

Year Five

NUMBERS AND THE NUMBER SYSTEM

2-15 Place value, ordering and rounding

Read and write whole numbers in figures and words, and know what each digit represents. (For decimals, see page 29.) (p.3)	Primary Resources 'Number Board'	Place value chart and arrow cards/ pointer cards used for partitioning numbers	www.primaryresources.co.uk/online/numberboard2.swf
Multiply and divide any positive integer up to 10000 by 10 or 100 and understand the effect (e.g. $9900 \div 10$, $737 \div 10$, $2060 \div 100$). (p.7)			
Use the vocabulary of comparing and ordering numbers, including symbols such as $<$, $>$, $=$. Give one or more numbers lying between two given numbers. Order a set of integers less than 1 million. (p.9)			
Use the vocabulary of estimation and approximation. Make and justify estimates of large numbers, and estimate simple proportions such as one third, seven tenths. Round any integer up to 10000 to the nearest 10, 100 or 1000. (For rounding decimals, see page 31.) (p.11,13)			
Order a given set of positive and negative integers (e.g. on a number line, on a temperature scale). Calculate a temperature rise or fall across 0°C . (p.15)	Primary Resources 'Order the Negative Numbers'	Fun ordering of negative numbers. Extended by children finding the difference between 2 numbers	www.primaryresources.co.uk/online/negnumorder.swf
	Standards Site 'Thermometer'	Interactive Thermometer. Change scale. Show difference in temperature and change in temperature. Great discussion potential	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9995&top_id=0&rt_id=0
<u>16-21 Properties of numbers and number sequences</u>			
Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back. For example: count on in steps of 25 to 1000, and then back; count on or back in steps of 0.1, 0.2, 0.3... (p.17)	Primary Resources 'Counting Stick'	Use to generate decimal number lines	www.primaryresources.co.uk/online/numberstick.swf
	Ambleside 'Super Sequencer'	Counter. Use for chanting, counting on or back. Use negative increment for backwards chant	http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/supersequencer.html
	Turquoise Box 'Counter'	Use to generate sequences, children predict continuation of sequence	www.standards.dfes.gov.uk/numeracy/publications/ict_resources/12876/

Make general statements about odd or even numbers, including the outcome of sums and differences. (p.19)	Primary Games 'Splat Square'	Hundred square and/or empty 100 square with 'splats' as highlights. Useful for highlighting numbers	www.primarygames.co.uk/pg2/splat/splat100.html
Recognise multiples of 6, 7, 8, 9, up to the 10th multiple. Know and apply tests of divisibility by 2, 4, 5, 10 or 100. (p.19)	Primary Resources 'Counting Stick'	Use as physical counting stick. Ability to easily cover and uncover numbers very beneficial	www.primaryresources.co.uk/online/numberstick.swf
	Primary Resources Moon Maths	Practice at identifying multiplication facts in rather fun way. Children individually or on whiteboard during mental and oral starter	www.primaryresources.co.uk/online/moonmaths.swf
	Grid Club 'Alien Tables'	Activity allowing practice of recognition of chosen multiples. Short starter or short individual practice.	www.gridclub.com/have_a_go/maths/alien_tables/index.shtml
Know squares of numbers to at least 10×10 . (p.21)	Primary Resources 'Number Square'	Interactive multiplication square, colour squares/blank squares out	www.primaryresources.co.uk/online/numbersquare.swf
	Ambleside 'Scribble TablesSquare'	Multiplication square you can 'scribble' on	http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/scribbletable.html
Find all the pairs of factors of any number up to 100. (p.21)			
<u>22-33 Fraction, decimals, percentages, ratio and proportion</u>			
Use fraction notation, including mixed numbers, and the vocabulary numerator and denominator. Change an improper fraction to a mixed number (e.g. change $\frac{13}{10}$ to $1\frac{3}{10}$). Recognise when two simple fractions are equivalent, including relating hundredths to tenths (e.g. $\frac{70}{100} = \frac{7}{10}$). (p.23)			
Order a set of fractions such as 2 , $2\frac{3}{4}$, $1\frac{3}{4}$, $2\frac{1}{2}$, $1\frac{1}{2}$, and position them on a number line. (p.23)	Primary Games: 'Hi/Lo Fractions'	Fraction version of 'Play Your Cards Right'!	www.primarygames.co.uk/pg3/hilo/hilowebed.html
Relate fractions to division , and use division to find simple fractions, including tenths and hundredths, of numbers and quantities (e.g. $\frac{3}{4}$ of 12, $\frac{1}{10}$ of 50, $\frac{1}{100}$ of £3). (p.25)			
Solve simple problems using ideas of ratio and proportion ('one for every...' and 'one in every...'). (p.27)			
Use decimal notation for tenths and hundredths. Know what each digit represents in a number with up to two decimal places. Order a set of numbers or measurements with the same number of decimal places. (p.29)			
Round a number with one or two decimal places to the			

nearest integer. (p.31)			
Relate fractions to their decimal representations: that is, recognise the equivalence between the decimal and fraction forms of one half, one quarter, three quarters and tenths and hundredths (e.g. $\frac{7}{10} = 0.7$, $\frac{27}{100} = 0.27$). (p.31)			
Begin to understand percentage as the number of parts in every 100, and find simple percentages of small whole-number quantities (e.g. 25% of £8). Express one half, one quarter, three quarters, and tenths and hundredths, as percentages (e.g. know that $\frac{3}{4} = 75\%$). (p.33)			
<u>CALCULATIONS</u>			
<u>38-39 Rapid recall of addition and subtraction facts</u>			
Derive quickly or continue to derive quickly: decimals that total 1 (e.g. $0.2 + 0.8$) or 10 (e.g. $6.2 + 3.8$); all two-digit pairs that total 100 (e.g. $43 + 57$); all pairs of multiples of 50 with a total of 1000 (e.g. $350 + 650$). (p.39)	Ambleside 'NumberBond Machine'	Number bonds - 100 or set your own target bond.	http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/numberbond.html
<u>40-47 Mental calculation strategies (+ and -)</u>			
Find differences by counting up through next multiple of 10, 100 or 1000, e.g. calculate mentally a difference such as 8006 - 2993. (p.41)			
Partition into H, T and U, adding the most significant digits first. (p.41)			
Identify near doubles, such as $1.5 + 1.6$. (p.41)			
Add or subtract the nearest multiple of 10 or 100, then adjust. (p.41)			
Develop further the relationship between addition and subtraction. (p.43)			
Add several numbers (e.g. four or five single digits, or multiples of 10 such as $40 + 50 + 80$). (p.43)			
Use known number facts and place value for mental addition and subtraction (e.g. $470 + 380$, $810 - 380$, $7.4 + 9.8$, $9.2 - 8.6$). (p.45,47)	Primary Resources 'Bricks 2'	Addition pyramid, possible extension of rearranging numbers to create largest total	www.primaryresources.co.uk/online/bricks2.swf
<u>48-51 Pencil and paper procedures (+ and -)</u>			
Use informal pencil and paper methods to support, record or explain additions and subtractions. Extend written methods to: column addition/subtraction of two integers less than			

<p>10000; addition of more than two integers less than 10000; addition or subtraction of a pair of decimal fractions, both with one or both with two decimal places (e.g. £29.78 + £53.34). (p.49,51)</p>			
<p><u>52-57 Understanding multiplication and division</u></p>			
<p>Understand the effect of and relationships between the four operations, and the principles (not the names) of the arithmetic laws as they apply to multiplication. Begin to use brackets. (p.53,55)</p>			
<p>Begin to express a quotient as a fraction, or as a decimal when dividing a whole number by 2, 4, 5 or 10, or when dividing £.p. Round up or down after division, depending on the context. (p.57)</p>			
<p><u>58-59 Rapid recall of multiplication and division facts</u></p>			
<p>Know by heart all multiplication facts up to 10×10. (p.59)</p>	<p>Primary Resources 'Counting Stick'</p> <p>Primary Resources Moon Maths</p> <p>Grid Club 'Alien Tables'</p>	<p>Use as physical counting stick. Ability to easily cover and uncover numbers very beneficial</p> <p>Practice at identifying multiplication facts in rather fun way. Children individually or on whiteboard during mental and oral starter</p> <p>Activity allowing practice of recognition of chosen multiples. Short starter or short individual practice.</p>	<p>www.primaryresources.co.uk/online/numberstick.swf</p> <p>www.primaryresources.co.uk/online/moonmaths.swf</p> <p>www.gridclub.com/have_a_go/maths/alien_tables/index.shtml</p>
<p>Derive quickly or continue to derive quickly: division facts corresponding to tables up to 10×10; doubles of all whole numbers 1 to 100 (e.g. 78×2); doubles of multiples of 10 to 1000 (e.g. 670×2); doubles of multiples of 100 to 10000 (e.g. 6500×2); and the corresponding halves. (p.59)</p>			
<p><u>60-65 Mental calculation strategies (mult and div)</u></p>			
<p>Use doubling or halving, starting from known facts. For example: double/halve any two-digit number by doubling/halving the tens first;</p>			

double one number and halve the other; to multiply by 25, multiply by 100 then divide by 4; find the $\times 16$ table facts by doubling the $\times 8$ table; find sixths by halving thirds. (p.61)			
Use factors (e.g. $8 \times 12 = 8 \times 4 \times 3$). (p.61)			
Use closely related facts (e.g. multiply by 19 or 21 by multiplying by 20 and adjusting; develop the $\times 12$ table from the $\times 10$ and $\times 2$ tables). (p.63)			
Partition (e.g. $47 \times 6 = (40 \times 6) + (7 \times 6)$). (p.63)			
Use the relationship between multiplication and division. (p.63)			
Use known facts and place value to multiply and divide mentally. (p.65)			
66-69 Pencil and paper procedures (mult and div)			
Approximate first. Use informal pencil and paper methods to support, record or explain multiplications and divisions. Extend written methods to: short multiplication of HTU or U.t by U; long multiplication of TU by TU; short division of HTU by U (with integer remainder). (p.67,69)			
70-71 Using a calculator			
Develop calculator skills and use a calculator effectively. (p.71)	Ambleside 'Online Calculator'	Online Calculator	http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/Calculator.html
72-73 Checking results of calculations			
Check with the inverse operation when using a calculator. (p.73)			
Check the sum of several numbers by adding in the reverse order. (p.73)			
Check with an equivalent calculation. (p.73)			
Estimate by approximating (round to nearest 10 or 100), then check result. (p.73)			
Use knowledge of sums and differences of odd/even numbers. (p.73)			

SOLVING PROBLEMS

74-75 Making decisions

Choose and use appropriate number operations to solve problems, and appropriate ways of calculating: mental, mental with jottings, written methods, calculator. (For examples of problems see pages 34-37, 79, 82-89, 101.) (p.75)	Grid Club PuzzleMaths...Catapult	Similar to Hangman...but with numbers. Lots of discussion opportunities here	www.gridclub.com/have_a_go/maths/puzzlemaths/catapult.shtml
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76-81 Reasoning and generalising about numbers or shapes

Explain methods and reasoning, orally and in writing. (p.77)			
Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions asking 'What if...?' (p.79)	PrimaryGames.co.uk- Powerlines Standards Site 'PlayTrain' (Turquoise Box)	Problem solving activity similar to magic squares, making equal addition lines Arranging passengers onto a train in specified grouping. Great problem solving possibilities.	www.primarygames.co.uk/pg2/powerlines/powerlines1.html www.standards.dfes.gov.uk/numeracy/publications/?pub_id=510&top_id=0&article_id=0
Make and investigate a general statement about familiar numbers or shapes by finding examples that satisfy it. Explain a generalised relationship (formula) in words. (p.81)	Primary Resources 'Bricks 2'	Addition pyramid, possible extension of rearranging numbers to create largest total	www.primaryresources.co.uk/online/bricks2.swf

82-89 Problems involving 'real life', money or measures

Use all four operations to solve simple word problems involving numbers and quantities based on 'real life', money and measures (including time), using one or more steps, including making simple conversions of pounds to foreign currency and finding simple percentages. Explain methods and reasoning. (p.82-89)	Grid Club Puzzle Maths...'Shop 'til you drop' Turquoise Box 'Counter'	Mental addition of amounts of money to purchase good as to close to specified amount as possible. Using two machines, discussion as to conversion of currency.	www.gridclub.com/have_a_go/maths/puzzlemaths/shop_game.shtml
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HANDLING DATA

112-117 Organising and interpreting data

Discuss the chance or likelihood of particular events. (p.113)			
Solve a problem by representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, for example: bar line charts, vertical axis labelled in 2s, 5s, 10s, 20s or 100s, first where intermediate points have no meaning (e.g.	Standards Site 'Data Handling'	Pre set information for interegation and representation as bar chart (horizontal and vertical) and pie chart. Create own chart also an option.	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9991&top_id=0&article_id=0

scores on a dice rolled 50 times), then where they may have meaning (e.g. room temperature over time). (p.115,117)			
Find the mode of a set of data. (p.117)			
<u>MEASURES, SHAPE AND SPACE</u>			
<u>90-101 Measures</u>			
Use, read and write standard metric units (km, m, cm, mm, kg, g, l, ml), including their abbreviations, and relationships between them. Convert larger to smaller units (e.g. km to m, m to cm or mm, kg to g, l to ml). Know imperial units (mile, pint, gallon). (p.91)			
Suggest suitable units and measuring equipment to estimate or measure length, mass or capacity. Measure and draw lines to the nearest millimetre. Record estimates and readings from scales to a suitable degree of accuracy. (p.93,95)	Standards Site 'Measuring Cylinder'	Interactive Measuring Cylinder. Change scale, increments. Fill / empty cylinder. Fill / empty by desired amount of liquid or constant running.	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9992&top_id=0&art_id=0
	Standards Site 'Measuring Scales'	Interactive measuring scales with option to change scale and interval.	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9993&top_id=0&art_id=0
Understand area measured in square centimetres (cm²).			
Understand and use the formula in words 'length × breadth' for the area of a rectangle. Understand, measure and calculate perimeters of rectangles and regular polygons. (p.97)			
Use units of time; read the time on a 24-hour digital clock and use 24-hour clock notation, such as 19:53. Use timetables. (p.99,101)	TeachingTime.co.uk	Matching analogue to 24hr digital time activity Analogue recognition activity, stopping clock at stated time (5 minute intervals). Whole class and individual opportunities. Moveable Teaching Clock, also allows conversion to 24hr digital time	www.teachingtime.co.uk/draggames/sthec5.html www.teachingtime.co.uk/clock2/clockwordsres.html www.teachingtime.co.uk/clock/clockres.html
<u>102-111 Shape and Space</u>			
Recognise properties of rectangles. Classify triangles (isosceles, equilateral, scalene), using criteria such as equal sides, equal angles, lines of symmetry. (p.103)			

Make shapes with increasing accuracy. Visualise 3-D shapes from 2-D drawings and identify different nets for an open cube. (p.105)			
Recognise reflective symmetry in regular polygons: for example, know that a square has four axes of symmetry and an equilateral triangle has three. Complete symmetrical patterns with two lines of symmetry at right angles (using squared paper or pegboard). Recognise where a shape will be after reflection in a mirror line parallel to one side (sides not all parallel or perpendicular to the mirror line). Recognise where a shape will be after a translation. (p.107)	Primary Resources 'Reflection'	Demonstration tool allows creation of shapes/patterns and showing reflection in one or two mirror lines	www.primaryresources.co.uk/online/reflection.swf
Recognise positions and directions: read and plot co-ordinates in the first quadrant; recognise perpendicular and parallel lines. (p.109)	Standards Site 'Coordinates' Grid Club 'Coordinate Cops' Primary Resources 'Coordinates II' Primary Resources 'Coordinates'	Interactive coordinates. 1st quadrant, 2 quadrants and 4 quadrants optional. Plot points, plot letters, also the option of drawing shapes on grid. Option of removing squares so just left with coordinates very useful. Coordinates in 1 st quadrant. Individual practice and whole class possibility Simple coordinate plotting in 1 st quadrant As Coordinate II, but larger quadrant used	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9990&top_id=0&art_id=0 www.gridclub.com/have_a_go/maths/coordinate_cops/index.shtml www.primaryresources.co.uk/online/coordinates2.swf www.primaryresources.co.uk/online/coordinates.swf
Understand and use angle measure in degrees. Identify, estimate and order acute and obtuse angles. Use a protractor to measure and draw acute and obtuse angles to the nearest 5°. Calculate angles in a straight line. (p.111)	Standards Site 'Whats my Angle?' (Turquoise Box) Also available from Ambleside	Visual demonstration of measuring angles to 5 degrees of accuracy or any specified accuracy.	www.primaryresources.co.uk/online/rotation.swf