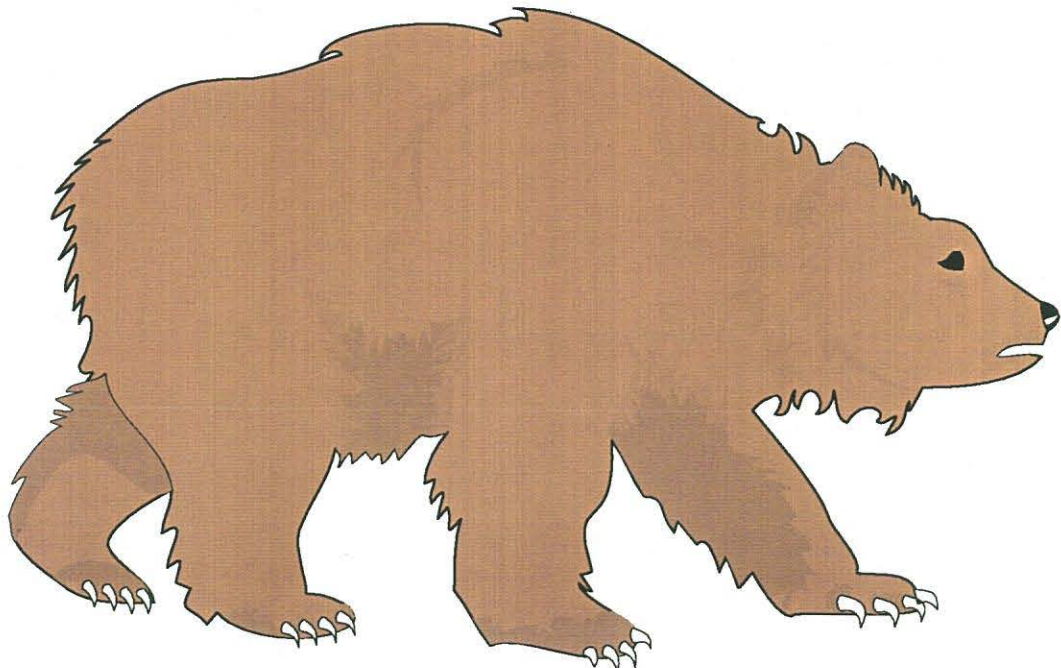
Scientists are examining bear blood carefully in an effort to find a new substance which allows the bear to recycle available calcium and phosphorus into healthy bone. They know that the urea available in the body is being recycled into proteins which build strong bones and muscles. Once they find the link between the processes, scientists may be able to find a cure for bone disease. In addition, their findings may help astronauts from suffering bone and muscle loss caused by long periods in low gravity environments.

3. CARDIOVASCULAR DISEASE

Scientists have found a link between a high fat diet and heart and cardiovascular diseases in humans. Bears eat huge amounts of fat and burn fat during hibernation, yet they have never been found to have cholesterol buildup in their blood, and don't suffer from hardening of the arteries. Scientists are trying to find out why in order to help people who suffer from cardiovascular disease.

4. OBESITY AND WEIGHT LOSS PROBLEMS

Bears eat tremendous amounts of food in the summer and fall to develop layers of fat in preparation for hibernation. While sleeping, their bodies metabolizes (or burns) this fat for energy and they lose 20 to 27% of their body fat before coming out again in the spring. Scientists are looking for a hormone or another substance which controls this cycle of feeding and fasting in hopes they can help people who are obese or suffer chronic weight loss problems.



Retell the Article

READ "BEAR DREAMS...HUMAN DREAMS" IN THE EVERYWHERE BEAR.

IN THE CENTER, TELL WHAT THE MAIN TOPIC OF THE ARTICLE IS ABOUT. TRY TO ONLY USE ONE OR TWO WORDS.

IN THE BOXES AROUND THE CENTER, TELL WHAT PARTS THE ARTICLE IS DIVIDED INTO. TELL TWO OF THE MOST IMPORTANT IDEAS IN EACH PART.

MAIN IDEA

1.

2.

TOPIC

MAIN IDEA

1.

2.

MAIN IDEA

1.

2.

MAIN IDEA

1.

2.

HOW NOT TO BECOME A BEAR'S LUNCH:

1. Store food properly - bear proof containers should be suspended high up between two trees.
2. Store all food well away from sleeping site.
3. No bedtime snacks in your tent - leave all food items, including candy, gum, and toothpaste, out of your tent.
4. Pay attention to bear warning signs in National Parks - don't go into areas where bear populations are high.
5. Pack out all garbage - garbage eating bears become habituated bears and become dangerous bears.
6. When hiking in bear country make noise by talking and whistling. This will warn bears ahead of your presence and give bears a chance to move peacefully away.
7. Pay attention - look for scat, tracks, and tree markings. If these signs are seen, you are in a bear's territory and you may want to choose another route.
8. If you see a bear, keep your distance - the closer you get to a bear the more threatened he or she may feel.
9. If you come near a bear with a food supply, act submissive and back away.



Chow Down

DESIGN A NORMAL MENU OF FOOD THAT YOU WOULD EAT IN ONE DAY (BREAKFAST, LUNCH AND DINNER AT MCDONALDS. BE SURE TO INCLUDE CALORIES FROM THE FACT SHEET.

Breakfast		Lunch		Dinner	
food items	calories	food items	calories	food items	calories
total calories=		total calories=		total calories=	

total calories for a day =

NOW DESIGN A MENU THAT WILL CONSUME AT LEAST 20,000.

Breakfast		Lunch		Dinner	
food items	calories	food items	calories	food items	calories
total calories=		total calories=		total calories=	

total calories for a day =

***CONTINUE ON BACK PAGE IF YOU NEED MORE ROOM**

What is the difference in calories between what you eat a day and a bear does?



MAC ATTACK

HYPERPHAGIA...

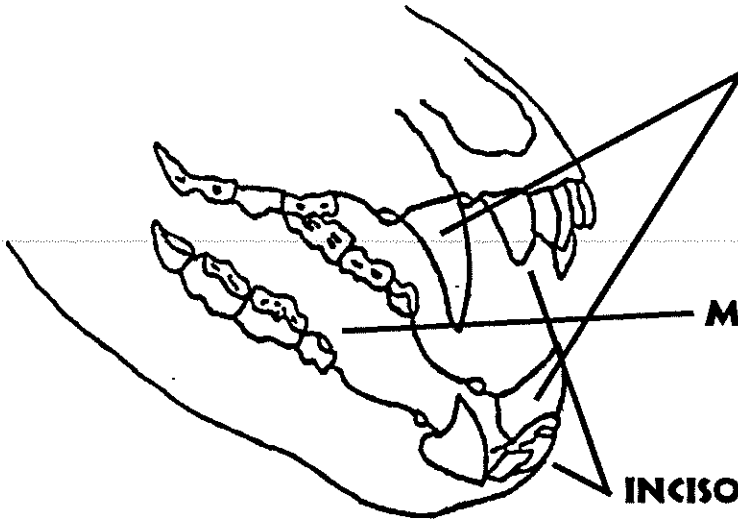
is a time when bears eat a lot to get enough fat for denning. A big grizzly can eat up to 36,000 calories a day. A Big Mac is 550 calories. How many Big Macs would a bear have to eat in one day to get enough calories?

The bear will also urinate up to four gallons a day to get rid of as much waste product as possible before entering the den.



JAWS

GRIZZLY JAW STRUCTURE AND TEETH



CANINE (kay-nine)

Used for catching and killing prey. Also used for ripping meat from carcass.

MOLARS (mow-lers)

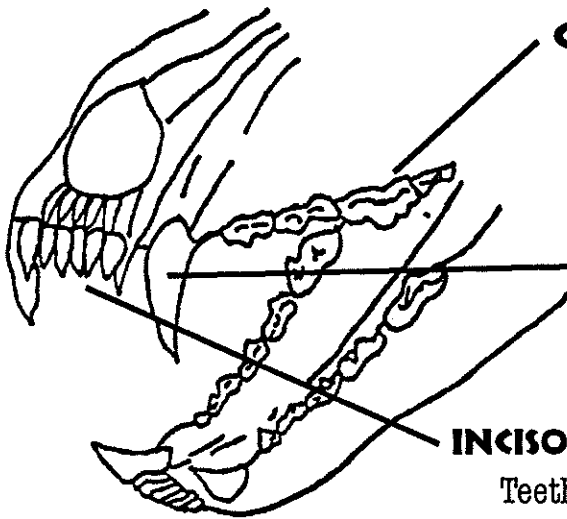
Used for smashing and grinding plant food.

INCISORS (in-size-ors)

Used for catching and killing prey. Also used for ripping meat from carcass.

How are your teeth the same or different from wolves and bears?

WOLF JAW STRUCTURE AND TEETH



CARNASSIAL (kar-nas-ee-al)

Used for chewing into smaller pieces for swallowing. How are these different from the bear's molars?

CANINE (kay-nine)

Teeth used to grab and hold onto prey.

INCISORS (in-size-ors)

Teeth used to pick meat off bones. Where are your incisors? What do you use them for?

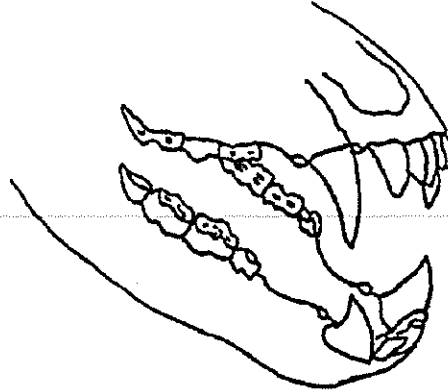


Color my teeth

COLOR MY MOLARS GREEN
COLOR MY INCISORS BLUE

COLOR MY CANINES ORANGE
COLOR MY CARNASSIALS RED

BEAR JAW

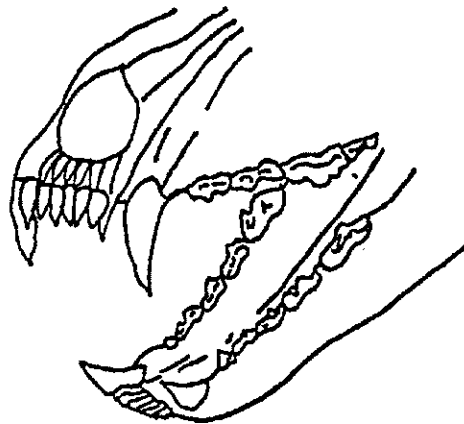


With my molars and canines I eat both _____ and _____.

I'm called a(n)

Circle the best answer: herbivore, carnivore, omnivore

WOLF JAW

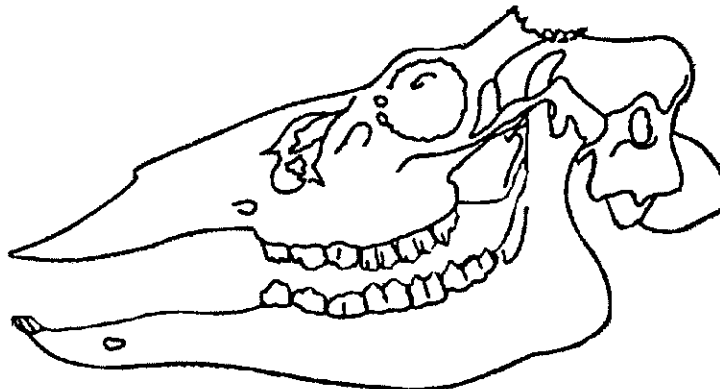


With my sharp carnassials I eat mostly _____.

I'm called a(n)

Circle the best answer: herbivore, carnivore, omnivore

DEER JAW







With my molars I eat mostly _____

I'm called a(n)

Circle the best answer: herbivore, carnivore, omnivore

DIFFERENCE BETWEEN GRIZZLY BEAR AND BLACK BEAR TRACKS

NOTES TO CONSIDER:

-  Less arc in toes compared to the black bear.
-  Toes are closer together compared to the black bear.
-  Grizzly bears have longer claws compared to the black bear.
-  Draw a line from the lowest point of the outside toe (1), through the highest point on the front edge of the bear foot pad (2), and to the inside toe (3). If it is a grizzly bear the inside toe will be above the line. If it is a black bear the inside toe print will be below the line.



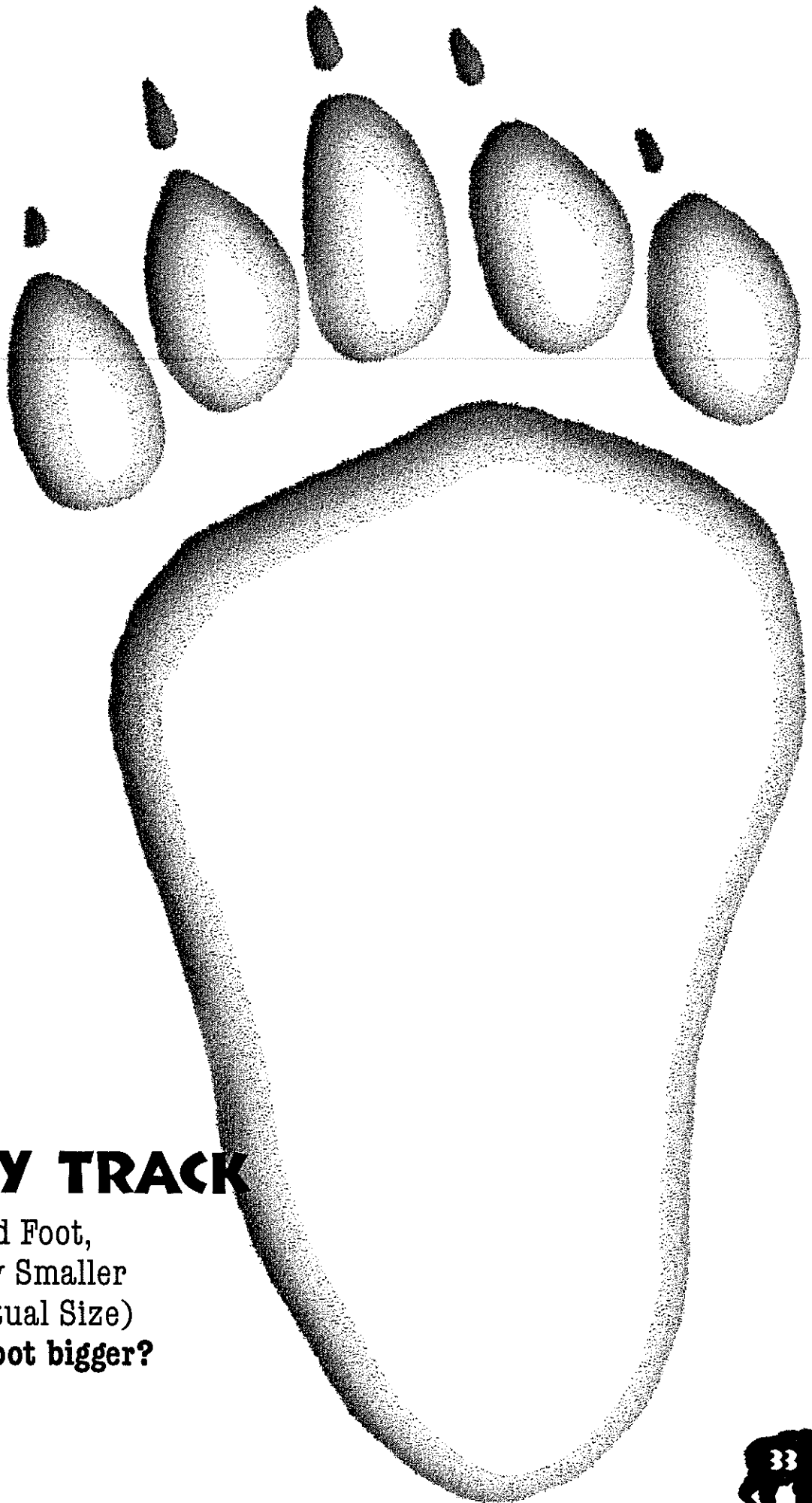
**GRIZZLY
TRACK**

left front



**BLACK BEAR
TRACK**

left front



GRIZZLY TRACK

(Hind Foot,
Slightly Smaller
than Actual Size)
Is your foot bigger?



BEAR TRACKS

BLACK BEAR

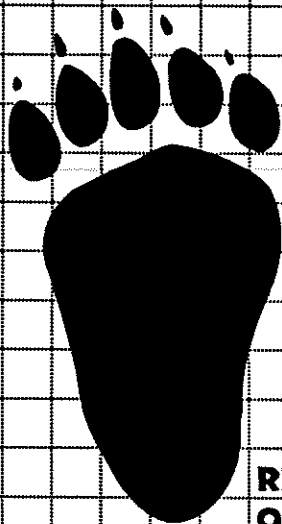


REAR
OR HIND

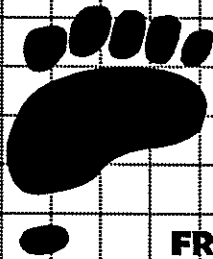


FRONT

GRIZZLY BEAR

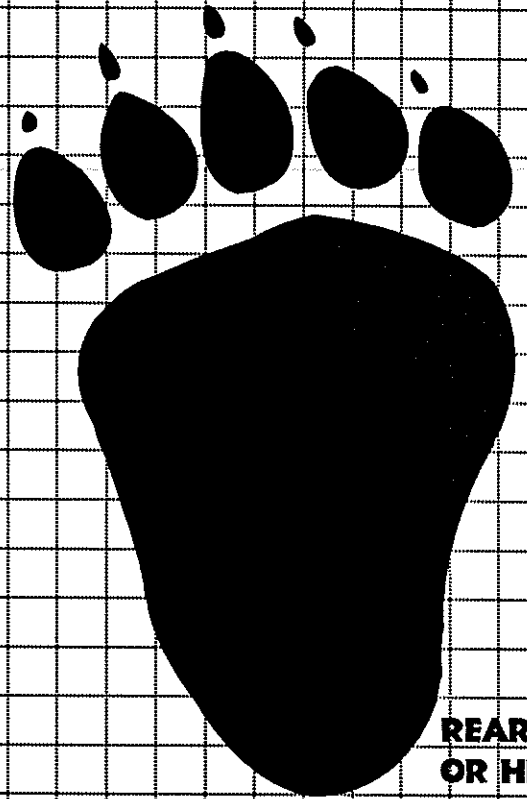


REAR
OR HIND

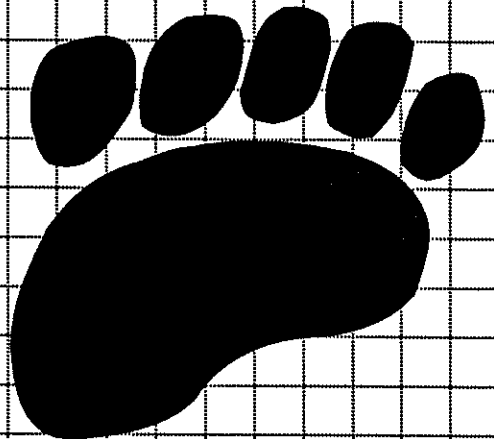


FRONT

ALASKA BROWN BEAR



REAR
OR HIND






FRONT

Black Bear Front.....	_____	inches
Black Bear Rear.....	_____	inches
Grizzly Bear Front.....	_____	inches
Grizzly Bear Rear.....	_____	inches
Alaska Brown Bear Front	_____	inches
Alaska Brown Bear Rear	_____	inches





EACH LINE REPRESENTS ONE INCH




THE BEAR TRACK FACTS



-  Bears appear “pigeon-toed” when walking.
-  In a real bear track, the heel pad of the front foot usually doesn't show.
-  A human's little toe is on the outside of the foot.
A bear's smallest toes are on the inside of the foot.


THINGS TO REMEMBER WHEN LOOKING AT BEAR TRACKS


-  A grizzly front track will show claw marks farther from the pad prints than a black bear.
-  Grizzly toe pad prints sometimes appear like they are touching each other.
-  A young grizzly track may look like the black bears track.
-  Tracks may appear larger than they really are due to the type of soil or snow and the age of the track.


QUESTIONS:

-  What is the difference in the front foot track length of the grizzly bear and the black bear? Between a grizzly and the Alaska brown bear?

-  Measure the length of your bare foot print. _____
-  What is the difference between your foot print and a black bear?

-  What is the size difference between your foot print and a grizzly?

-  Compare the width of a grizzly and a black bear front foot.

-  Compare the width of your foot and a grizzly's rear foot.







BEAR COMMUNICATION


Like wolves, bears use both vocalization and body language to communicate with other members of their species. Humans should be aware of the way bears communicate, as this awareness could prevent an attack.

STANDING ON HIND LEGS:





The bear is curious, and is trying to get a better idea of what is in front of him. This is not normally an aggressive posture.

STANDING ON ALL FOURS:




-  Turned sideways — signaling "I don't want to fight."
-  Lowering of head — a threat to another creature to back off.
-  Hair rising on back of neck — a sign he is warning the creature disturbing him.
-  Ears pinned back against head, flattened to the neck — sign of increasing aggressiveness.
-  Voice — whuffs or snorts — a strong warning of possible attack.
-  Voice — growls, jaw popping, teeth clicking — attack is **IMMINENT**.

 **Grizzlies kill fewer people than do lightning, bee stings, or snake bites.**

When in grizzly country, you are in danger of being attacked **IF** you do any of the following:

-  Try to get too close to a bear to photograph it
-  Get too close to a mother bear and cubs
-  Surprise a bear near his food cache
-  Surprise a female with cubs

Aggressive behavior is used by bears to:

-  Protect themselves and their cubs
-  Obtain or defend a food source
-  Repel other bears during breeding season to establish dominance

 **When grizzlies fight with each other, fights rarely end in death or serious injury.**

One bear will signal defeat and leave the scene.

BONUS: Find out what a habituated bear is. Why should it be more dangerous for people to hike in areas that are populated with habituated bears?



BEAR LANGUAGE

DIRECTIONS:

Check off each direction as you complete it.

1. Look up the word "bear" in your dictionary

2. In the blanks below, write three different definitions of "bear" used as a noun (n).

bear (n) 1. _____

bear (n) 2. _____

bear (n) 3. _____

3. On the lines below, use each "bear" (n) in an original sentence that indicates the meaning of each word.

1. _____

2. _____

3. _____

4. Now look for three different meanings of the word "bear" used as a verb (v). On each of the blanks below write a definition of "bear" used as a verb (v).

bear (v) 1. _____

bear (v) 2. _____

bear (v) 3. _____

5. On the lines below, use each "bear" (v) in an original sentence that indicates the meaning of each word.

1. _____

2. _____

3. _____

6. Place a check if you proof read your sentences to make sure each sentence begins with a capital, has words spelled correctly, and has a period at the end of the sentence.





DO YOU KNOW THE FACTS?

DIRECTIONS: Write five statements about bears.

#1 ITEMS TO PROVE:

Example: *Grizzly bear have their young in the fall.*

1. _____
2. _____
3. _____
4. _____
5. _____

DIRECTIONS: Look in reference books and other resources to find information that will prove or disprove your statement. Write the title of each reference used.

#2 RESOURCES USED: Example: *Bear book*

1. _____
2. _____
3. _____
4. _____
5. _____

DIRECTIONS: Write the correct and factual statements in complete sentences.

#3 THE REAL TRUTH:

Example: *Grizzly bears usually give birth to their cubs in February.*

1. _____

2. _____

3. _____

4. _____

5. _____





BEARS: TRUE OR FALSE

DIRECTIONS:

Read the statements below. If the statement is true, place a "T" in the box. If the statement is false, place a "F" in the box and rewrite the statement to make it true.

- Bears are not true hibernators.
- Bears are omnivorous.
- Grizzly bears are generally larger than black bears.
- Grizzly bears, or males, help take care of the cubs.
- Black bears are not always black.
- Grizzly bears are always brown.
- Grizzly bears have a good sense of smell.
- Grizzly bears live in the Northwestern part of North America.
- There are more black bears in North America than there are Grizzly bears.
- Black bears and grizzly bears require the same type of habitat.
- Grizzly bears like to be around people and development.
- Grizzly bears are plantigrade animals.
- There are more grizzly bears in Alaska than anywhere else.
- Brown bears and grizzly bears are the same species.



GRIZZLY



WORD FIND

DIRECTIONS:

Words can be found backwards, up, down, or diagonal.

T H E T H R E A T E N E D L I N G T O W A S H
 O N W G A T N X E T W R A B E D E E A R L O T
 W T E N A C D U G R I Z Z L Y I D E E T W A L
 M E M I B L A C K R A S C A T B A B C E E D Y
 A L A T I A N R O T G Y U C N H R M O I S G P
 W A S A H W G J O I L W E K Q U G B U I N N Y
 B U B N S S E G N A R U S C K S I O S I L O T
 B O A R N N R L O C H P N O V O T A L P I T E
 H T E E W V E G H T U C U N W A N R H E L L O
 F O A B R E D N N Y M B G R O L A G R O W L S
 O M N I V O R E R E R E D G A L S E L H V I U T Y
 W O W H A B I T U A T E D X Y X P E L Y P P S

THREATENED

HUMP

HABITUATED

ENDANGERED

CUB

OMNIVORE

GRIZZLY

PLANTIGRADE

BOAR

SCAT

CLAWS

SOW

YEARLING

RANGES

BLACK

HIBERNATING



Extra Credit: Find the definition of each word in your student glossary. Write a sentence using each word.

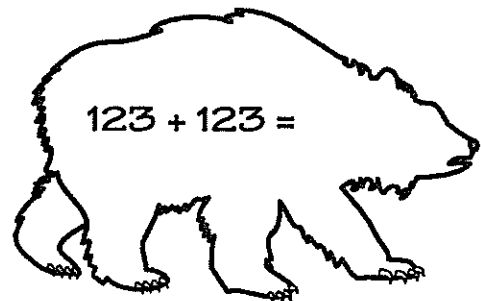
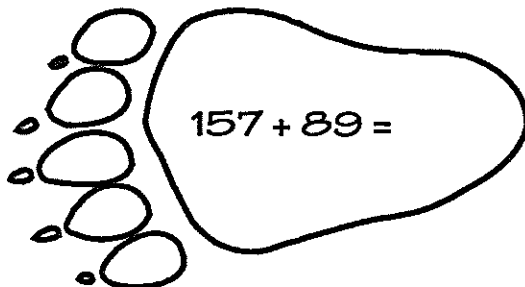
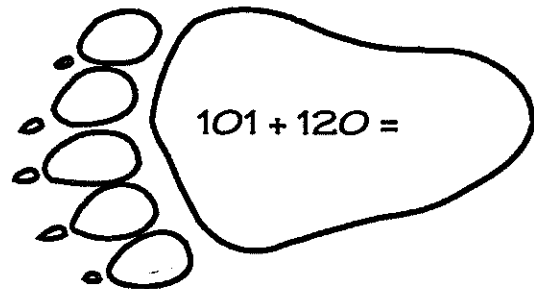
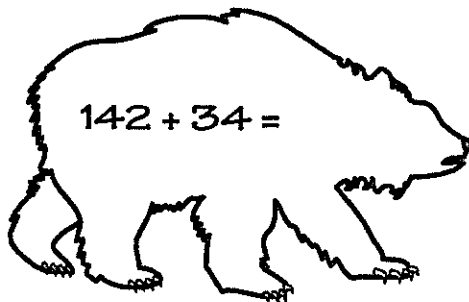
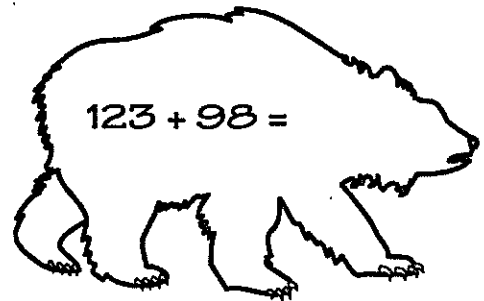
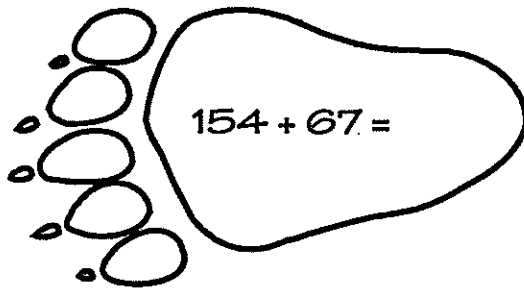
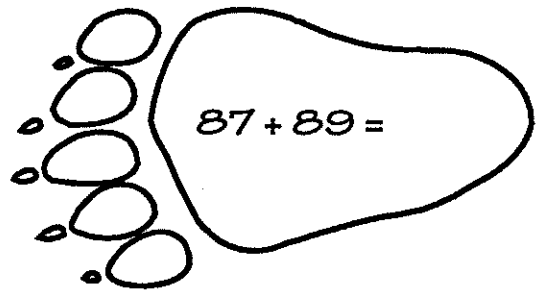
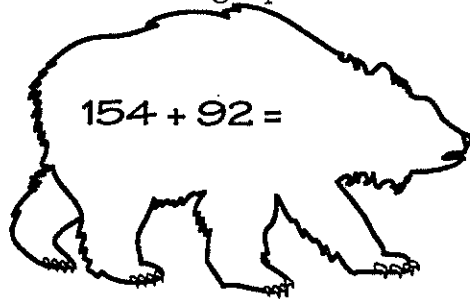


BEAR MATH ADDITION

DIRECTIONS:

Once you have done the math, match the bears and tracks.

Please show your work on a separate sheet of paper
if there is not enough space available.

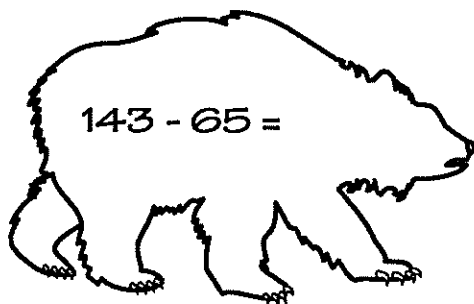
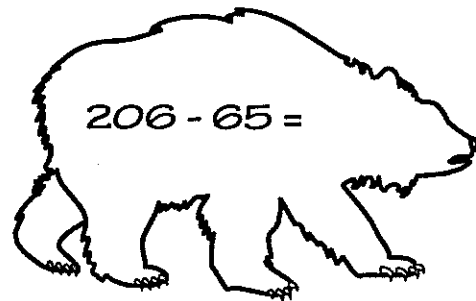
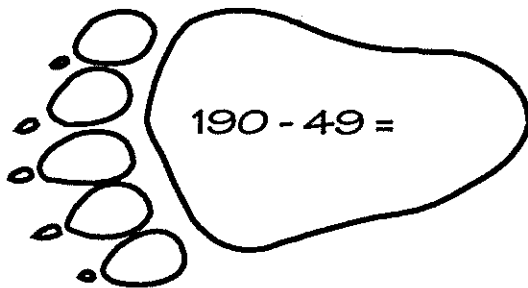
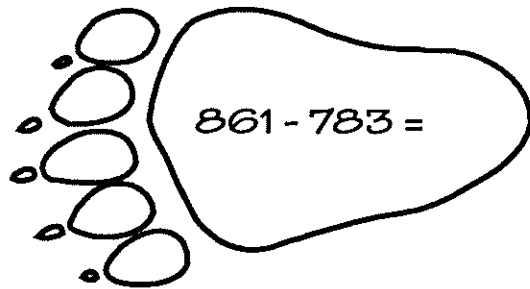
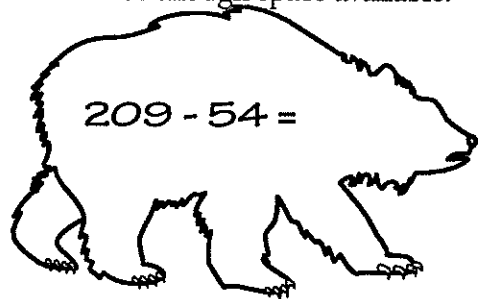


BEAR MATH SUBTRACTION

DIRECTIONS:

Once you have done the math, match the bears and tracks.

Please show your work on a separate sheet of paper
if there is not enough space available.

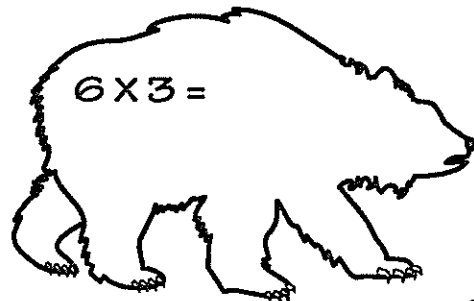
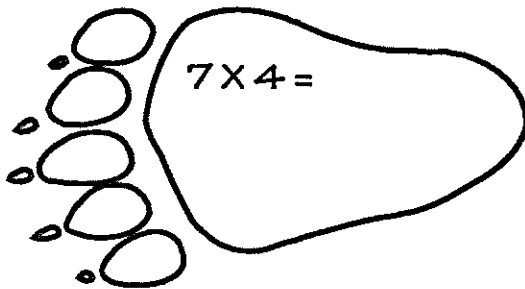
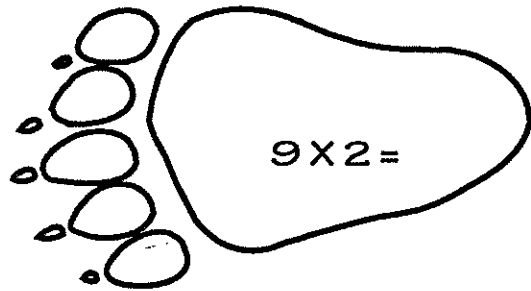
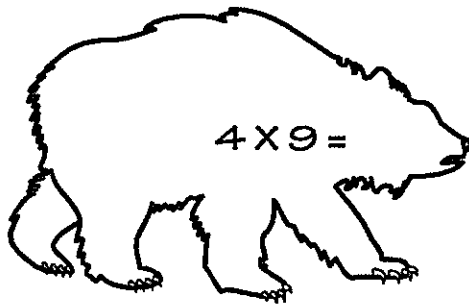
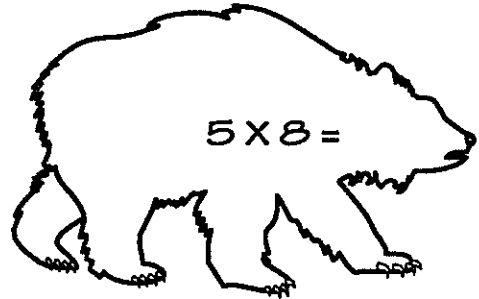
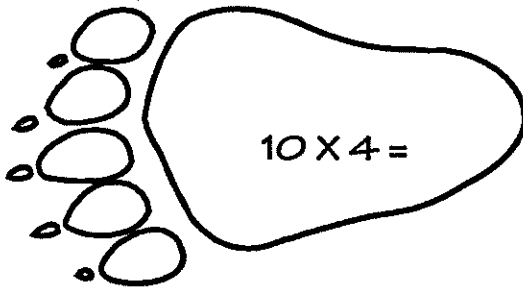
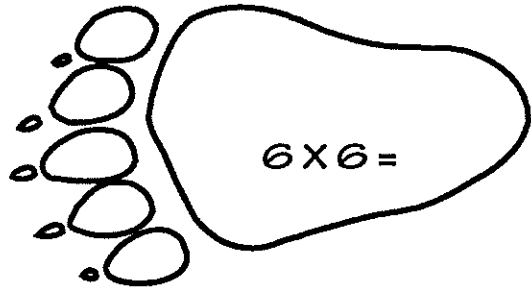
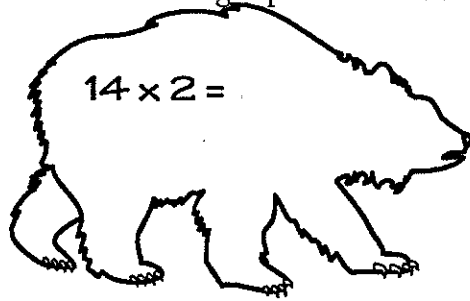


BEAR MATH MULTIPLICATION

DIRECTIONS:

Complete the math and match bears and tracks.

Please show your work on a separate sheet of paper if there is not enough space available.

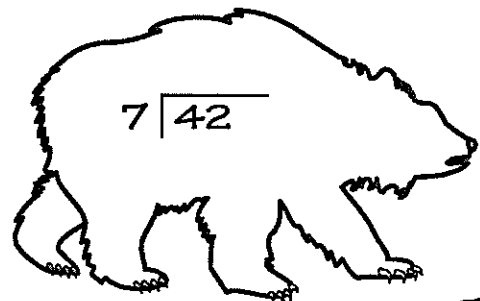
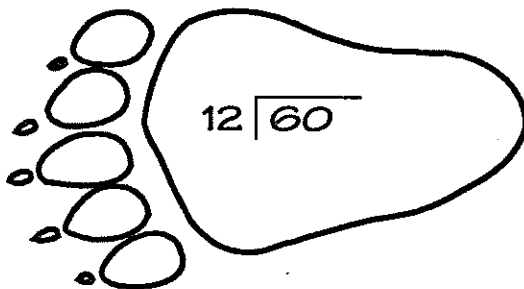
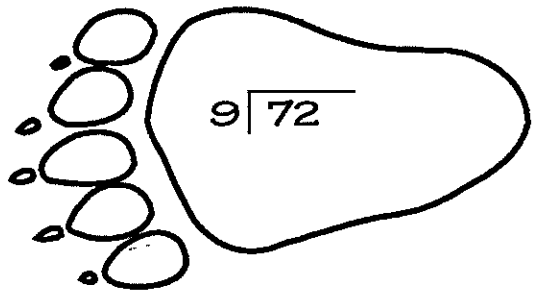
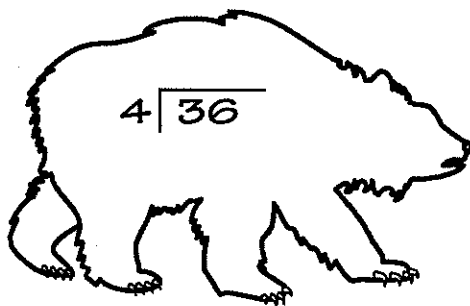
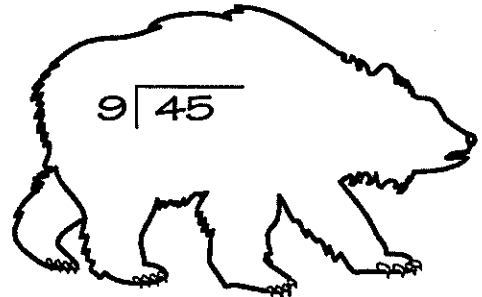
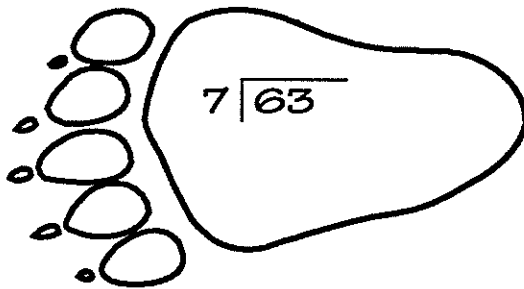
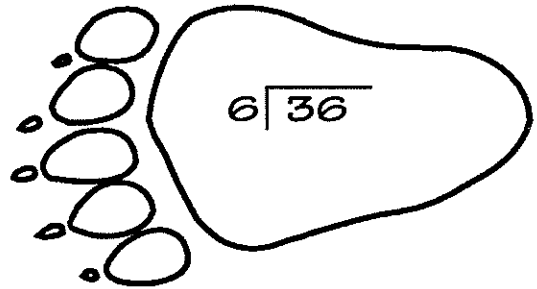
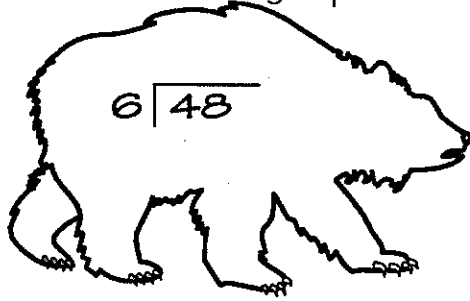


BEAR MATH DIVISION

DIRECTIONS:

Once you have done the math, match the bears and tracks.

Please show your work on a separate sheet of paper if there is not enough space available.

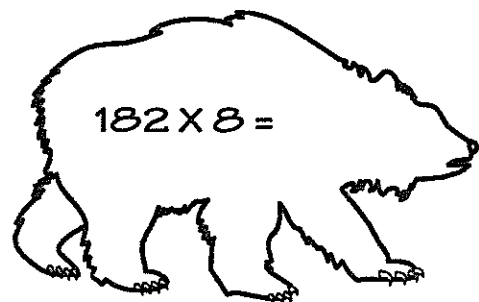
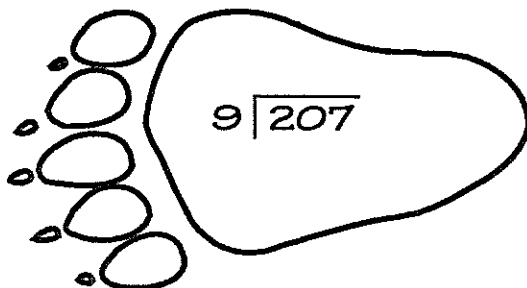
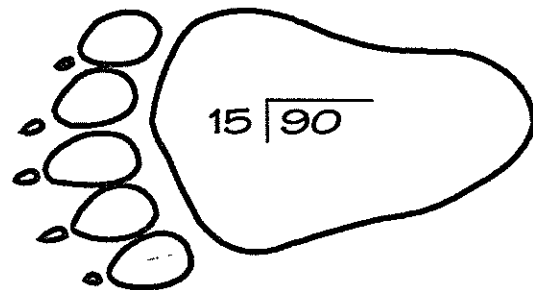
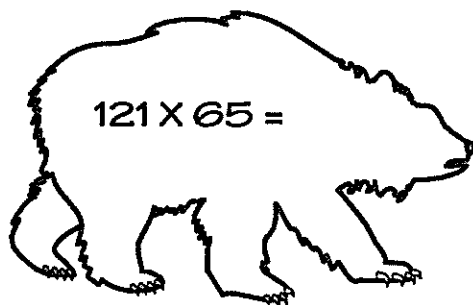
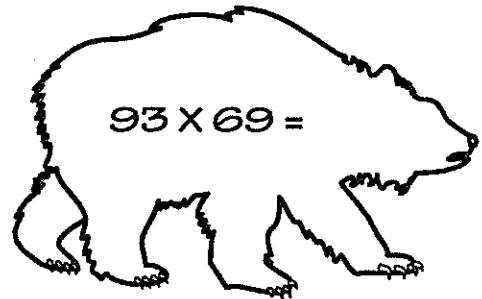
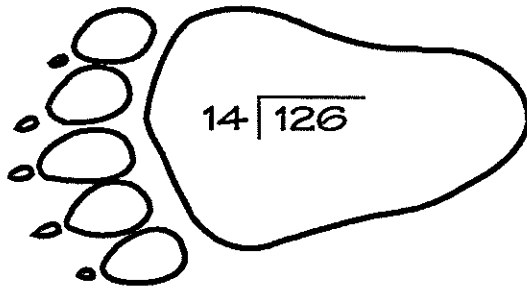
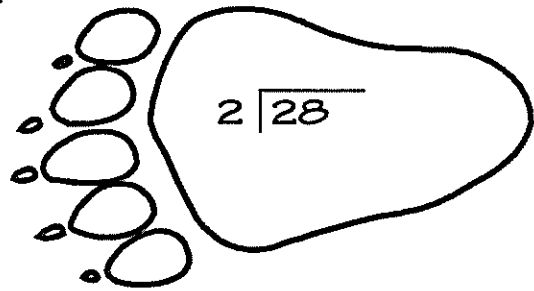
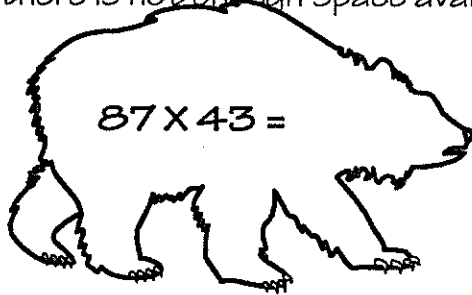


BEAR MATH MULTIPLICATION AND DIVISION

DIRECTIONS:

Complete the math, are there any matches?

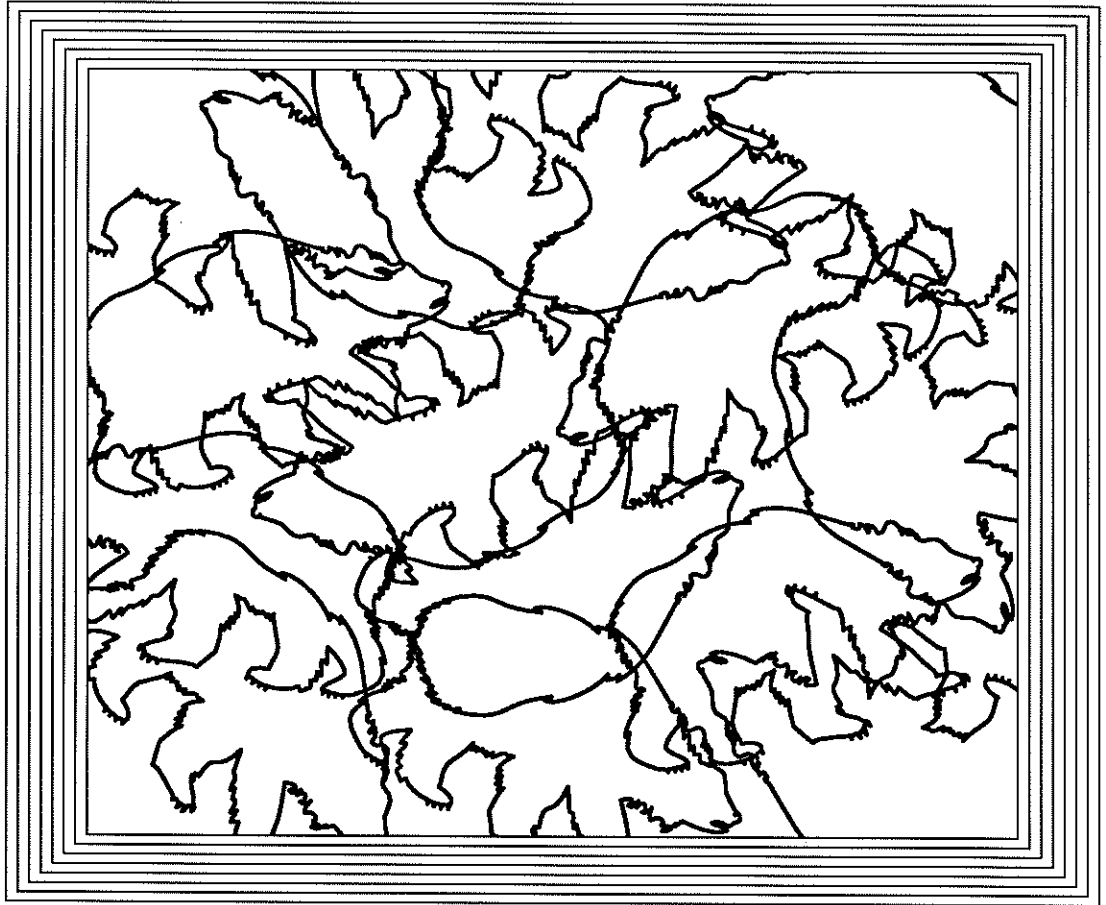
Please show your work on a separate sheet of paper
if there is not enough space available.



HOW MANY GRIZZLIES CAN YOU SEE?

DIRECTIONS:

Count how many completed grizzlies you can spot in this square. Be careful and make sure to count those that overlap.

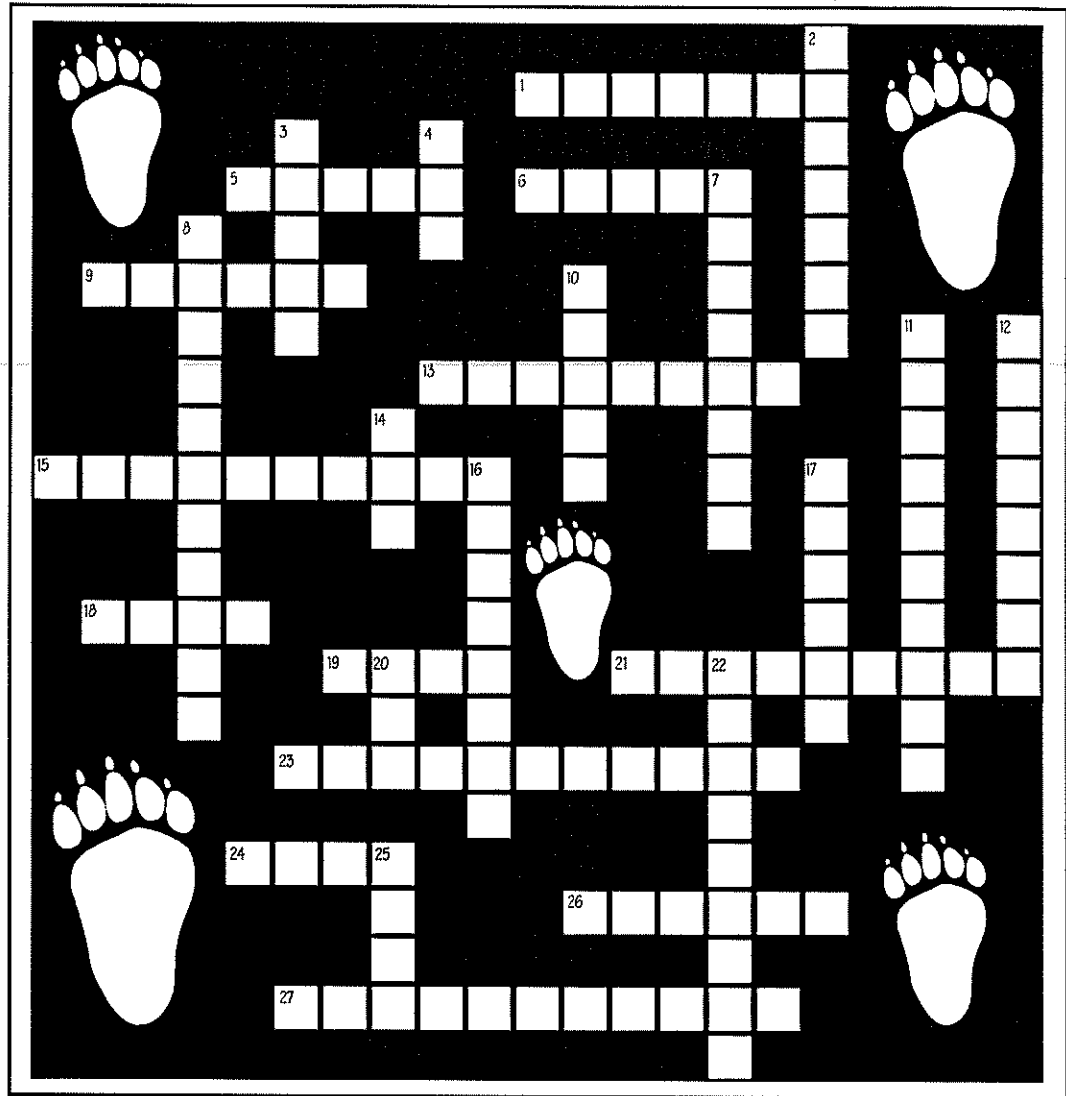


TOTAL NUMBER OF GRIZZLIES:

BEAR CROSSWORD

WORD LIST

glacier
 cache
 Teddy
 pelage
 subadult
 omnivorous
 boar
 scat
 scavenger
 hibernation
 dish
 Alaska
 hyperphagia
 plantigrade
 range
 den
 sow
 black
 yearling
 grizzly
 solitary
 cub
 hump
 predator
 hypophagia
 day bed
 agonistic



DOWN:

2. Another name for a brown bear
3. The area a bear travels
4. The place in which a bear hibernates
7. A bear that is one year old or a little older
8. A word to describe how a grizzly (or human) walks
10. A common American bear; the _____ bear
11. The period right after a bear comes out of hibernation, when they still use stored fat for energy, even though they are beginning to eat spring food
12. An animal that kills other animals for food
14. A female adult bear
16. Alone
17. A place where grizzlies sleep during the day
20. A young bear; under a year old
22. Aggressive behavior
25. One distinguishing mark of the grizzly

ACROSS:

1. A large national park in N.W. Montana where grizzlies be found
5. Partially buried food supply
6. A toy bear named from a former U.S. President
9. An animal's fur coat
13. A young grizzly
15. Name for a creature that eats both plants and animals
18. Name of a male bear
19. Undigested seeds can be found in the bear's _____
21. An animal that eats carrion
23. A bear's winter sleep
24. Shape of a grizzly's nose
26. The state with the largest population of grizzlies
27. The period right before hibernation when bears are eating less.

Use your student glossary to help you define any words.





GRIZZLY ART

DRAW A PICTURE OF SOMETHING YOU LEARNED ABOUT BEARS

WRITE A SENTENCE TO DESCRIBE YOUR PICTURE

STUDENT GLOSSARY

ADAPTATION: A change in behavior or physical characteristics of a plant or animal that enables it to survive in its environment.

AGONISTIC: Aggressive behavior, used by bears and wolves to chase away threatening people or animals.

ALPHA: The female leader and male leader of a wolf pack.

ALPINE: High level land, characterized by stunted trees, low growing shrubs, and flowers; covered by snow much of the year.

ARTIC: The area surrounding the North Pole.

BETA: The second most important male or female in a wolf pack; they are submissive only to the alpha wolves.

BLACK BEAR: *Ursus americanus*, a bear found over much of North America, smaller than a grizzly, with a longer face and no shoulder hump.

BOAR: A male bear

CACHE: Buried or partially buried meat stored for eating later. This method is used by bears and wolves.

CANINE: Teeth used to grab and hold onto prey.

CARNASSIAL: The back teeth of a carnivore used for chewing meat.

CARNIVORE: Any meat-eating animal.

CARNIVOROUS: Meat eating (adjective)

CARRION: The flesh of dead animals

CLAWS: The long sharp "toenails" used by grizzlies for digging.

CUB: A young bear



DAYBED: A protected bed where a bear rests when it is not traveling, feeding, or hibernating.

DELAYED IMPLANTATION: The mechanism by which a fertilized egg does not attach to the uterine wall until the bear's hibernation.

DEN: 1. Where the bear hibernates. 2. A secure dug out room in which a female wolf gives birth to her pups; also the place where the pups spend the first few weeks of their lives.

DIGITIGRADE: The manner in which an animal walks on just the toes of his feet, like dogs and wolves do.

DISH FACE: One of the distinguishing characteristics of a grizzly; a concave dip in the nose.

ECOSYSTEM: A community of living organisms interacting with their environment and each other to form a unified whole.

ENDANGERED: Population of a species is so low that extinction is possible.

EXTINCT: No longer existing.

GESTATION: The period of pregnancy between mating and birth.

GRIZZLY: *Ursos arctos*, a large brown bear of North America.

HABITAT: The environment in which an animal lives.

HABITUATION: Becoming accustomed to human presence; losing fear of humans.

HERBIVORE: An animal who only eats plants.

HIBERNATION: A state of lowered metabolism in wintertime, during which a bear rests in his den, neither eating nor urinating or defecating.

HUMP: A large mass of muscle above the grizzly's shoulders, characteristic of the grizzly.

HYPERPHAGIA: Metabolic change leading to hibernation; ~~eating less, lethargic.~~ *wfns*

HYPOPHAGIA: The period right after a bear comes out of hibernation; eating sparingly, still metabolizing body fat for energy.

INCISOR: The front teeth used for catching and killing prey.



ISOLATION: Being alone, not being bothered by human presence; one of the seven requirements of grizzlies.

LITTER: A group of wolf pups, the average litter size is six pups.

LUPUS: The scientific name for wolf (*canis lupus*).

MOLAR: The back teeth used for smashing and grinding food.

OMEGA: Lowest ranking wolf in the pack.

OMNIVORE: Any animal that eats both animal and plant foods.

PACK: A group of wolves who live together, hunt together and socialize with each other.

PELAGE: Another name for the fur coat of an animal.

PLANTIGRADE: Walking on the soles of the feet, as does a grizzly; a human does also.

PREDATOR: Any animal that hunts and kills another animal for food.

PREY: Any animal that is hunted or killed by another animal.

RANGE: The area an animal travels to find food and mates.

RENDEZVOUS SITE: A safe area where a wolf pack rests between hunts.

RUB-MARKING: Where bears bite, claw, or rub trees to indicate to other bears that they have been there.

SCAPEGOAT: The outcast, or lone wolf. This is a wolf that is not accepted by any other wolf in the pack. He usually leaves the pack on his own, or is forced to leave—may become a lone wolf, or might join another pack.

SCAT: An animal's excrement (poop!).

SCAVENGER: Any bird or animal that eats the remains (carrion) of a previously killed animal.

SLEEPING CHAMBERS: The part of the den where the bear hibernates and gives birth to cubs.

SOW: A female bear



SPECIES: Scientific classification of living creatures.

STALK: The act of sneaking closer to prey before rushing in to attack.

SUB-ALPINE: Mountain land slightly lower in elevation than alpine regions, characterized by taller trees, more plant growth, and steep mountain meadows. This region remains snow-free slightly longer than the alpine regions.

SUBMISSION: 1. Sign of non-aggression, or unwillingness to fight. 2. A behavior that indicates a low place in the wolf pack order of importance.

SUB-SPECIES: A scientific classification just below species; for instance, a Kodiak brown bear is a sub-species of *Ursos arctos*

TEMPERATE: The land areas below sub-alpine, usually lower mountain valleys. These areas are snow-free much longer each year than alpine or sub-alpine areas. These areas are characterized by a variety of plant and animal life, shorter winters, and abundant water.

TERRITORY: 1. The area of an animal's range which that animal will defend against intruders. 2. The area a wolf pack will defend against intrusion by other wolves. Territories are a smaller part of the wolves' range.

THREATENED: A species that may become endangered if their numbers and habitat continue to decline.

TRACK: The foot print left by an animal.

TUNDRA: Cold, treeless plains of the arctic and subarctic regions.

TUNNEL: A narrow chamber leading to the larger sleeping chamber in a den.

UNGULATE: Any hoofed mammal, such as a deer, elk, moose, caribou, or mountain sheep.
Common prey of wolves.

VEGETATION: Any kind of plant growth.

YEARLING: Any wolf between the ages of one and two.

