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Environmental Print Activities for Teaching Mathematics and Content Areas

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ABSTRACT

Twenty-three mathematics activities that use environmental print materials are presented, along with two activities that focus on music education, one that highlights history concepts, and five science activities. The environmental print materials are words and images cut from food or other product packaging and mounted on mat board cards. Instructions for teachers regarding material preparation are given, along with directions for students to engage in each activity. Example layouts and labels for materials boxes are given for each activity. Mathematical topics include: more and less; numeration; addition and subtraction; time words; forming patterns; writing equations; story problems; chart coordinates; percents; fractions; measurement abbreviations; coins; liquid measurement; symmetry designs; Venn diagrams; volume and area of geometric solids; factors; permutations; and probability. The two music activities focus on rhythm. The history activity discusses ideas and items related to the taxation of the thirteen colonies. The five science activities include the following concepts: living versus nonliving; ecology food pyramid; distinguishing proteins, carbohydrates, and lipids; potential versus kinetic energy; and fossils in geologic time. (Author)

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Abstract

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Table of Contents

Introduction

Audrey C. Rule

Materials Made with Environmental Print

Every year, food companies, toy manufacturers, and other producers spend millions of dollars designing packaging for their products. Product labels are created to catch the eye of the consumer, to display the product in its best light, and to entice the buyer with promises and slogans. A dazzling array of fonts, images, icons, patterns, and colors contribute to the unending selection of product packaging to which we are exposed in grocery stores, department stores, and on our shelves at home. These printed products in our everyday environments are truly "environmental print". Instead of discarding this fascinating packaging into which so much creative work and expense has been poured, why not incorporate it into your teaching materials? This document shows you ways to use environmental print in teaching mathematics concepts and concepts for a few selected content area activities.

Basic Preparation of Environmental Print Cards

Begin by making a collection of environmental print materials. Collect words and images from cardboard products. Avoid "adult," "personal hygiene" items, or packaging from tobacco or alcohol products. Decide the important parts of the product label and carefully trim away unnecessary words or images that detract from the parts you want to emphasize. Then cut, using a lever-armed paper cutter, a rectangle of colored mat board about two centimeters wider and taller than the cardboard piece. Mat board is the colored cardboard used for framing pictures and is available at framing shops and craft stores. Mount the cardboard environmental print word card on the mat board with white craft glue, making sure that glue is evenly distributed completely on the back of the cardboard. Place the word card under a heavy book to dry flat.

Using This Document

Each activity presented here describes preparation of the materials and gives student directions for completing the activity. Example word or image cards are shown, along with any needed heading cards or charts. Two labels for the storage box are provided, in

addition to labels for the backs of cards so that students may independently check their work.

These activities focus mostly on mathematics, although there are some additional activities for music, history, and science included. Another source for environmental print activities for preschool students (30 activities on early language and thinking skills) and for elementary age students (29 additional activities focusing on language and reading) is a book written by the editor-in -chief of this document:

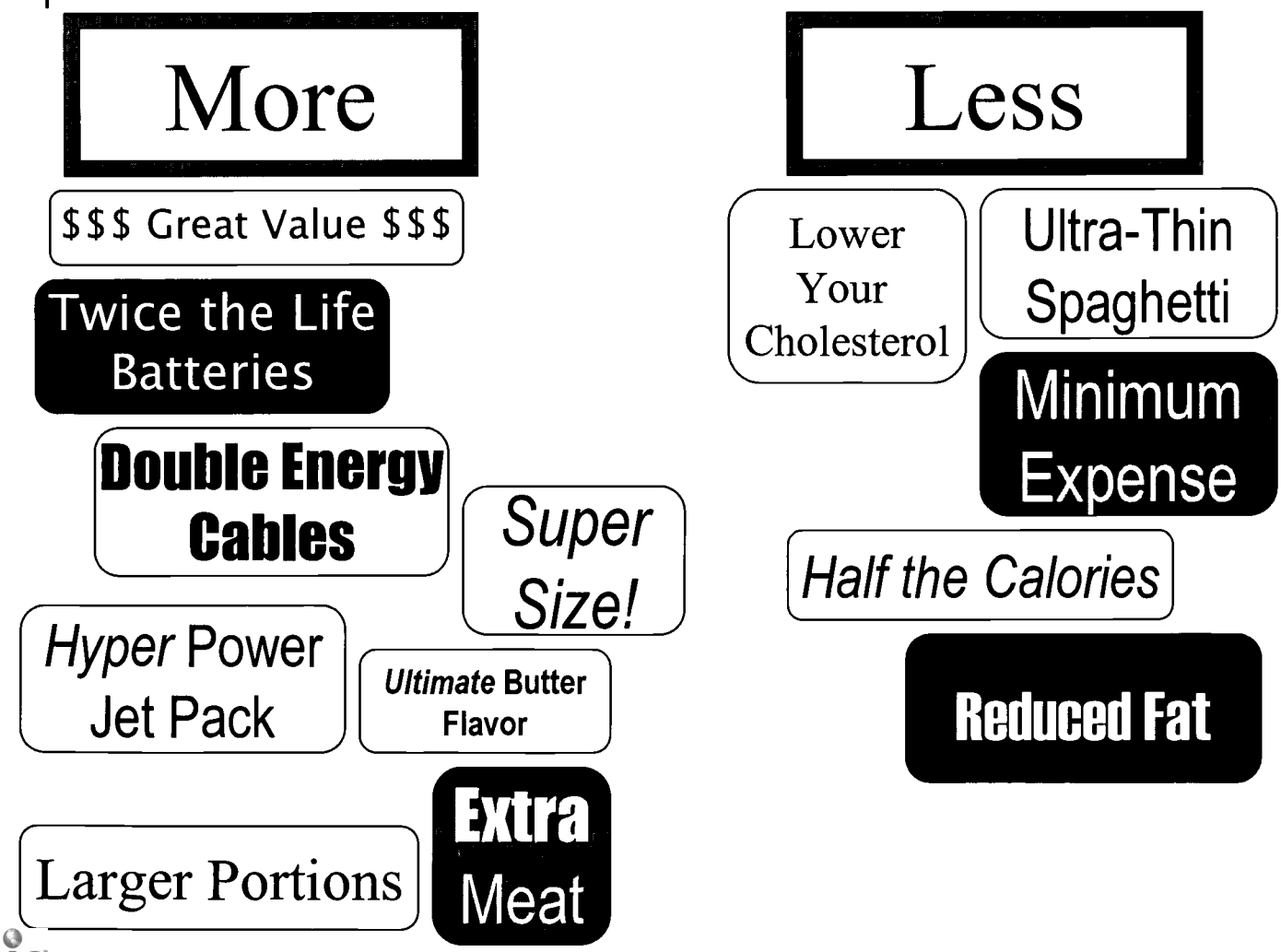
Rule, A. C. (2001). *Environmental Print Activities for Language and Thinking Skills*. Dubuque, Iowa: Kendall/Hunt Publishing Company. ISBN 0-7872-8743-1

Identifying and Sorting Words Meaning More or Less

By Cindy Rivers

Teacher Directions: Collect words that indicate larger or smaller quantities, cost, time, or size. Mount these on mat board rectangles and place the word "more" or "less" on the reverse side for student self-checking. Have students work in groups of two or three. Ask students to open the environmental print box for sorting words related to the concepts of "more" or "less" and follow the directions inside the box.

Student Directions: Open the environmental print box and take out the heading cards. Place the heading cards at the top of your work space. Take out an environmental print card and read it. Look for words that describe an amount of product that mean "more" or "less". Place each card under the correct heading card. Self-check by looking on the back of each card. Then mix up the cards and put them back into the box, leaving the heading cards on top.



Math Environmental Print Activity
Identifying & Sorting
Words Meaning More or Less

Math Environmental Print Activity
Identifying & Sorting
Words Meaning More or Less

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

Labels below for backs of cards. These allow students to check their work.

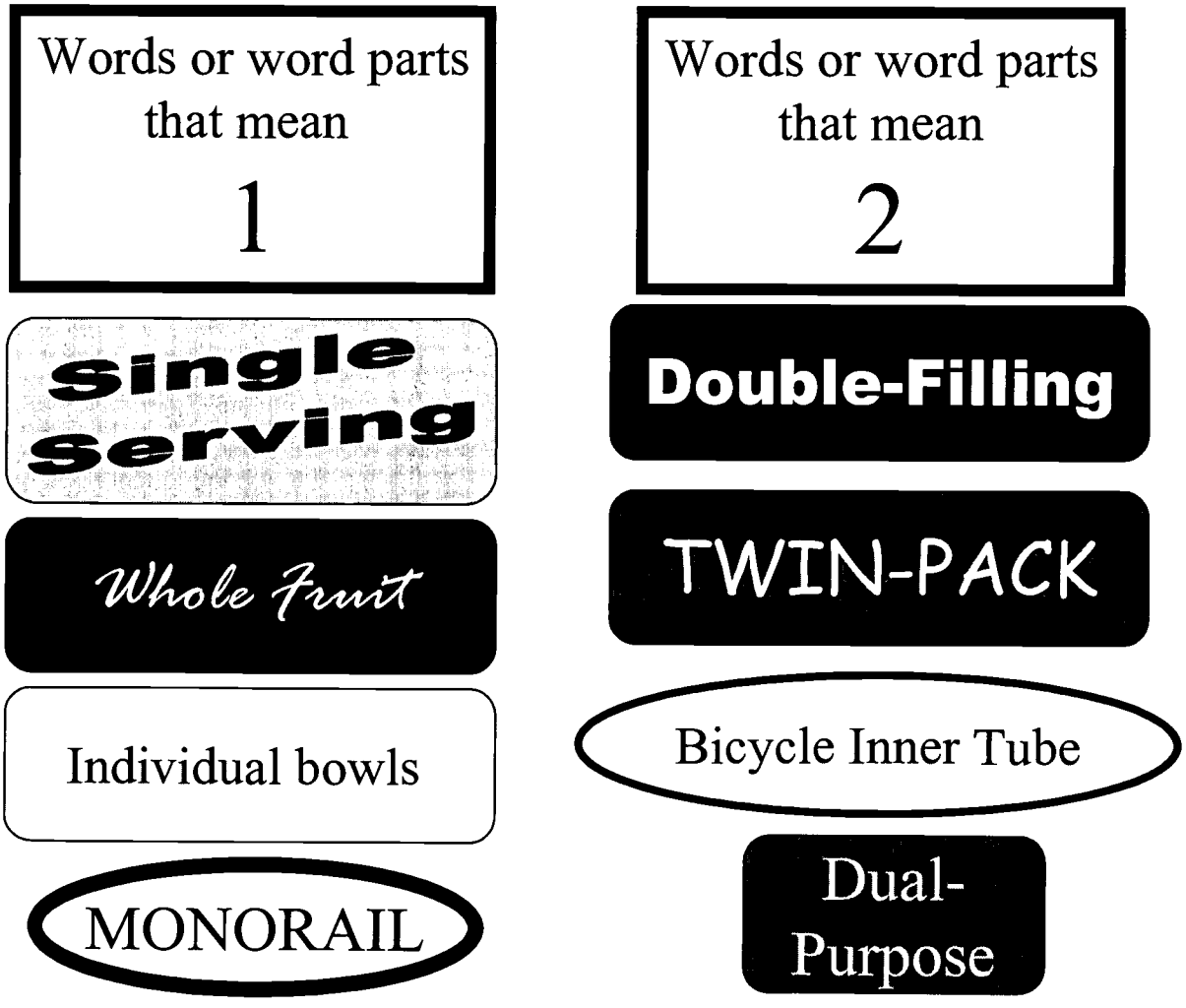
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less
More	More	Less	Less

Identifying and Sorting Words or Word Parts Related to Numbers

By Audrey C. Rule

Teacher Directions: Collect words that are related to numbers. They may contain a root word, or prefix that indicates number, or may be a synonym for a number. Mount these on mat board rectangles and place the corresponding number on the reverse side for student self-checking. Have students work in groups of two or three. Ask students to open the environmental print box for sorting words related to number and follow the directions inside the box.

Student Directions: Open the environmental print box and take out the heading cards. Place the heading cards at the top of your work space. Take out an environmental print card and read it. Look for words that mean "one," "two," "three," or "four." Place each card under the correct heading card. Self-check by looking on the back of each card. Then mix up the cards and put them back into the box, leaving the heading cards on top.



Words or word parts that mean

3

Words or word parts that mean

4

Italian Trio of Noodles

Quarter-Pound

Triple Gum

Baby Quadruplets

TRICRISP
Crackers

Quartet of Flavors

Math Environmental Print Activity
Identifying & Sorting
Words Related to Numbers

Math Environmental Print Activity
Identifying & Sorting
Words Related to Numbers

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

Labels below for backs of cards. These allow students to check their work.

1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4

Identifying Words that Indicate Addition or Subtraction

By Maria Bryant

Teacher Directions: Collect words that indicate addition or subtraction. Mount these on mat board along with the heading cards below.

Student Directions: Open the environmental print box and take out the heading cards. Place the heading cards at the top of your work space. Take out an environmental print card and read it. Look for words or symbols that indicate addition or subtraction. Place each card under the correct heading card. Self-check by looking on the back of each card. Then mix up the cards and put them back into the box, leaving the heading cards on top.

Words or Symbols Indicating **Addition**

Words or Symbols Indicating **Subtraction**

TOGETHER

+

Take away

losses

Along with

Plus

Reduced

−

and

combine

Compare these values

How much Is needed?

Added to

All together

Lose Weight

minus

Math Environmental Print Activity
Identifying Words Indicating Addition or Subtraction

Math Environmental Print Activity
Identifying Words Indicating Addition or Subtraction

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

Labels below for backs of cards. These allow students to check their work.

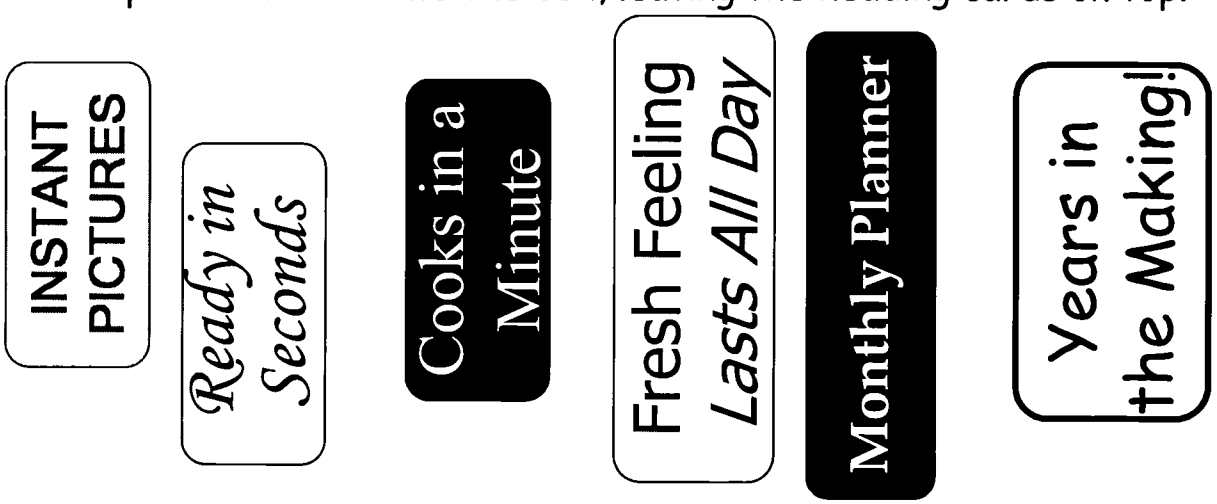
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction
Addition	Addition	Subtraction	Subtraction

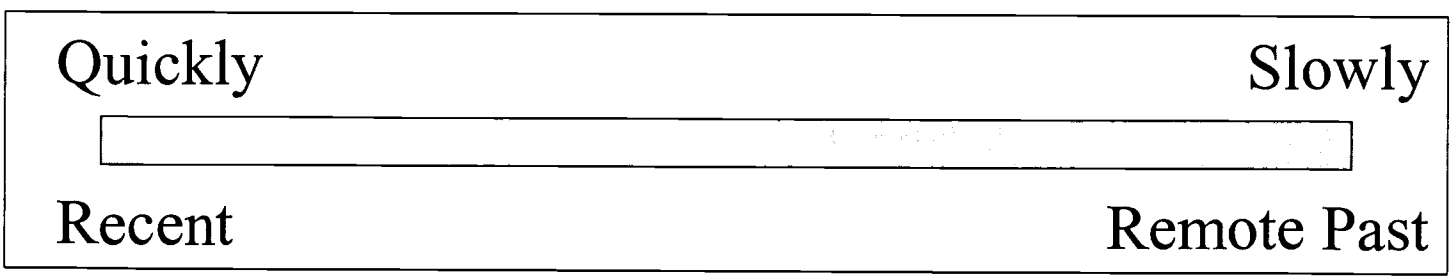
Placing Time Words on a Timeline

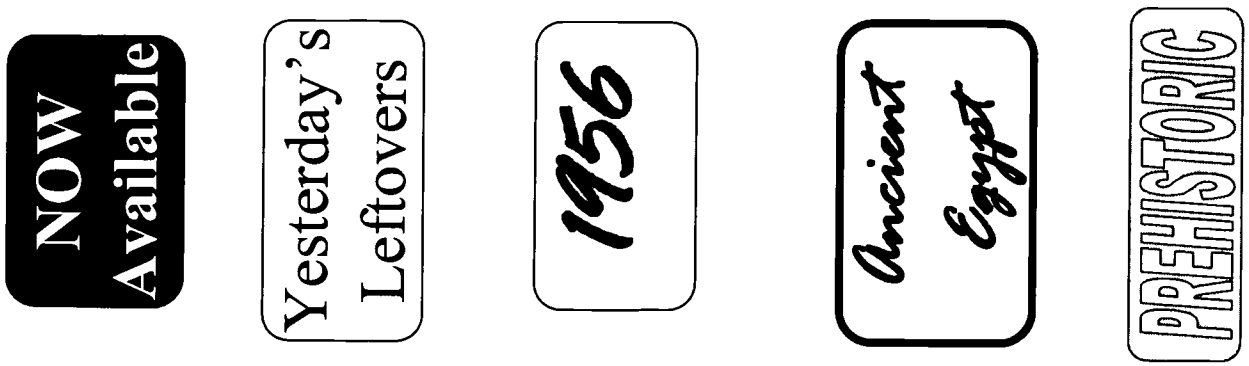
By Audrey C. Rule

Teacher Directions: Collect words that are related to time. They may describe the passage of time, units of time, or contain words that refer to a past time. Mount these on mat board rectangles. Create a timeline like the example shown here for comparing and ordering the time terms.

Student Directions: Lay out the time line. Note that it represents a continuum between words that describe events happening quickly or that occurred recently on one side and events that happen slowly or happened long ago on the other side. Take each word card and identify the word or phrase that signifies elapsed time or timing. Place each card in position on the time line relative to the other cards. Discuss your results with others. Then mix up the cards and put them back into the box, leaving the heading cards on top.







Math Environmental Print Activity
Placing Time Words On a Timeline

Math Environmental Print Activity
Placing Time Words On a Timeline

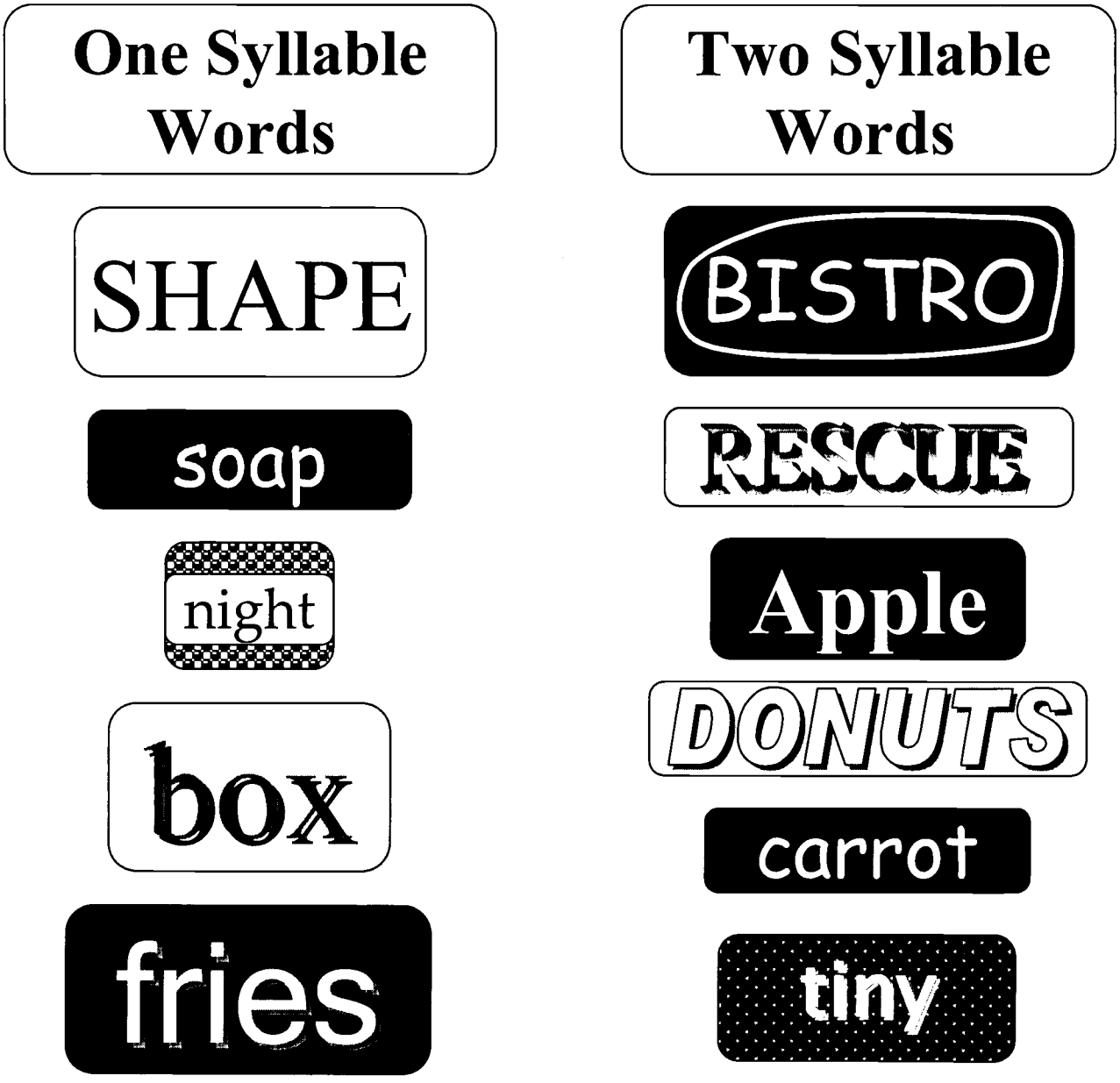
Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

Forming Patterns with One and Two Syllable Words

By Jennifer Laubscher

Teacher Directions: Find at least fifteen one-syllable words and fifteen two-syllable words. Mount these words on mat board. Cut out the heading cards and the pattern cards. Mount them on mat board also.

Student Directions: Remove all of the cards from the box. Sort the words according to whether each has one or two syllables, using the heading cards. Then choose a pattern card. Use the environmental print word cards to form a pattern that conforms to the one shown symbolically on the card.



Pattern cards with example word strings

Pattern Card 1
A B A B A B A B

Egg waffle fish Sandwich Red Joke!

Pattern Card 2
A B B A B B A B

Pan pretzel water sliced muffin pizza

Pattern Card 3
A A B B A A B B

eye case button salty SWEET first extra

Pattern Card 4
A B B B A B B B

swim goggles BASKET sweater PIE quarter

1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable
1-syllable	1-syllable	2-syllable	2-syllable

Math Environmental Print Activity
Forming Patterns with One and Two Syllable Words

Math Environmental Print Activity
Forming Patterns with One and Two Syllable Words

Writing Equations for Addition of Vowels

By Jackie Sugrue

17

Teacher Directions: Find a variety of short product statements or phrases that include 2-4 words with variable numbers of vowels. Mount each phrase on mat board. Record the correct equation on the back of each card.

Student Directions: Remove all of the cards from the box. Choose a card. Write an equation for the phrase that shows the number of vowels in each word being summed. Check the back of the card to see if your were correct.

Example cards and equations are shown below.

$1 + 1 + 1 = 3$

$4 + 3 + 3 + 2 = 12$

$2 + 3 + 5 + 2 + 2 = 14$

$2 + 4 + 2 = 8$

Math Environmental Print Activity
Writing Equations for Addition of Vowels

Math Environmental Print Activity
Writing Equations for Addition of Vowels

Adding the Letters of Two Words to Reach a Specified Sum

By Sue DeGraff

Teacher Directions: Find a variety of words that have different numbers of letters. Find numbers between 8 and 20 for the sums. Mount these on mat board. Make sure there are two different combinations of words for each sum.

Student Directions: Remove all of the cards from the box. Choose a sum card with a number on it. Try to find two word cards that have the correct number of letters to equal that sum. Can you do this in more than one way?

Target Sum	Words with Letters that are Addends	
20	Crackers	marshmallows
	gingerbread	chocolate
		20 = 8 + 12
		20 = 11 + 9
14	oatmeal	CANDIES
		14 = 7 + 7
	strawberry	gram
		14 = 10 + 4
10	potato	Corn
		10 = 6 + 4
	pop	cupcake
		10 = 3 + 7

Math Environmental Print Activity
Adding Letters in Two Words To Reach a Specified Sum

Math Environmental Print Activity
Adding Letters in Two Words To Reach a Specified Sum

Using the Number of Vowels and Consonants in a Word as Coordinates on a Chart

19

By Stacy J. Hurlbut

Teacher Directions: Create a large chart like the one shown below with spaces large enough for the words you use. You might draw it on bulletin board paper or poster board. Find a variety of environmental print words with different numbers of consonants and vowels. Try to obtain at least 10 words with different locations on the chart.

Student Directions: Choose a word card. Identify the vowels and count them (x). Then count the number of consonants (y). These are the (x, y) coordinates for determining the location of the word on the chart. Place your word in its correct location on the chart. Then, repeat with another word until you have placed all of the words. If a word has the same coordinates as another word, stack the words on the chart.

Word Chart

y Coordinate = Number of Consonants			
7			cracker
6		shredded	scalloped
5	charms	cracker	*bleached*
4	rolls	cherry	biscuit
3	fish	jelly	cheese
2	**BAG**	glue	
1	of	TEA	
	1	2	3

x Coordinate = Number of Vowels

Math Environmental Print Activity
Using Number of Vowels & Consonants in a Word as Coordinates on a Chart

Math Environmental Print Activity
Using Number of Vowels & Consonants in a Word as Coordinates on a Chart

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

Labels below for backs of cards. These allow students to check their work.

(1, 1)	(1, 2)	(1, 3)	(1, 4)
(1, 5)	(1, 6)	(1, 7)	(2, 1)
(2, 2)	(2, 3)	(2, 4)	(2, 5)
(2, 6)	(2, 7)	(3, 1)	(3, 2)
(3, 3)	(3, 4)	(3, 5)	(3, 6)
(3, 7)			

Making Equations with Variables and Operations

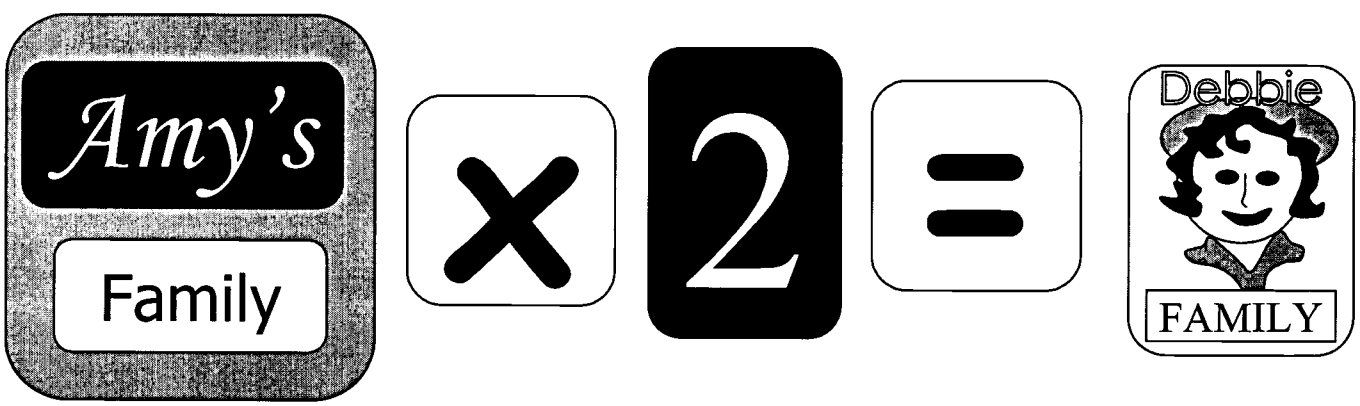
By Jayne Moore

Teacher Directions: Find a variety of words or images that can represent variables in a story problem relationship. Create statements that compare two variables. Mount the images and the statements on mat board. Provide additional symbols for operations and equal signs.

Student Directions: Choose a statement card and read it out loud. Find image/word cards, operation cards, and use an equal sign to reproduce the statement as a mathematical expression.

Examples are shown below.

Amy's family is two times bigger than Debbie's.

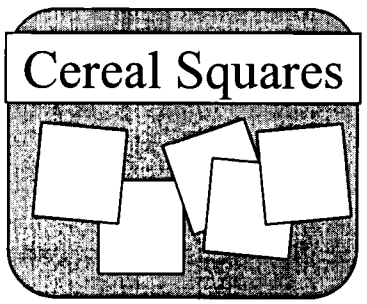


A muscle guy has nine times more energy than Mr. Newman.

Frog can hop twelve centimeters farther than Bunny.

= 12 centimeters + bunny JUMP

Instant Oatmeal has fifty less calories than cereal squares.



− 50 CALORIES = Oatmeal

× × − = = =

\+ + − = = =

Math Environmental Print Activity
Making Equations with Variables and Operations

Math Environmental Print Activity
Making Equations with Variables and Operations

Putting Percents in Order and Matching to Decimals and Fractions

By Jessica Puccia

Teacher Directions: Find a variety of product statements with different percents shown. Create fraction cards and decimal cards for matching. Mount all on mat board backgrounds.

Student Directions: Remove all of the cards from the box. Place the percents in order from smallest to largest. Then match an equivalent fraction and decimal card to each percent.

Example layout is shown below.

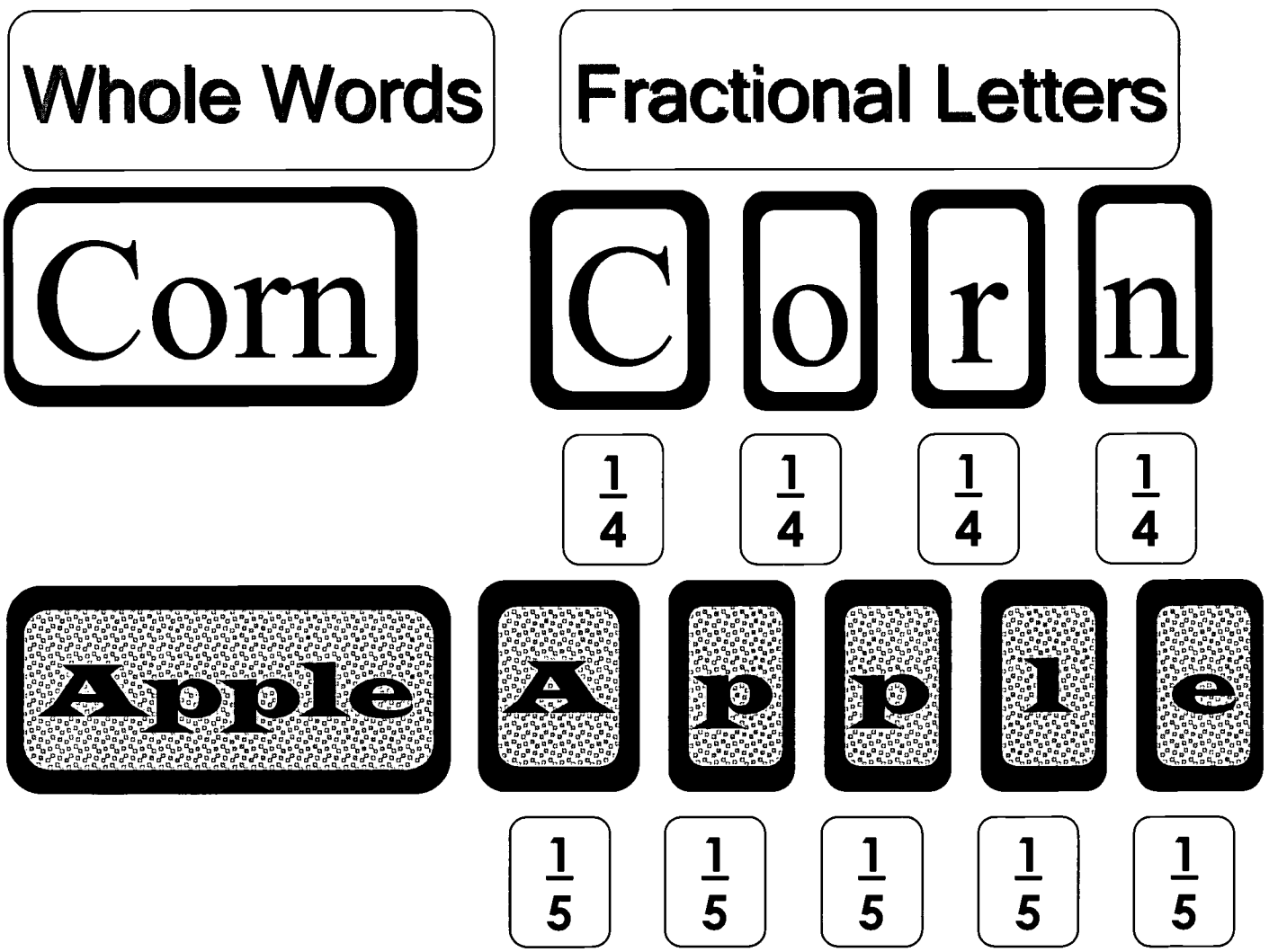
Letters as Fractional Parts of a Word 24

By Barbara Chalk

Teacher Directions: Find duplicate simple product words. Mount one of each pair as a complete, whole word. Divide the other word into single letters and mount each on mat board. Create fractional cards for each letter card.

Student Directions: Remove all of the cards from the box. Sort the cards into whole words and letters. Find the letters that correspond to each whole word. Match each letter with its correct fractional part of the word.

Example layout is shown below.



Math Environmental Print Activity
Letters as Fractional Parts of a Word

Math Environmental Print Activity
Letters as Fractional Parts of a Word

Matching Measurement Words with Abbreviations

By Janessa Richmond

Teacher Directions: Find a variety of product statements with different measurement words and abbreviations to match. Try to obtain at least 10 words in each category. If necessary, create the words by using individual letters from environmental print. Create the heading cards using individual letters from environmental print.

Student Directions: Remove all of the cards from the box. Use the heading cards to begin sorting. Match the remaining words with their abbreviations.

Abbreviations	Measurement Words
Km	*kilometers*
L	liters
Oz	ounces
Lb	pounds
g	grams

Math Environmental Print Activity
Matching Measurement Words with Abbreviations

Math Environmental Print Activity
Matching Measurement Words with Abbreviations

Finding Correct Coins for Purchase

By Cynthia Pluff

Teacher Directions: Find a variety of appealing products. Create a price for each product that can be paid with exactly five coins. Mount the product cards with prices on mat board. Indicate the correct coins on the reverse side. Provide real or play coins for students to use in solving the problems.

Student Directions: Remove all of the cards from the box. Each product has a price that can be paid with **exactly five coins**. Determine the correct combination of coins for each product. Place the coins next to the product. Check your work by looking on the back of each product card.

Examples are shown below.

Math Environmental Print Activity **Finding Correct Coins for Purchase**	Math Environmental Print Activity **Finding Correct Coins for Purchase**

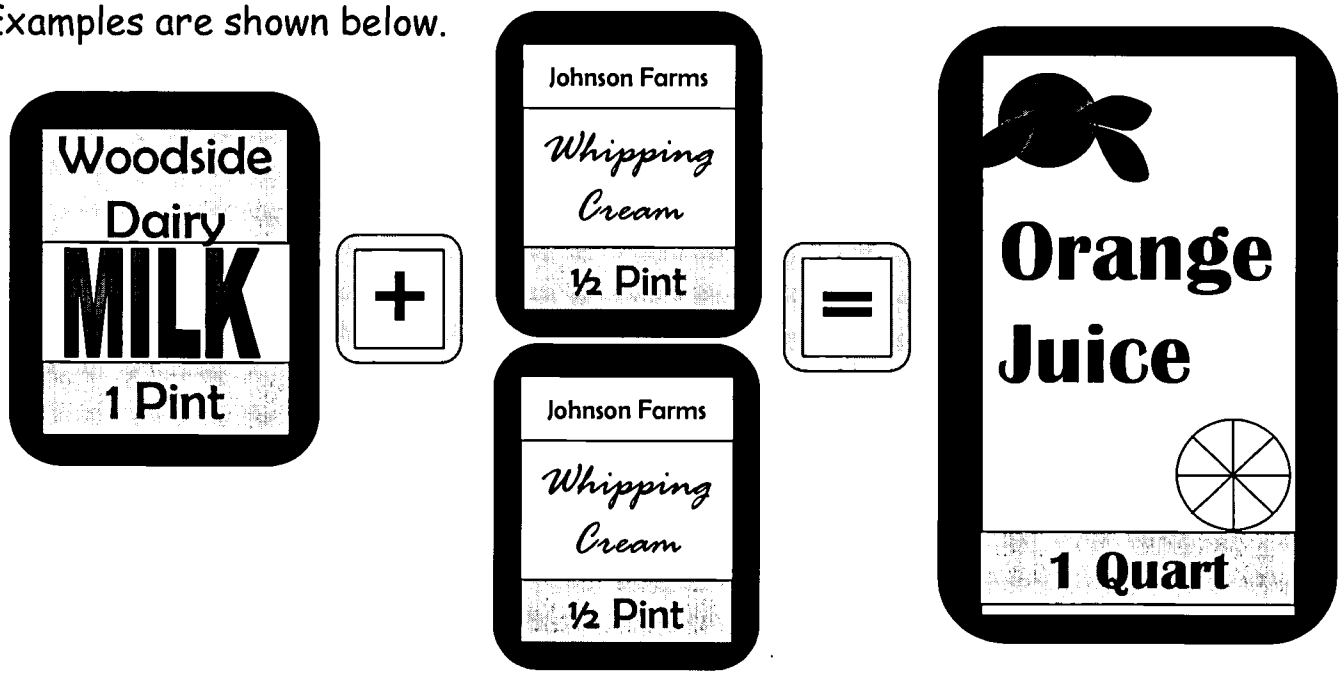
Liquid Measurement

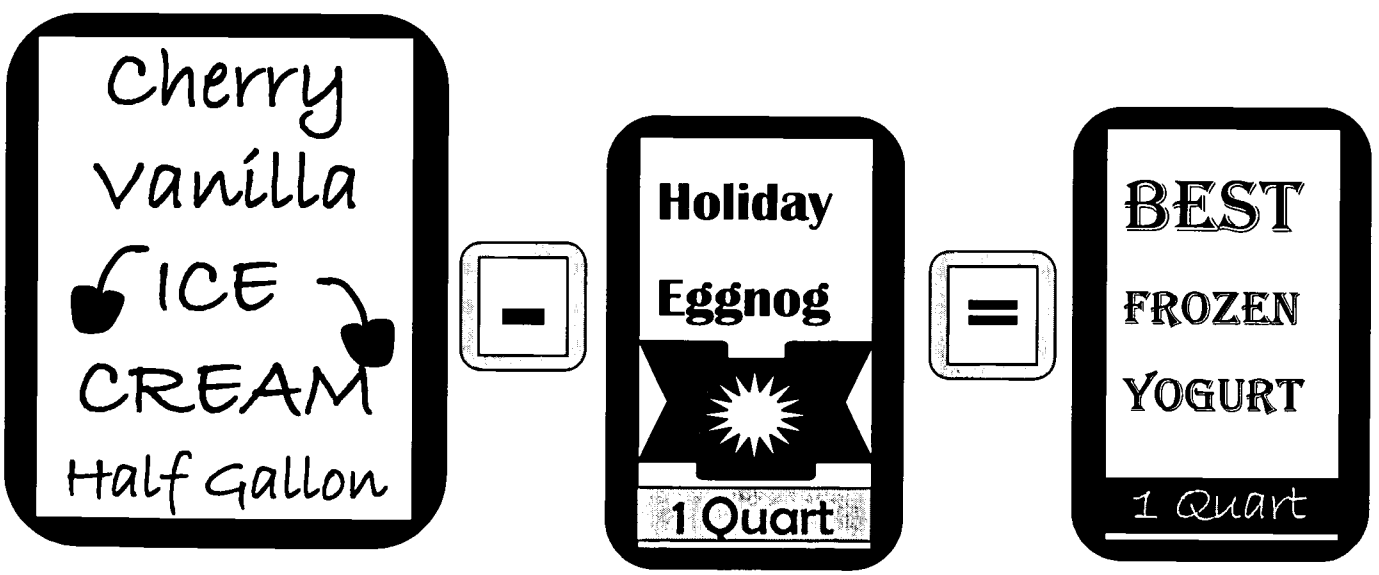
By Patricia Hanlon

Teacher Directions: Find a variety of dairy and liquid products that show liquid measurements. Mount the product panels on mat board. Provide operation and equal signs mounted on mat board.

Student Directions: Remove all of the cards from the box. Each product has a liquid measurement. Construct equations with the product cards and the symbol cards.

Examples are shown below.





+	+	+	+
-	-	-	-
=	=	=	=
x	x	2	4

Math Environmental Print Activity **Liquid Measurement**	Math Environmental Print Activity **Liquid Measurement**

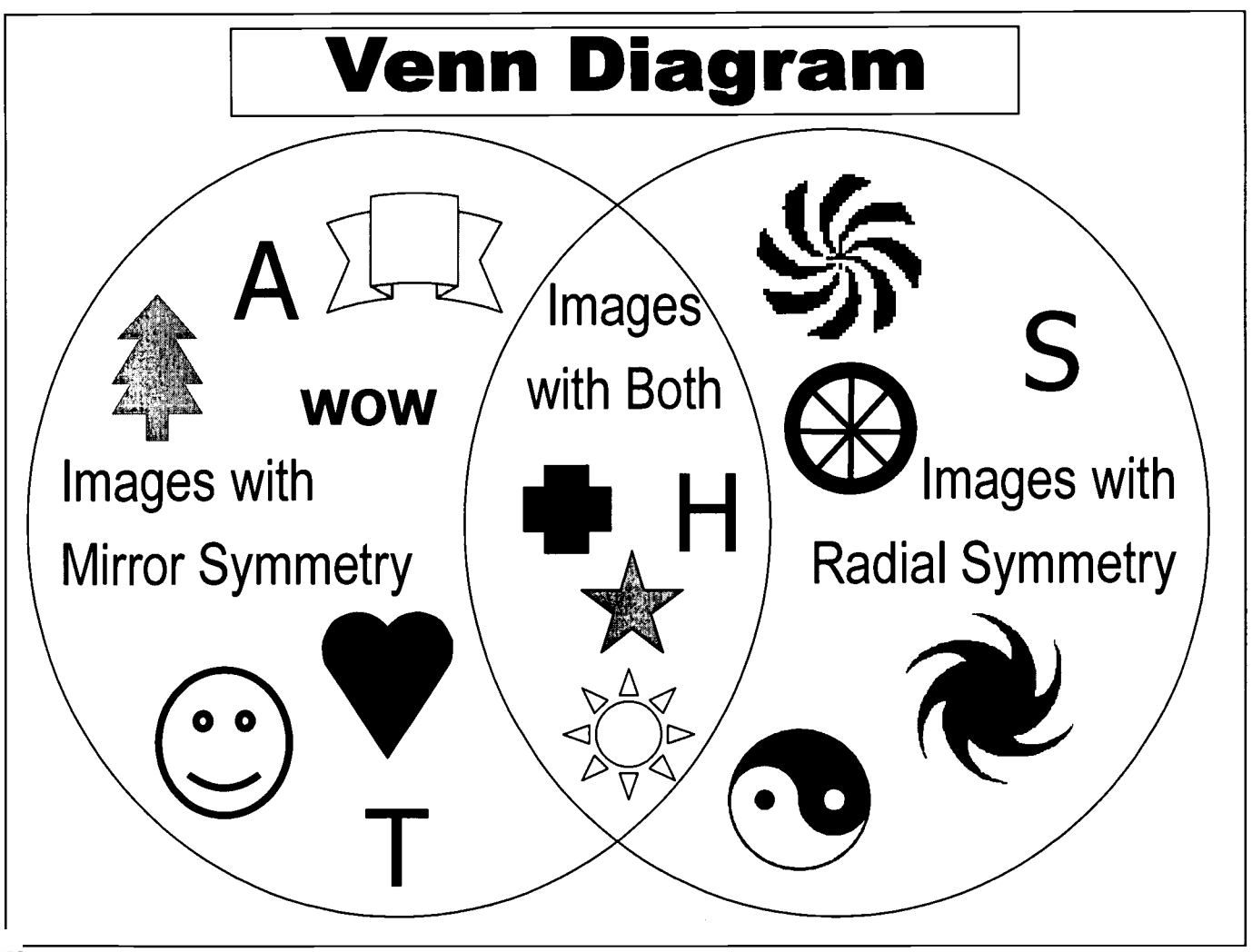
Sorting Designs According to Radial and Mirror Symmetry on a Venn Diagram

29

By Crystal Hutchins

Teacher Directions: Create a large Venn Diagram Chart like the one shown on the next page. Collect environmental print images that have radial or mirror symmetry. These may include geometric designs, product symbols, capital letters, pictures of foods, and animals (animals often have mirror or bilateral symmetry).

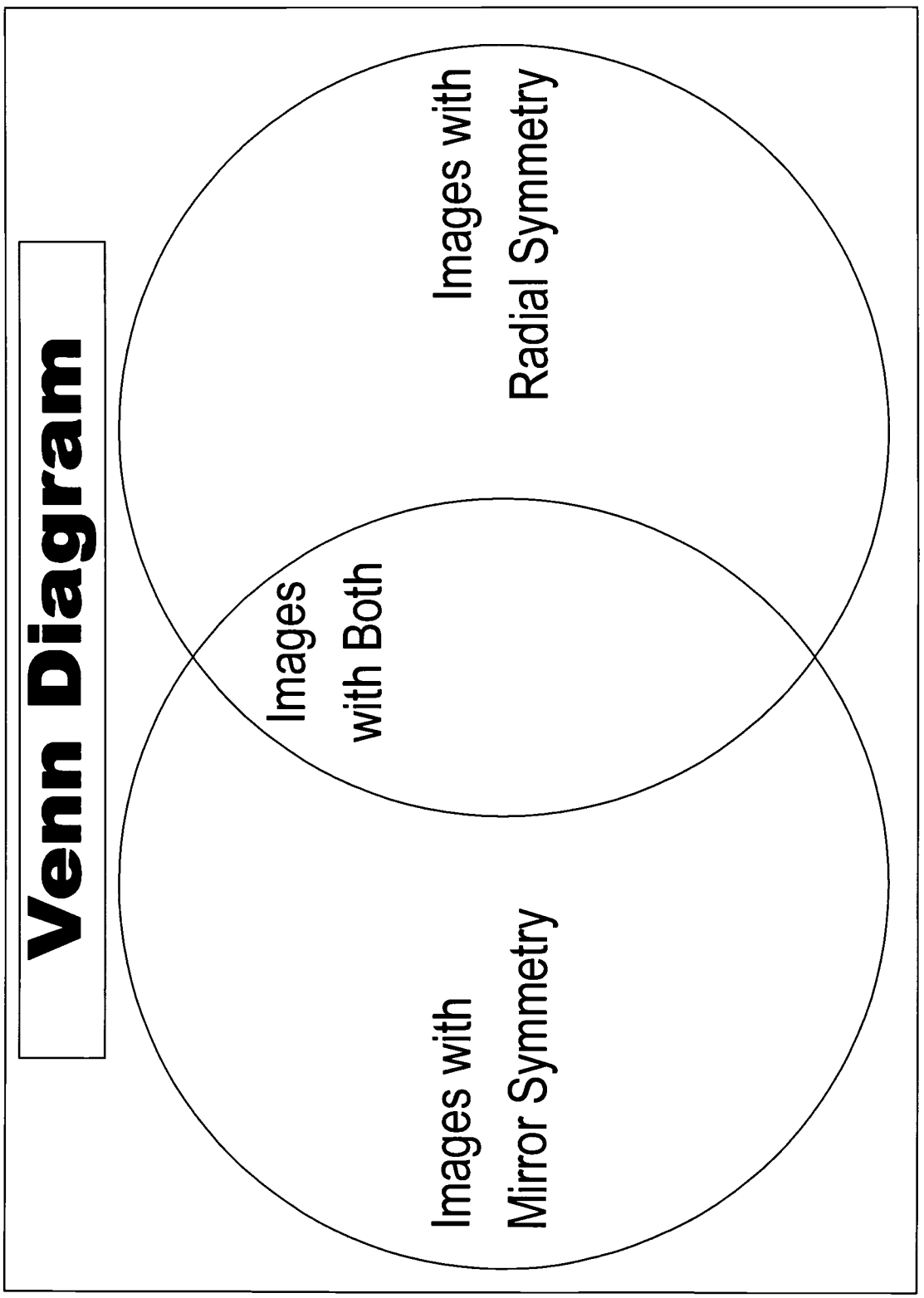
Student Directions: Put the Venn Diagram in front of you. Choose an environmental print image. Decide whether or not it it has mirror symmetry (Imagine if it can be folded in half and both parts of the image would fall exactly on top of each other). Then determine if the image has radial symmetry. Is the design repeated evenly around a center point in a circle? Place the image in its correct position on the Venn Diagram.



Math Environmental Print Activity
Sorting Designs for Symmetry
On a Venn Diagram

Math Environmental Print Activity
Sorting Designs for Symmetry
On a Venn Diagram

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

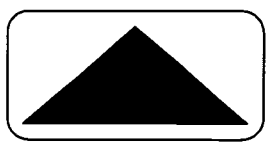
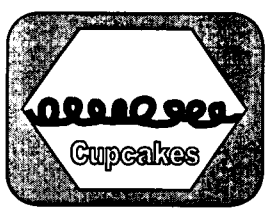
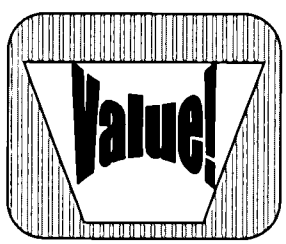
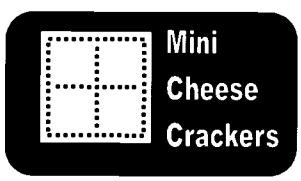
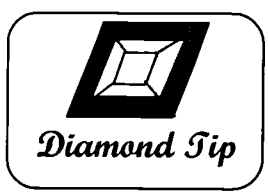


Name that Polygon

By Dawn Matthews

Teacher Directions: Find a variety of different images that represent polygons. Cut out the different polygon heading cards and property cards. Mount each on mat board.

Student Directions: Remove all of the cards from the box. Sort them into environmental print cards, heading cards, and property cards. Arrange the different polygon heading cards across the top of your work space. Choose an environmental print card. Determine the type of polygon that is pictured and place the card under the correct heading. After sorting all the environmental print cards, find the property card that corresponds to each of the polygons.

Rectangle	Triangle	Hexagon	Trapezoid	Square	Rhombus
					
Opposite sides congruent 4 right angles Opposite sides parallel	3 line segments 3 angles	6 line segments 6 angles	4 sides Only one set of parallel sides	4 congruent sides 4 right angles Opposite sides parallel	4 congruent sides Opposite sides parallel

Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square
Rectangle	Triangle	Hexagon	Rhombus	Trapezoid	Square

Math Environmental Print Activity

Name that Polygon

Math Environmental Print Activity

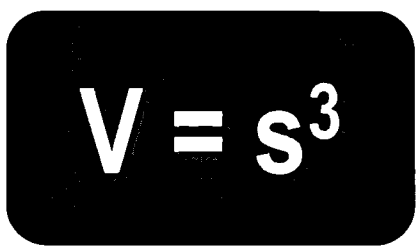
Name that Polygon

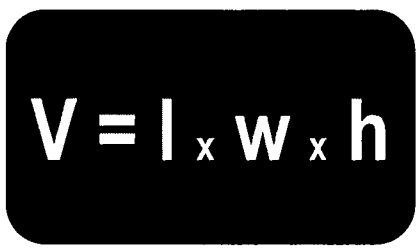
Volume of 3-D Geometric Shapes

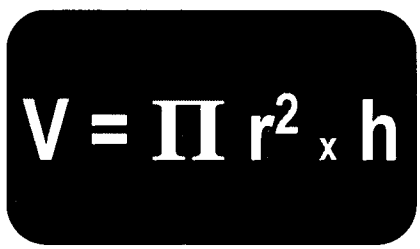
By Pamela McHenry

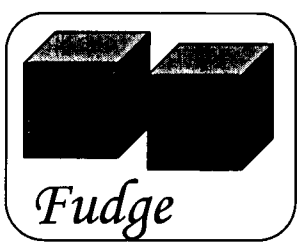
Teacher Directions: Find twenty different images that show three-dimensional shapes such as an ice cream cone or coffee filter (cone), caramels or fudge chunks (cube), food pyramid (square pyramid), cereal bar or cake (rectangular prism), film canister (cylinder), or cereal puffs (sphere). Mount these and the heading cards on mat board. Place the correct volume equation on the reverse of each image.

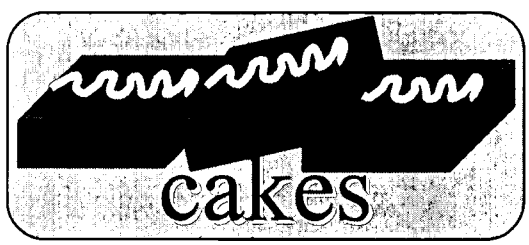
Student Directions: Remove all of the cards from the box. Take the heading cards and place them across the top of your work space. Place each of the images under the correct heading, matching the shape with the formula used to determine its volume. If there is more than one shape in the picture, focus on the one that is most recognizable.

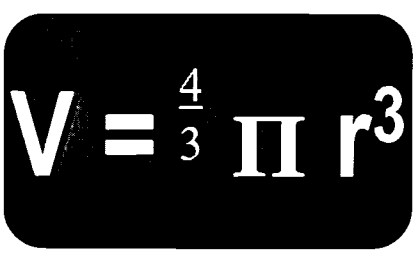


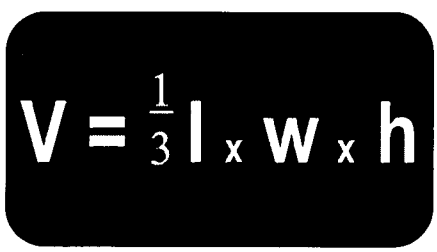


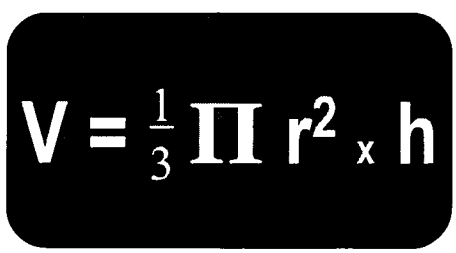


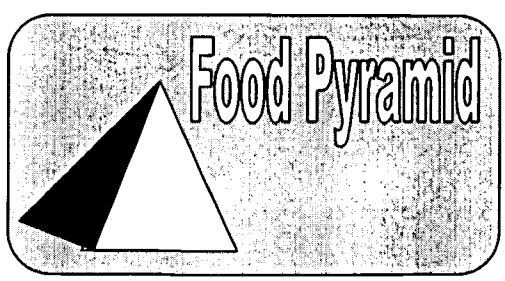












Math Environmental Print Activity

Volume of 3-D Geometric Shapes

Math Environmental Print Activity

Volume of 3-D Geometric Shapes

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

$V = s^3$	$V = l \times w \times h$	$V = \pi r^2 \times h$	$V = \frac{1}{3} \pi r^3$
$V = s^3$	$V = l \times w \times h$	$V = \pi r^2 \times h$	$V = \frac{1}{3} \pi r^3$
$V = s^3$	$V = l \times w \times h$	$V = \pi r^2 \times h$	$V = \frac{1}{3} \pi r^3$
$V = s^3$	$V = l \times w \times h$	$V = \pi r^2 \times h$	$V = \frac{1}{3} \pi r^3$
$V = s^3$	$V = l \times w \times h$	$V = \pi r^2 \times h$	$V = \frac{1}{3} \pi r^3$
$V = \frac{4}{3} \pi r^3$	$V = \frac{4}{3} \pi r^3$	$V = \frac{1}{3} l \times w \times h$	$V = \frac{1}{3} l \times w \times h$
$V = \frac{4}{3} \pi r^3$	$V = \frac{4}{3} \pi r^3$	$V = \frac{1}{3} l \times w \times h$	$V = \frac{1}{3} l \times w \times h$
$V = \frac{4}{3} \pi r^3$	$V = \frac{4}{3} \pi r^3$	$V = \frac{1}{3} l \times w \times h$	$V = \frac{1}{3} l \times w \times h$
$V = \frac{4}{3} \pi r^3$	$V = \frac{4}{3} \pi r^3$	$V = \frac{1}{3} l \times w \times h$	$V = \frac{1}{3} l \times w \times h$

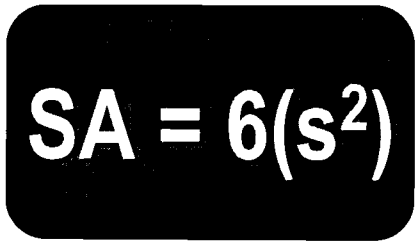
Surface Area of Geometric Shapes

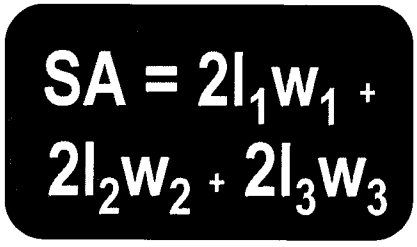
35

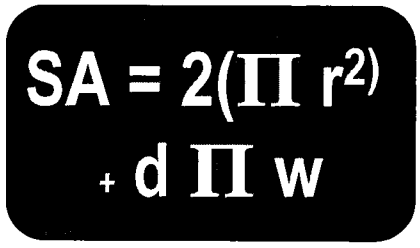
By Pamela McHenry

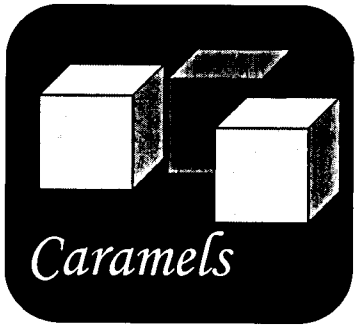
Teacher Directions: Find twenty different images that show three-dimensional shapes such as an ice cream cone or coffee filter (cone), caramels or fudge chunks (cube), food pyramid (square pyramid), cereal bar or cake (rectangular prism), film canister (cylinder), or cereal puffs (sphere). Mount these and the heading cards on mat board. Place the correct surface area equation on the reverse of each image.

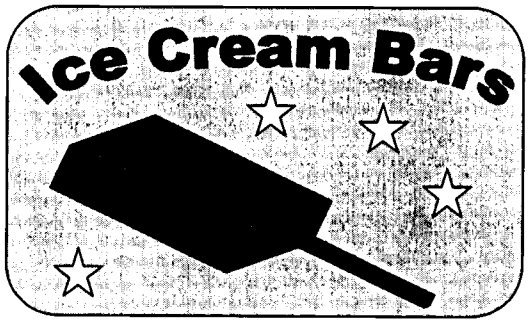
Student Directions: Remove all of the cards from the box. Take the heading cards and place them across the top of your work space. Place each of the images under the correct heading, matching the shape with the formula used to determine its surface area. If there is more than one shape in the picture, focus on the one that is most recognizable.

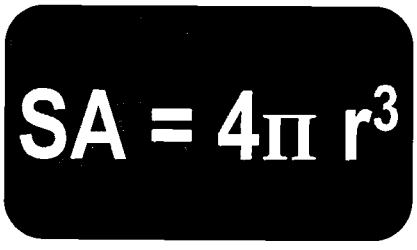


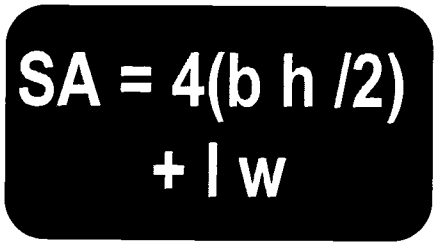


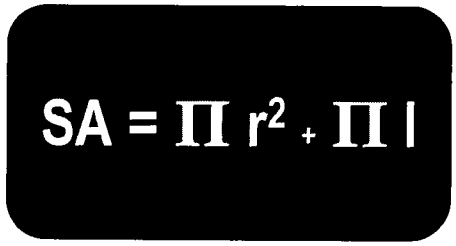


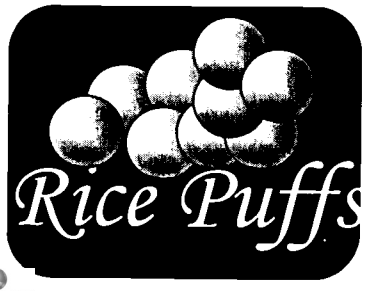


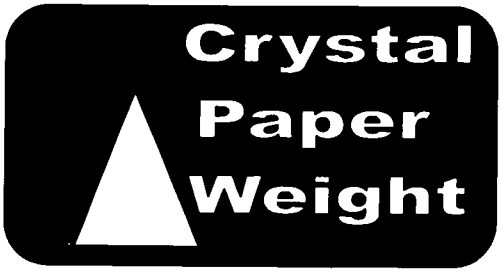












Math Environmental Print Activity

Surface Area of Geometric Shapes

Math Environmental Print Activity

Surface Area of Geometric Shapes

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.

$SA = 6(s^2)$	$SA = 2l_1w_1 + 2l_2w_2 + 2l_3w_3$	$SA = 2(\Pi\ r^{2)} + d\ \Pi\ w$	$SA = 4\pi\ r^3$
$SA = 6(s^2)$	$SA = 2l_1w_1 + 2l_2w_2 + 2l_3w_3$	$SA = 2(\Pi\ r^{2)} + d\ \Pi\ w$	$SA = 4\pi\ r^3$
$SA = 6(s^2)$	$SA = 2l_1w_1 + 2l_2w_2 + 2l_3w_3$	$SA = 2(\Pi\ r^{2)} + d\ \Pi\ w$	$SA = 4\pi\ r^3$
$SA = 6(s^2)$	$SA = 2l_1w_1 + 2l_2w_2 + 2l_3w_3$	$SA = 2(\Pi\ r^{2)} + d\ \Pi\ w$	$SA= 4\pi\ r^3$
$SA = 6(s^2)$	$SA = 2l_1w_1 + 2l_2w_2 + 2l_3w_3$	$SA = 2(\Pi\ r^{2)} + d\ \Pi\ w$	$SA = 4\pi\ r^3$
$SA = 4(b\ h\ /2) + l\ w$	$SA = 4(b\ h\ /2) + l\ w$	$SA = \Pi\ r^2 + \Pi\ l$	$SA = \Pi\ r^2 + \Pi\ l$
$SA = 4(b\ h\ /2) + l\ w$	$SA = 4(b\ h\ /2) + l\ w$	$SA = \Pi\ r^2 + \Pi\ l$	$SA = \Pi\ r^2 + \Pi\ l$
$SA = 4(b\ h\ /2) + l\ w$	$SA = 4(b\ h\ /2) + l\ w$	$SA = \Pi\ r^2 + \Pi\ l$	$SA = \Pi\ r^2 + \Pi\ l$
$SA = 4(b\ h\ /2) + l\ w$	$SA = 4(b\ h\ /2) + l\ w$	$SA = \Pi\ r^2 + \Pi\ l$	$SA = \Pi\ r^2 + \Pi\ l$

Sorting Words According to Numeration and Other Characteristics

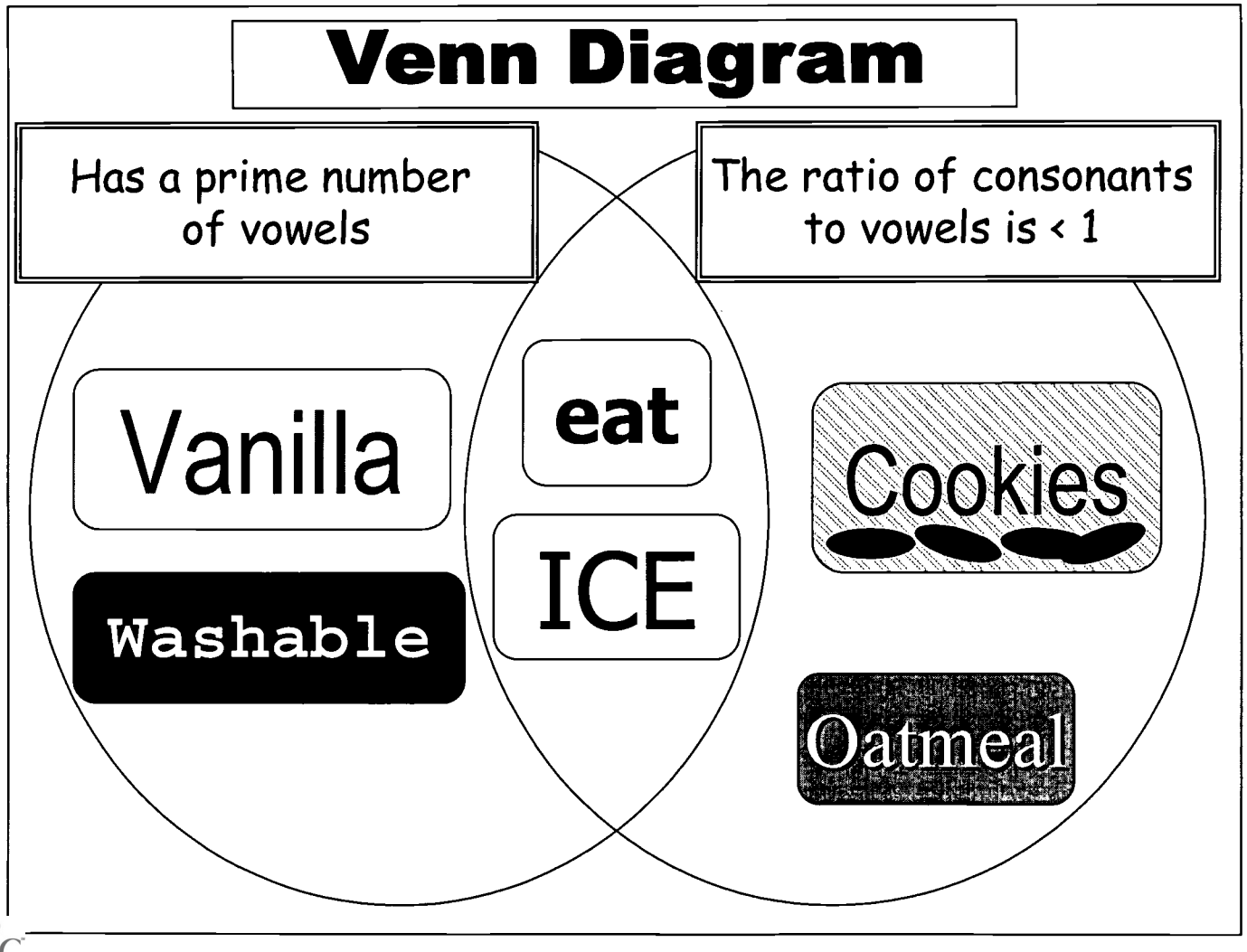
37

By Sean Manns

Teacher Directions: Create two large Venn Diagram Charts like the ones shown on the next pages. Collect environmental print words that fit the different categories and cut out the characteristic labels. Mount the words and labels on mat board.

Student Directions: Put one of the Venn Diagrams in front of you. Choose the appropriate number of categories for the diagram and place them where indicated. Then try to find at least one word that fits in each area of the chart.

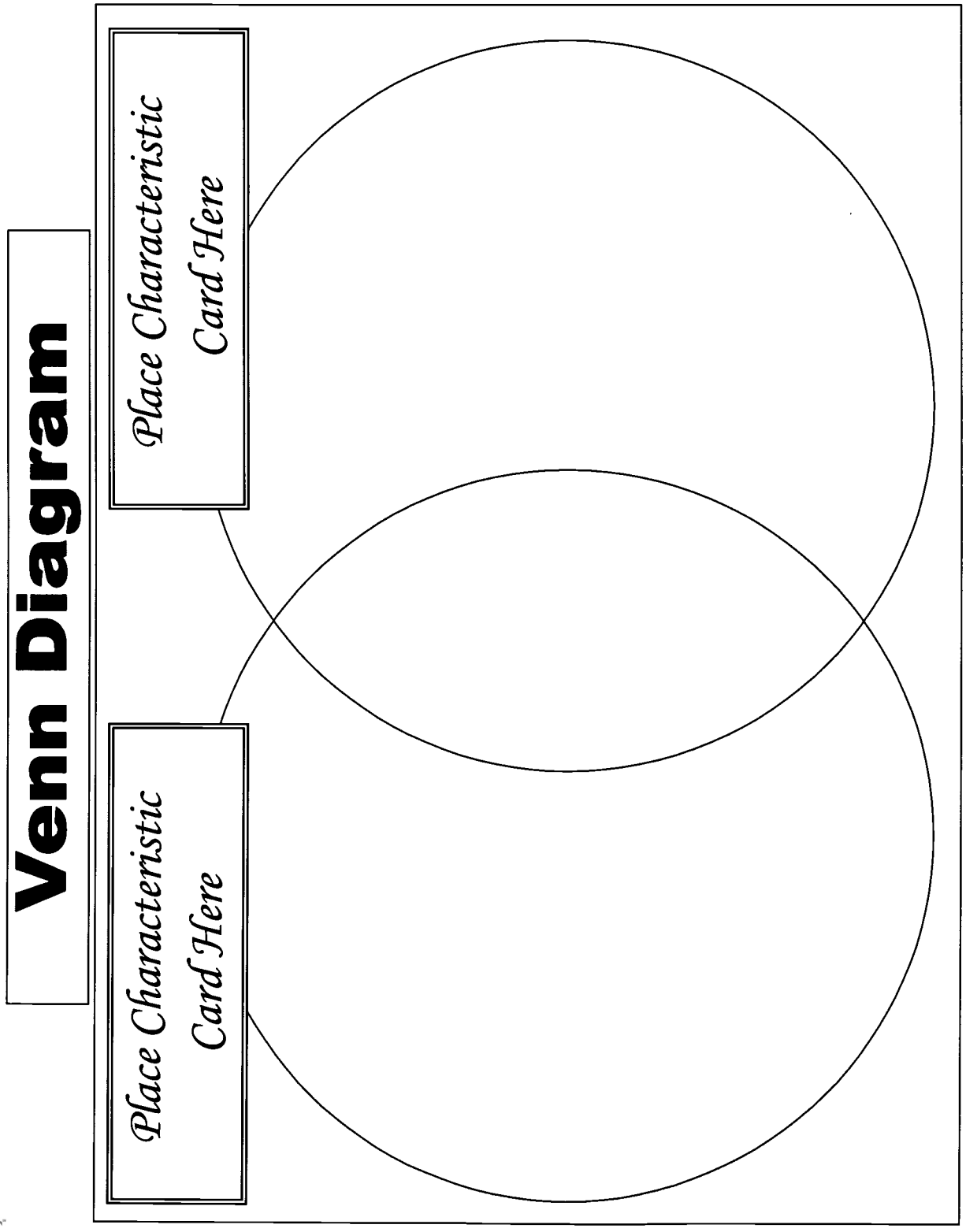
Example Venn Diagram below:



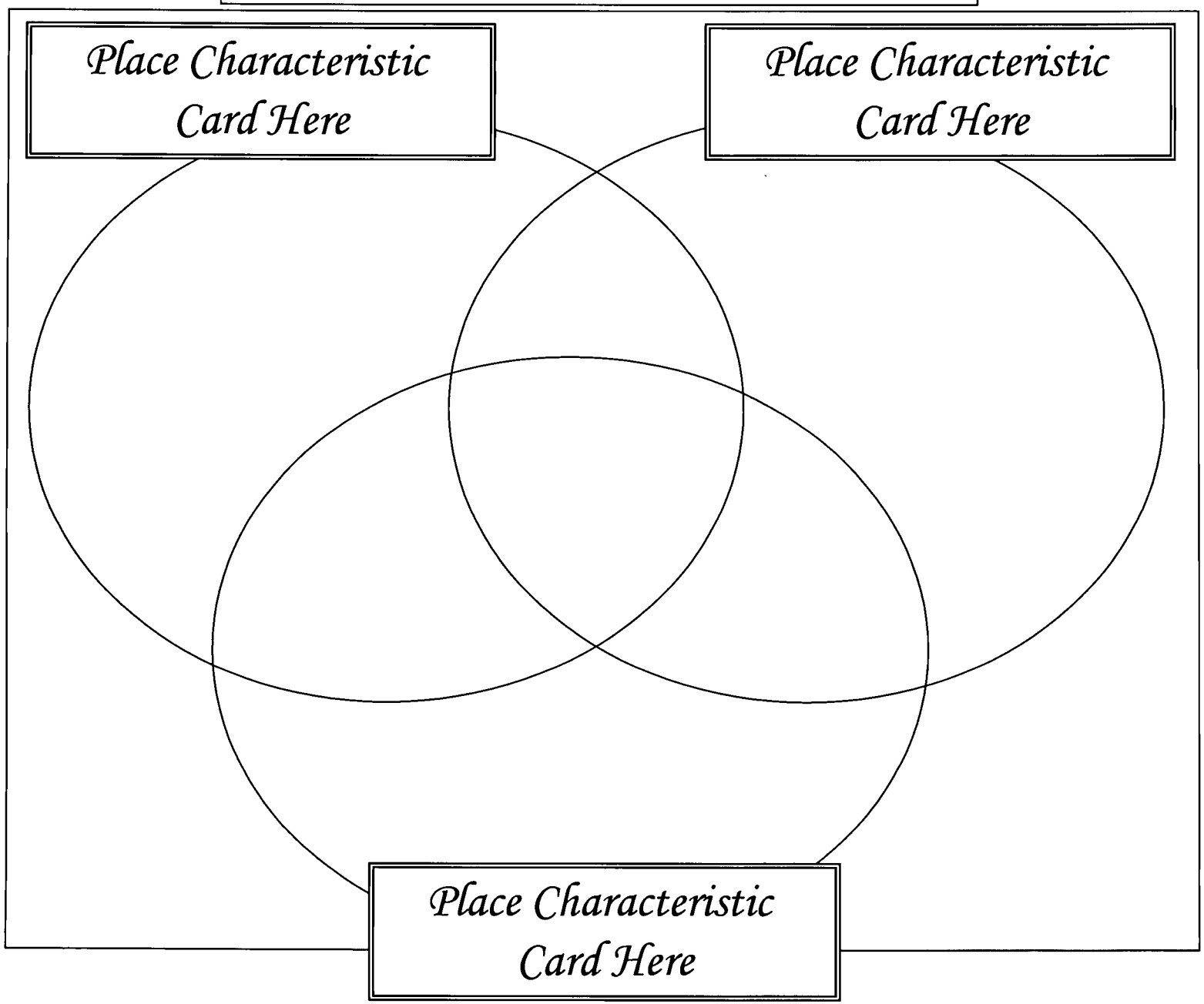
Math Environmental Print Activity
Sorting Words for Characteristics
Using a Venn Diagram

Math Environmental Print Activity
Sorting Words for Characteristics
Using a Venn Diagram

Labels above for activity storage box. Affix a label to each end of a plastic shoe box with wide, clear tape.



Venn Diagram



Venn Diagram Label Cards for Characteristics

The ratio of consonants to vowels is > 2	The word represent food	The word represents a number
The ratio of consonants to vowels is > 3	The word starts with a vowel	Has the color blue in Word or background
The word card includes a picture of the product	The ratio of consonants to vowels is < 2	Has a prime number of consonants
The letters are all capital (upper case) letters	The ratio of consonants to vowels is < 1	Has a prime number of vowels
The word is longer than eight letters	The number of letters is even	The number of letters is odd

Sorting Letter Sums According to Multiples of 3, 4, or 5

By Hanna Weigel

Teacher Directions: Find a variety words with letter sums that are multiples of 3, 4, or 5. Mount the words and sorting cards on mat board.

Student Directions: Remove all of the cards from the box. Use the heading cards to sort the words according to whether the number of letters is a multiple or 3, 4, or 5.

3

4

5

Scalloped

Supremes

Fruit Bowls

SILKY SMOOTH COMPLEXION

Olive Oil

French Bread Pizza

The Organic Flaxseed Bar

Haunting

Thick Sliced Bacon

Lemon Shortbread

Sugar Coated Chocolate Mints

Wheat Free Blueberry

A delicious blend of rare Eastern herbs and spices

So Creamy Garlic Mashed Potatoes

Banana Bread with walnut bits

Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5
Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 3	Multiple of 4	Multiple of 5

Math Environmental Print Activity
Sorting Letter Sums as Multiples of 3, 4, or 5

Math Environmental Print Activity
Sorting Letter Sums as Multiples of 3, 4, or 5

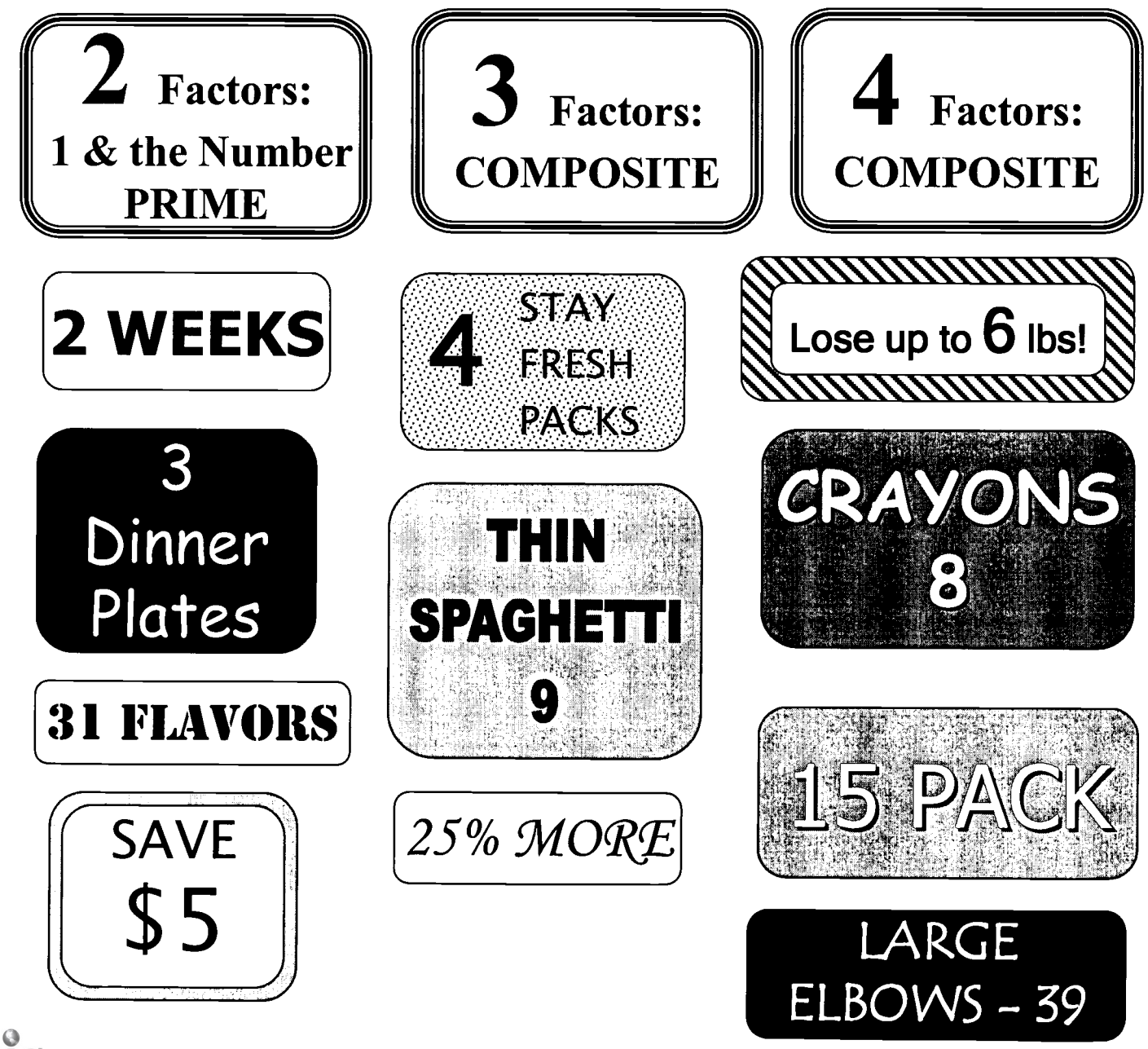
Number of Factors for a Number

43

By Nichole Rielly

Teacher Directions: Find a variety of numbers with 2, 3, 4, or 6 factors. Write the correct factors on the reverse of each card. Determine if the number is a prime number or a composite number. Glue the correct term on the back of the card.

Student Directions: Remove all of the cards from the box. Use the heading cards to sort the words according to whether the number has 2,3,4,or 6 factors.



6 Factors:
COMPOSITE

12
COUNT

50
SQ. FT.

18 EGGS

20g of
PROTEIN

Exactly 2 Factors Prime	Exactly 3 Factors Composite	Exactly 4 Factors Composite	Exactly 6 Factors Composite
Exactly 2 Factors Prime	Exactly 3 Factors Composite	Exactly 4 Factors Composite	Exactly 6 Factors Composite
Exactly 2 Factors Prime	Exactly 3 Factors Composite	Exactly 4 Factors Composite	Exactly 6 Factors Composite
Exactly 2 Factors Prime	Exactly 3 Factors Composite	Exactly 4 Factors Composite	Exactly 6 Factors Composite
Exactly 2 Factors Prime	Exactly 3 Factors Composite	Exactly 4 Factors Composite	Exactly 6 Factors Composite

Math Environmental Print Activity
Number of Factors for a Number

Math Environmental Print Activity
Number of Factors for a Number

Number of Distinct Letter Arrangements

By Michael Olley

45

Teacher Directions: Find a variety of words that have repeated letters. Mount each word on mat board. Put the answer on the back of each card.

Student Directions: Choose a word. Try to determine the distinct number of arrangements of the letters (permutations) in the given word. Write the arrangement in fraction form first, as a quotient of factorials. Then write the final answer in simplest form.

Examples are shown below:

CHEESE

Number of letters in word

$$\frac{6!}{3!} = 120$$

Number of repeats of a letter

CLASSIC

$$\frac{7!}{2!2!} = 1{,}260$$

TORTILLAS

$$\frac{9!}{2!2!} = 90{,}720$$

Envelopes

$$\frac{9!}{3!} = 60{,}480$$

DELUXE

$$\frac{6!}{2!} = 360$$

BETTER

$$\frac{6!}{2!2!} = 180$$

COCOA

$$\frac{5!}{2!2!} = 30$$

Math Environmental Print Activity
Number of Letter Permutations in a Word

Math Environmental Print Activity
Number of Letter Permutations in a Word

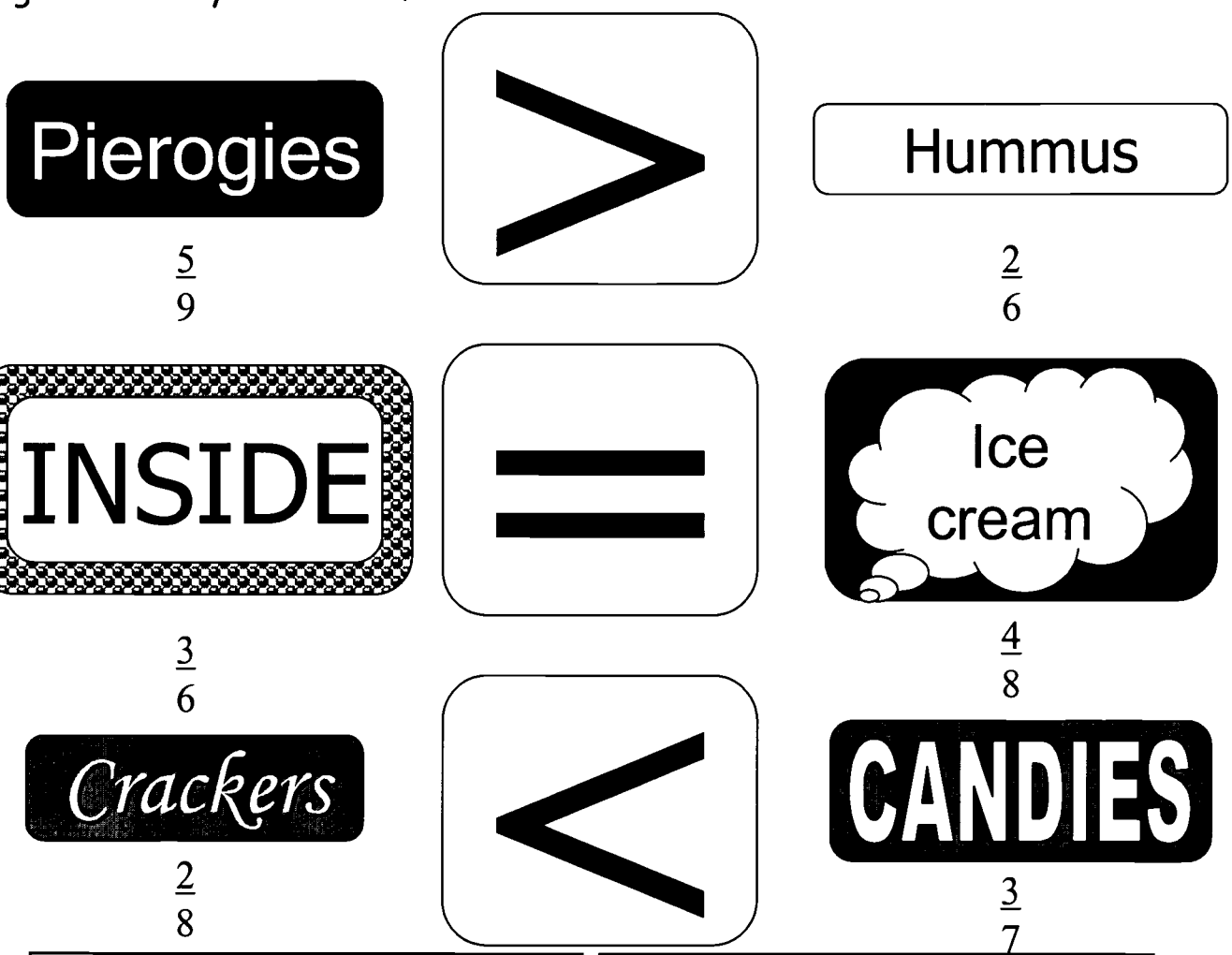
Comparing Probability of Vowels in Words

By Tammy Maddock

46

Teacher Directions: Find a variety of words that have different numbers of letters and vowels. Prepare inequality/ equality cards for math sentences.

Student Directions: Choose two word cards from the box. Count the total number of letters and then count the vowels. Determine the probability of obtaining a vowel (a, e, i, o, or u) when randomly choosing a letter from the word. Express the probability for each card as a fraction. Then compare the probabilities of the two words. Use the <, >, or = sign to make a math sentence. Continue with other pairs of words. Then try to produce a longer math sentence using all three symbols and four words.



Math Environmental Print Activity
Comparing Probability of Vowels in Words

Math Environmental Print Activity
Comparing Probability of Vowels in Words

Single and Multiple Rhythm Words

By Kelly Pritchard

Teacher Directions: Find a variety of words that evidence single or multiple rhythms. Mount each word on a mat board backing. Prepare two heading cards on mat board for sorting.

Student Directions: Remove all of the cards from the box. Use the heading cards to sort the words according to whether there is a single rhythm shown or multiple rhythms.

Single Rhythm

graham

Corn flakes

charms

JONES

fruit snacks

Multiple Rhythms

Rigatoni

Shredded Wheat

Pecan Pie

Taco Shells

Banana split

single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm
single rhythm	single rhythm	multiple rhythm	multiple rhythm

Environmental Print Activity
Identifying Single and Multiple Rhythm Words

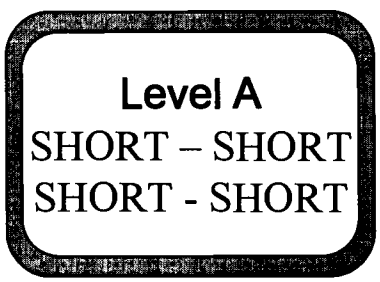
Environmental Print Activity
Identifying Single and Multiple Rhythm Words

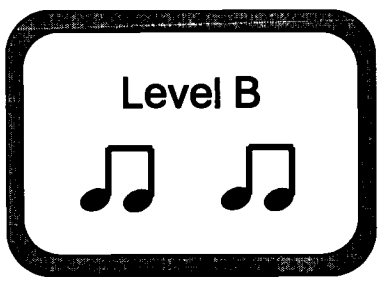
"Words Got Rhythm"

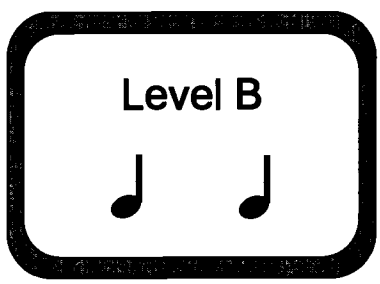
By Mark David D'Alberto

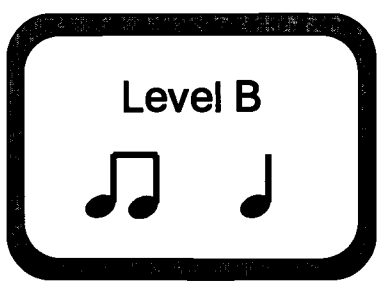
Teacher Directions: Find a variety of words that have different rhythms that correspond to the rhythms shown on the sorting cards. Mount them on mat board. Use the Level A sorting cards for beginning students and the Level B sorting cards for more advanced students.

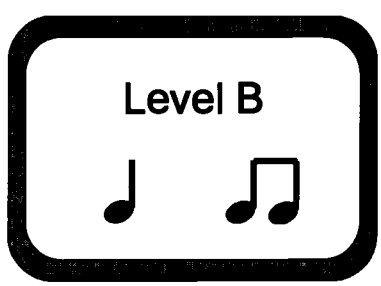
Student Directions: Arrange the sorting cards across the top of your work space. Choose a card from the box. Say the word. What is the natural rhythm of the word or words on the card? Look at the categories on the sorting cards and determine the one which best fits your card. Place your card under it and continue this process with the next card.











SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫
SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫
SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫
SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫
SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫
SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫
SHORT – SHORT SHORT – SHORT ♫ ♫	LONG - LONG ♩ ♩	SHORT – SHORT LONG ♫ ♩	LONG SHORT – SHORT ♩ ♫

Environmental Print Activity
Musical Rhythm of Words

Environmental Print Activity
Musical Rhythm of Words

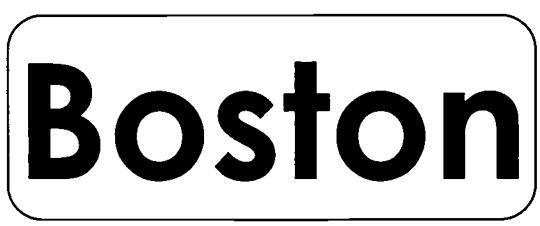
Items and Ideas Related to the Taxation of the 13 Colonies

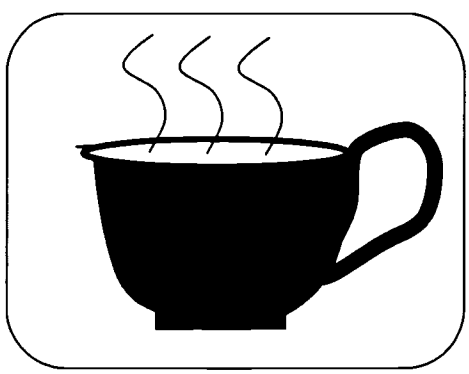
By Jeramy Clingerman

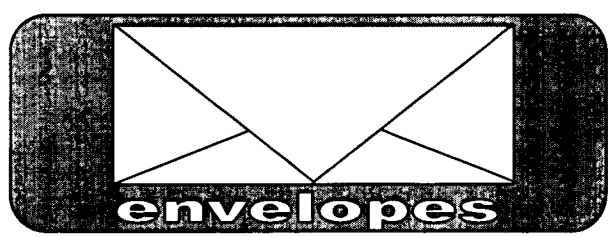
Teacher Directions: Find a variety of words or images that represent different items or ideas related to three historic acts: the Sugar Act of 1764, the Stamp Act of 1765, and the Townshend Acts of 1767. Some suggested things are: sugar, molasses, triangular trade (Sugar Act); legal documents, playing cards, envelopes, newspapers, unity of 13 colonies (Stamp Act); and paper, glass, tea, Daughters of Liberty, Boston Tea Party, Committee of Correspondence, Concord, success, happiness (Townshend Acts).

Student Directions: Examine the words and images provided. Take each one and tell how it relates to either the Sugar Act of 1764, the Stamp Act of 1765, or the Townshend Acts of 1767.

Examples are shown below:







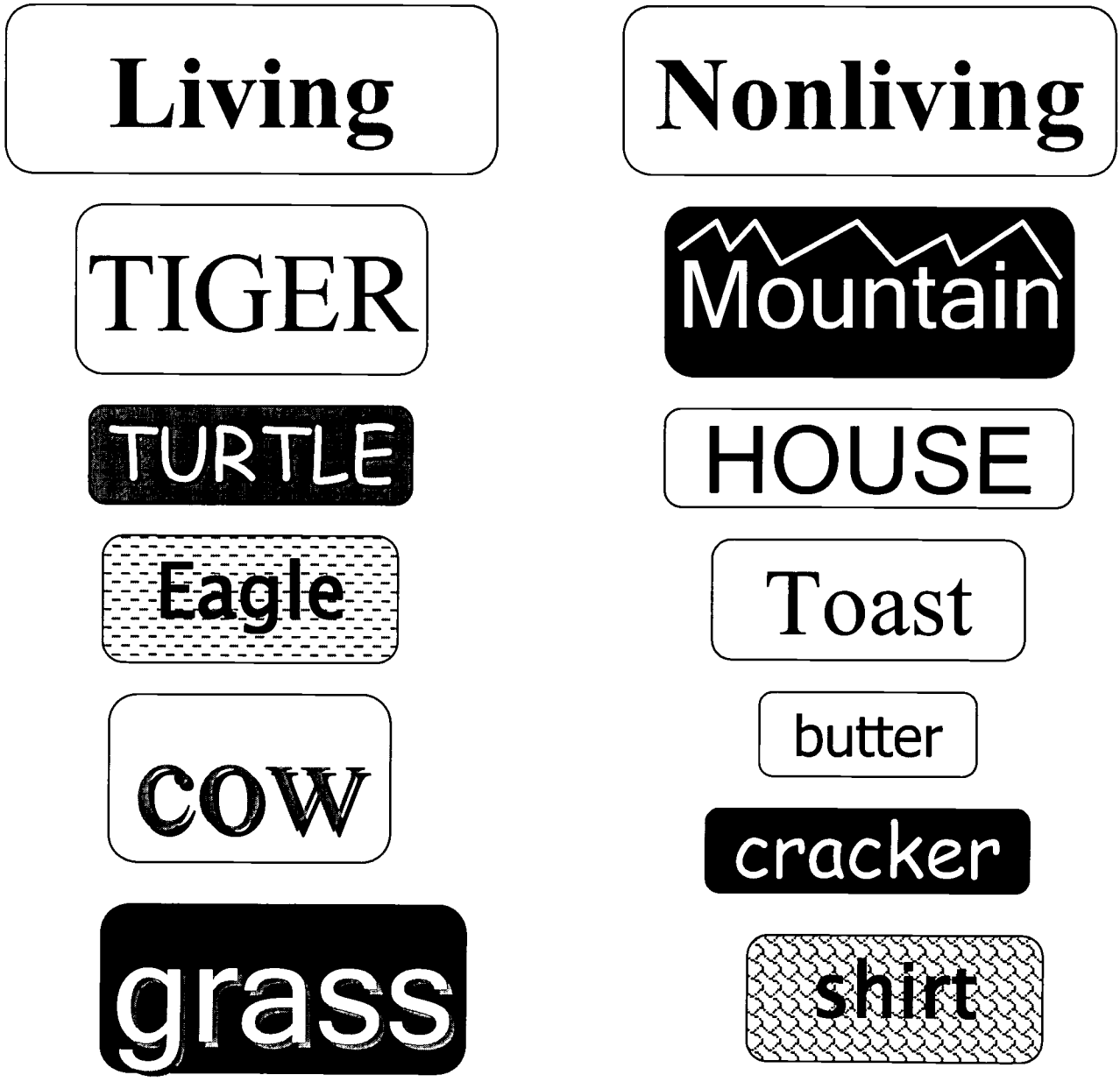
Environmental Print Activity **Taxation 13 Colonies**	Environmental Print Activity **Taxation 13 Colonies**

Sorting Living and Nonliving

By Jennifer Szkotak

Teacher Directions: Find a variety of images and words that represent living and nonliving things. Mount each one on mat board and glue the answer to the back. Prepare the heading cards for "living" and "nonliving" similarly.

Student Directions: Remove all of the cards from the box. Use the heading cards to sort the items that are living from those that are nonliving. Remember, Living things need food, make movement, and grow, whereas nonliving things do not.



living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving
living	living	nonliving	nonliving

Environmental Print Activity
Sorting Living and Nonliving

Environmental Print Activity
Sorting Living and Nonliving

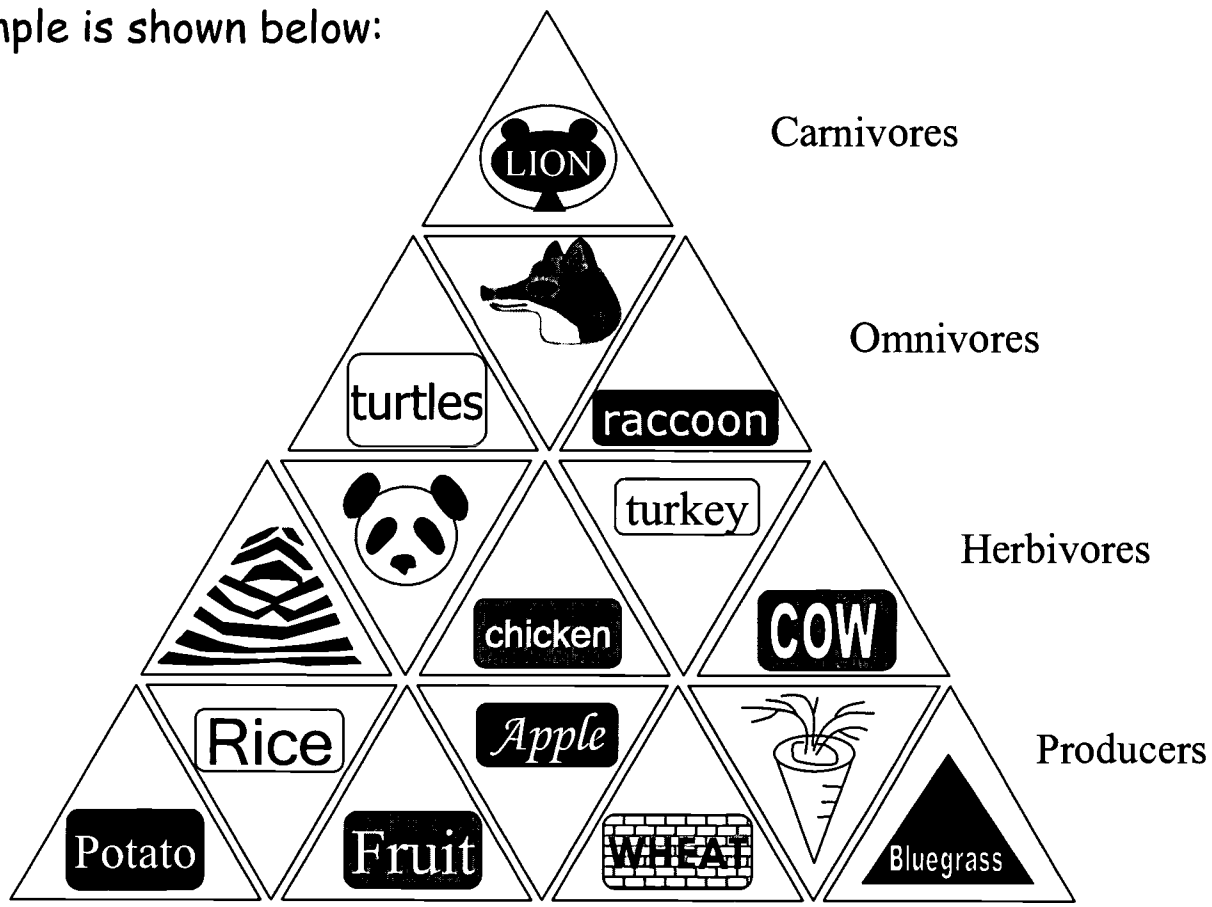
Ecology Food Pyramid

By Daniel Mainville

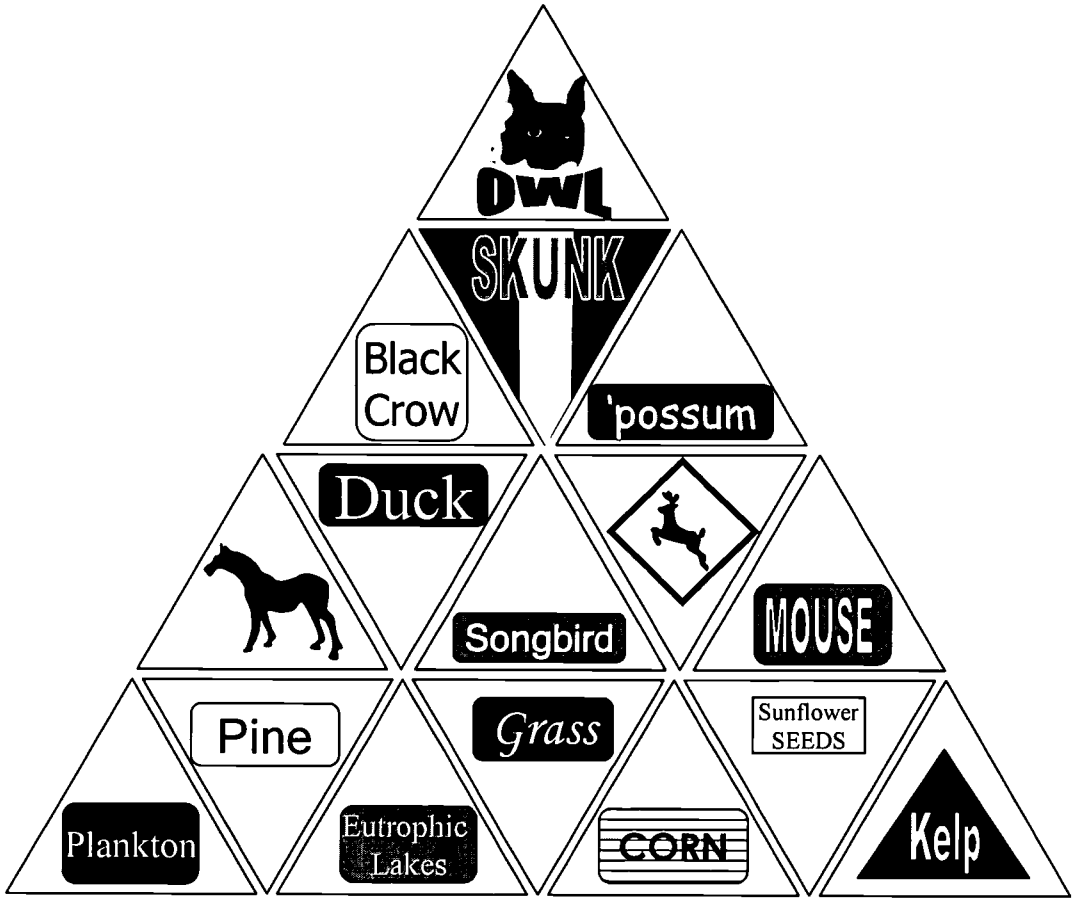
Teacher Directions: Find a variety of words or images that represent different parts of a food chain from producer to herbivore to omnivore to carnivore. Mount each on an equilateral triangle cut of mat board. Label the reverse side with the correct classification. For each complete pyramid, you will need 1 carnivore, 3 omnivores, 5 herbivores, and 7 producers.

Student Directions: Examine the words and images provided. Try to assemble them into a large ecology food pyramid by considering the role of each organism as producer, herbivore, omnivore, or carnivore.

An example is shown below:



For higher levels of biology, use more true to form examples of each level. Below is an example.



Environmental Print Activity
Ecology Food Pyramid

Environmental Print Activity
Ecology Food Pyramid

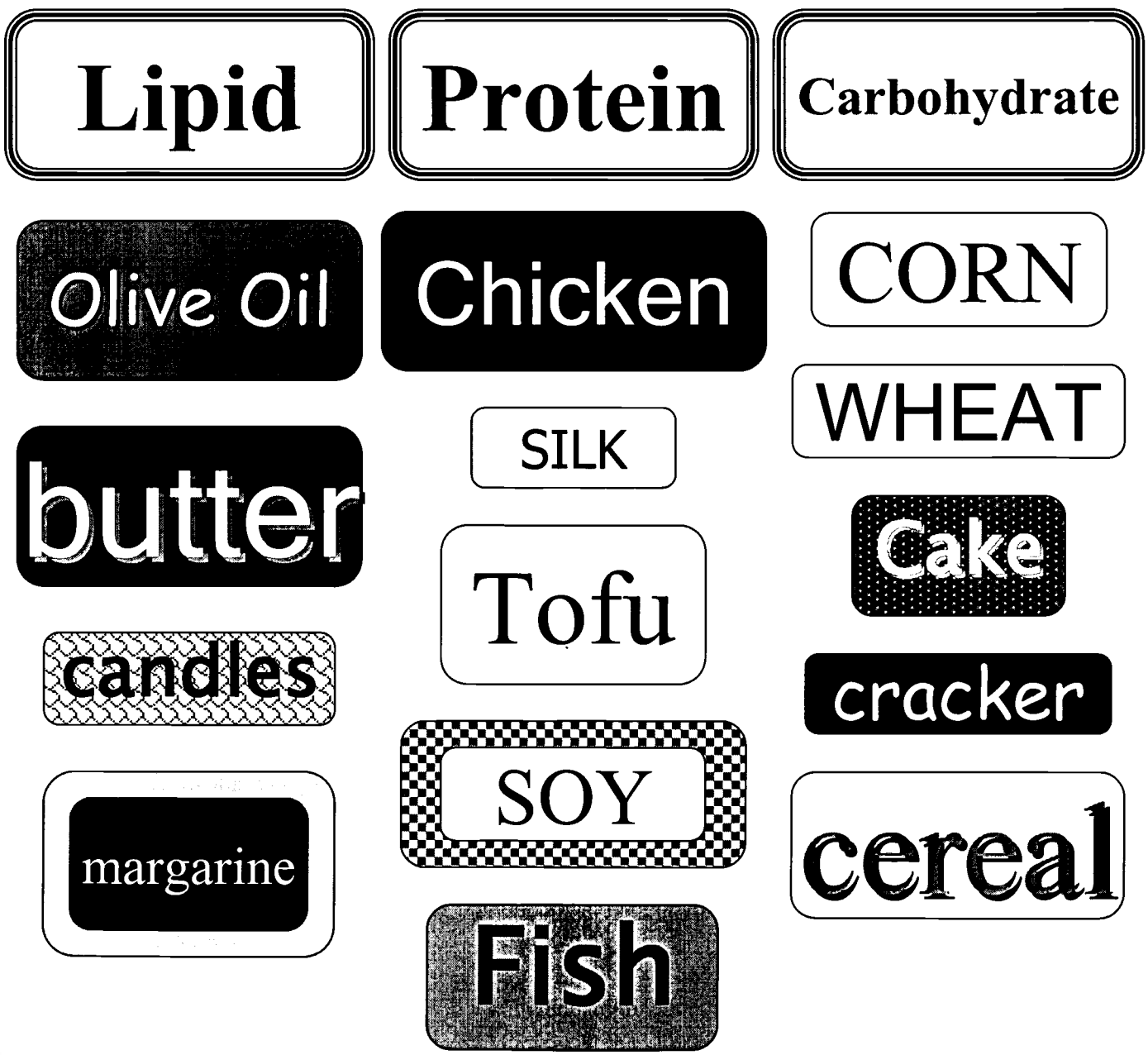
Sorting Proteins, Carbohydrates, & Lipids

By Robert Szkotak

56

Teacher Directions: Find a variety of images and words that food or other substances that are proteins, carbohydrates, and lipids. Mount these on mat board. Prepare heading cards and mount on mat board.

Student Directions: Remove all of the cards from the box. Use the heading cards to sort the items that are living from those that are nonliving. Remember, Living things need food, make movement, and grow, whereas nonliving things do not.



Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate
Lipid	Protein	Carbohydrate

Environmental Print Activity
Identifying Substances as Lipid, Carbohydrate, or Protein

Environmental Print Activity
Identifying Substances as Lipid, Carbohydrate, or Protein

Discriminating between Potential and Kinetic Energy

By Jeremie Auge

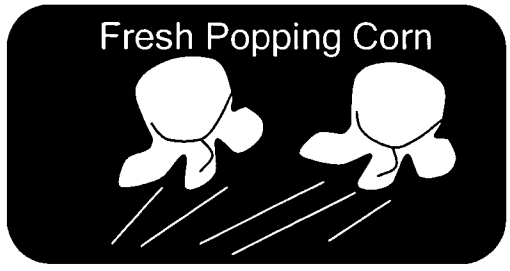
Teacher Directions: Find images and words related to potential energy and kinetic energy. Mount these on mat board. Prepare heading cards on mat board for sorting.

Student Directions: Remove all of the cards from the box. Sort the words according to whether each represents kinetic energy (energy of motion) or potential energy (stored energy).

Potential Energy

Kinetic Energy

Cliff Hanger



STORAGE

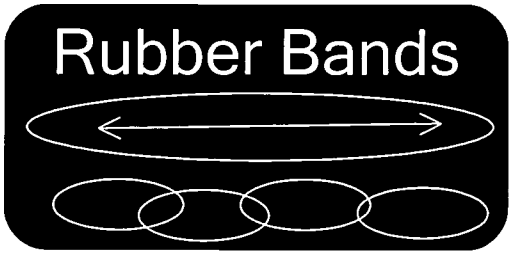
RACING MOTION

breakfast

SUGAR

ZIP

Spray



Action

NOW

Environmental Print Activity
Differentiating Potential & Kinetic Energy

Environmental Print Activity
Differentiating Potential & Kinetic Energy

Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic
Potential	Potential	Kinetic	Kinetic

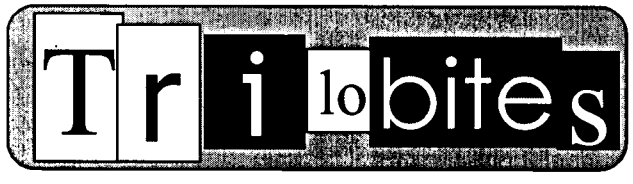
Fossils in Geologic Time

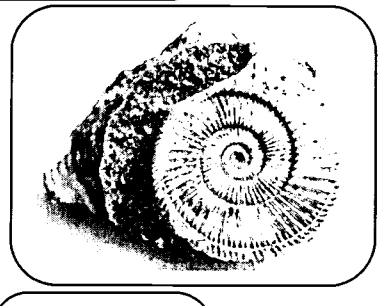
By Julie Ann Tetrault

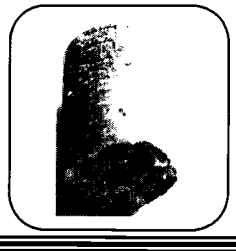
Teacher Directions: Find a variety of large, colorful words from which to cut letters. Form the words of the major fossil groups by cutting letters from other environmental print words. Mount these on mat board. Conduct internet searches for images of fossil specimens. Mount these on mat board also.

Student Directions: Arrange the labels for major fossil groups in order of those appearing earliest in the geologic record t those appearing later. Take the picture cards and sort them according to fossil group. Then arrange the set of fossil images for each type from earliest organisms to those appearing later.

Examples are shown below:







Environmental Print Activity
Fossils in Geologic Time

Environmental Print Activity
Fossils in Geologic Time

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