Foundation Phase Mathematical Development Area of Learning

Foundation Phase pedagogy

Children should be given opportunities to develop their skills, knowledge and understanding through:

- a developmentally appropriate curriculum where the seven (six in Welsh-medium settings/schools) Areas of Learning complement each other and work together
- continuous and enhanced provision and focused activities in the indoor and outdoor learning environments
- different types of play and a range of planned activities, including those that are child-initiated
- experiences that allow them to adopt a variety of roles, including leadership within a small group, paired learning or working within a team
- different resources, including ICT
- active learning opportunities that build on prior experiences and support them to become independent thinkers and learners
- activities that allow them to use their senses, be creative and imaginative
- tasks and challenges that encourage problem solving and discussion.

Range of experiences

Children should be given opportunities to:

- experience a mathematically-rich environment that allows them to explore and develop mathematical concepts and language
- develop practical mathematical skills in a range of contexts
- communicate in a range of mathematical contexts for a variety of purposes and audiences
- practise, develop and refine their mathematical skills within all aspects of provision, including continuous provision, and through all Areas of Learning
- experience and use a range of media and stimuli including emerging technologies
- understand and use a range of measures and recognise and use shapes within play and structured activities.

Key

Within the table, text taken from the LNF will appear as non-bold. Text that has been extended from the LNF or that is a specific Mathematical Development Area of Learning skill will appear as bold. These skills are further identified by the following icons.

Extended skill ▲ **Area of Learning skill** ❖ When combined with the LNF statements, these skills form the Foundation Phase Mathematical Development Area of Learning.

N.B.

In order to comply with accessibility and legibility, these tables have been designed to be printed at their optimum size of A3.

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Foundation Phase Mathematical Development Area of Learning

Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Developing numerical reasoning	**Identifying processes and connections**	transfer mathematical skills to play and classroom activities			
		identify steps to complete the task or reach a solution			
		select appropriate mathematics and techniques to use			
		select and use relevant number facts and mental strategies			
		select appropriate equipment and resources			
		use knowledge and practical experience to inform estimations			
	Represent and communicate	use everyday and mathematical language to talk about their own ideas and choices			
		present work orally, pictorially and in written form, and use a variety of ways to represent collected data			
		devise and refine informal, personal methods of recording, moving to using words and symbols in number sentences			
	Review	use checking strategies to decide if answers are reasonable			
		interpret answers within the context of the problem and consider whether answers are sensible			
		interpret information presented in charts and diagrams and draw appropriate conclusions			

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Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Using number skills	Use number facts and relationships	**listen to and join in with rhymes, songs, stories and games that have a mathematical theme ❖**	**recite a range of number rhymes and songs ❖**		
		realise that anything can be counted, not just objects, *e.g. claps, steps* ❖			
		count reliably up to 5 objects	count reliably up to 10 objects	count reliably up to 20 objects	count sets of objects by grouping in 2s, 5s or 10s
		recite numbers from 0 to 10 forwards and backwards using songs and rhymes ❖	**recite numbers up to 20, forwards and backwards, and from different starting points ❖**	**recite numbers up to 100, forwards and backwards and from different starting points ❖**	**recite numbers beyond 100, forwards and backwards and from different starting points ❖**
		recognise numbers 0 to 5 and relate a number 0 to 5 to its respective quantity	read and write numbers to at least 10	read and write numbers to at least 20 **forming and orientating them correctly ▲**	read and write numbers **to at least** 100 **▲**
		use mark making to represent numbers in play activities that can be interpreted and explained ❖			
		compare and order numbers to at least 5	compare and order numbers to at least 10	compare and order numbers to at least 20	compare and order 2-digit numbers
		demonstrate an understanding of one-to-one correspondence by matching pairs of objects or pictures	**understand that zero means 'none' ❖**	**demonstrate an understanding of place value, *e.g. one 10 and four units equal 14*, up to at least 20 ❖**	**demonstrate an understanding of place value up to at least 100 ❖**
			use number facts up to 5 ❖	use number facts within 10, i.e.: – doubling and halving, *e.g. 4 + 4* – bonds of 10, *e.g. 6 + 4*	use mental recall of number facts to 10 to derive other facts, i.e.: – doubling and halving, *e.g. derive 40 + 40 from knowing 4 + 4* – bonds of 10, *e.g. derive 60 + 40 from knowing 6 + 4*

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Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Using number skills	Use number facts and relationships			**recall doubles and near doubles up to 10 ❖**	**recall doubles up to 20 ❖**
				recognise and understand odd and even numbers up to 20 ❖	**recognise and understand odd and even numbers up to 100 ❖**
			count in 2s to 10 and in 10s to 100 ❖	**count in 2s, 10s and 5s to 100 ❖**	**count on in 2s, 5s and 10s from any given number ❖**
					recall and use 2, 5 and 10 multiplication tables
					begin to link multiplication with simple division, *e.g. grouping and sharing in 2s, 5s and 10s* ❖
		use the terms 'first', 'second', 'third' and 'last' in daily activities and play ❖	**use ordinal numbers to 10 in daily activities and play ❖**	**use ordinal numbers to 20 in practical situations ❖**	**use and record ordinal numbers in practical situations ❖**
			begin to read number words ❖	**read and write number words to 10 ❖**	**read and write number words to 100 ❖**
	Fractions, decimals, percentages and ratio			find halves in practical situations	find halves and quarters in practical situations
				recall halves up to 10 ❖	**partition 2-digit numbers and know the value of each digit ❖**

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Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Using number skills	**Calculate using mental and written methods**	understand and use the concept of 'one more' in their play	**mentally recall 'one more' of a number within 10 ❖**	**mentally recall 'one more' of a number within 20 ❖**	**mentally add 10 or 20 to a given number up to 100 ❖**
		understand and use the concept of 'one less' in their play	**mentally recall 'one less' of a number within 10 ❖**	**mentally recall 'one less' of a number within 20 ❖**	**mentally subtract 10 or 20 from a given number up to 100 ❖**
			combine two groups of objects to find 'how many altogether?'	use 'counting on' strategies to add two collections, starting with the larger number, *e.g. 8 + 5*	find small differences within 20 by using 'counting on' strategies
			take away objects to find 'how many are left?'	add and subtract numbers involving up to 10 objects	use mental recall of number facts to 10 and place value to add or subtract larger numbers, *e.g. 24 + 4, 30 + 5, 34 + 10*
				use a range of strategies to mentally solve problems within 10 ❖	**find a small difference between two numbers by counting on, *e.g. 44 – 28 =* ☐ ❖**
		use counting to solve simple mathematics problems in everyday and play situations ❖	**solve simple problems in a practical situation that involve simple addition and subtraction up to 5 ❖**	**solve one-step problems that involve addition and subtraction, including missing number problems, *e.g. 7 +* ☐ *= 9,* using concrete objects and pictorial representations ❖**	**solve one- and two-step problems that involve addition and subtraction, multiplication and simple division including missing number problems, *e.g. 40 –* ☐ *= 19* ❖**
				use known facts to solve simple problems within 10, *e.g. doubling and halving, number bonds* ❖	**use partitioning strategies to double and halve 2-digit numbers ❖**
				use known number facts when adding three single digit numbers and realise addition can be done in any order ❖	**understand that multiplication is repeated addition, *e.g. 2 + 2 + 2 is the same as 'three twos'* ❖**
					add/subtract 9 or 11 from given number by adding/subtracting 10 and adjusting ❖

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Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Using number skills	**Calculate using mental and written methods**		**talk about addition and subtraction instructions in play activities** ❖	**understand and use the mathematical symbols for addition, subtraction and equals** ❖	**understand and use mathematical symbols for addition, subtraction, multiplication, division and equals** ❖
				understand and use the different mathematical terms for addition and subtraction, *e.g. add, combine, find the difference* ❖	**understand and use the different mathematical terms for addition, subtraction, multiplication, division and equals, *e.g. find the total, share, goes into*** ❖
	Estimate and check		**make a sensible estimate of up to 10 objects that can be checked by counting** ❖	make a sensible estimate of a number of objects that can be checked by counting	use checking strategies: – repeat addition in a different order – use halving and doubling within 20
				make a sensible estimate of measurement in length, height, weight and capacity that can be checked using non-standard measures ❖	**make a sensible estimate of measurement in length, height, weight and capacity that can be checked using standard measures** ❖
	Manage money	demonstrate an awareness of the purpose of money through role play	use 1p, 2p, 5p and 10p coins to pay for items	use different combinations of money to pay for items up to 20p	use different combinations of money to pay for items up to £1
				find totals and give change from 10p	find totals and give change from multiples of 10p
Using measuring skills	**Length, weight/mass, capacity**	compare, sort and order two objects in terms of size, weight or capacity by direct observation	use direct comparisons with: – length, height and distance, *e.g. longer/shorter than* – weight/mass, *e.g. heavier/lighter than* – capacity, *e.g. holds more/less than*	use non-standard units to measure: – length, height and distance – weight/mass – capacity	use standard units to measure: – length, height and distance: metres, half metres or centimetres – weight/mass: kilograms or 10 gram weights – capacity: litres
					use symbols related to length, weight/mass and capacity ❖

Key: Non-bold text: LNF statement Extended skill ▲ Area of Learning skill ❖

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Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Using measuring skills	**Time**				read hours and minutes on a 12-hour digital clock
		anticipate events related to elements of daily routines and use the terms 'before' and 'after'	use the concept of time in terms of their daily activities	use the concept of time in terms of their daily and weekly activities and the seasons of the year	
		sing/chant the days of the week ❖	**sing/chant the days of the week, months and seasons of the year in meaningful contexts, *e.g. when changing the class calendar* ❖**	**understand and order the days of the week, the months and seasons of the year in meaningful contexts ❖**	**record the days of the week, the months and seasons of the year ❖**
			demonstrate a developing sense of how long tasks and everyday events take	use standard units of time to read 'o'clock' using both analogue and 12-hour digital clocks	read 'half past', 'quarter past' and 'quarter to' on an analogue clock
	Temperature	use words that describe temperature during everyday activities, *e.g. hot/cold*	use direct comparisons when describing temperature, *e.g. hot/cold*	use descriptive words for a range of temperatures, *e.g. cooler/warmer*	compare daily temperatures using a thermometer (°C)
	Area and volume **Angle and position**	follow two-step instructions for simple movements within games and play activities	move in given directions	make whole turns and half turns	recognise half and quarter turns, clockwise and anti-clockwise
					recognise that a quarter turn is a right angle
		demonstrate an awareness of prepositions and movement during their own physical activities ❖	**use prepositions to describe position ❖**	**describe position, direction and movement ❖**	**use mathematical vocabulary to describe position, direction and movement ❖**

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Strands	Elements	Nursery Children are able to:	Reception Children are able to:	Year 1 Children are able to:	Year 2 Children are able to:
Using geometry skills	**Shape**	**recognise and use the names for 2D shapes (*circle, square and triangle*) within play activities and the environment ❖**	**recognise and name common 2D shapes (*circle, square, triangle and rectangle*) and some 3D shapes (*cube, cuboid and sphere*) within play activities and the environment ❖**	**recognise and name common 2D shapes (*square, triangle, rectangle, circle and semi-circle*) and 3D shapes (*cube, cuboid, cone and sphere*) in order to begin to compare and sort ❖**	**recognise and name regular and irregular 2D and 3D shapes, understand and use the properties of shape ❖**
		use and build with 2D and 3D shapes within play-based activities ❖	**use 2D and 3D shapes to make models and pictures ❖**	**use 2D and 3D shapes and describe how they fit together ❖**	**make increasingly more complex or accurate models with 3D shapes and tessellate 2D shapes ❖**
	Movement	**use a variety of media to develop concept of symmetry ❖**	**complete a simple symmetrical picture through a variety of media ❖**	**recognise and complete a symmetrical picture or simple shape ❖**	**identify a line of symmetry for 2D shapes and complete symmetrical pictures ❖**
Using data skills	**Collect and record data** **Present and analyse data** **Interpret results**	sort and match sets of objects by recognising similarities	sort and classify objects using one criterion	sort and classify objects using more than one criterion	**sort and classify objects using more than two criterion ❖**
		use mark making to begin to record collections	record collections using marks, numbers or pictures	collect information by voting or sorting and represent it in pictures, objects or drawings	gather and record data from: – lists and tables – diagrams – block graphs – pictograms where the symbol represents one unit
				make lists and tables based on data collected	extract and interpret information from lists, tables, diagrams and graphs
	Pattern	**copy a range of simple patterns and sequences visually and aurally, *e.g. clapped patterns, threading activities.* ❖**	**recognise and repeat three object/colour/clapped patterns and sequences. ❖**	**demonstrate an understanding of repeating patterns, including shape and number, by describing, reproducing and extending. ❖**	**order and identify patterns in combinations of mathematical objects, including number and number tables, and discuss the relationship between them. ❖**

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