

Year Four

NUMBERS AND THE NUMBER SYSTEM

2-15 Place value, ordering and rounding

Read and write whole numbers to at least 10000 in figures and words, and know what each digit represents. Partition numbers into thousands, hundreds, tens and ones. (p.2)	PrimaryResources 'NumberBoard2'	Place value chart and arrow cards/ pointer cards used for partitioning numbers	www.primaryresources.co.uk/online/numberboard2.swf
Add/subtract 1, 10, 100 or 1000 to/from any integer, and count on or back in tens, hundreds or thousands from any whole number up to 10000. (p.4)	Standards Site 'NumberGrid' Ambleside: 'Supersequencer' Turquoise Box 'Counter'	Interactive number square. Highlight numbers, change start number, change number of columns, show multiples and primes. VERY versatile. Counting in any steps, from any number! Use negative increment for counting backwards. Set counter to count in steps of 10, 100 or 1000 starting at any number	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9969&top_id=0&art_id=0 http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/supersequencer.html Turquoise box or also available from: www.standards.dfes.gov.uk/numeracy/publications/ict_resources/12876/
Multiply or divide any integer up to 1000 by 10 (whole-number answers), and understand the effect. Begin to multiply by 100. (p.6)			
Read and write the vocabulary of comparing and ordering numbers. Use symbols correctly, including less than (<), greater than (>), equals (=). Give one or more numbers lying between two given numbers and order a set of whole numbers less than 10000. (p.8)			
Read and write the vocabulary of estimation and approximation. Make and justify estimates up to about 250, and estimate a proportion. Round any positive integer less than 1000 to the nearest 10 or 100. (p.10,12)			
Recognise negative numbers in context (e.g. on a number line, on a temperature scale). (p.14)	Standards Site 'NumberLine' Standards Site 'Thermometer'	Very interactive teaching tool. Interactive number line (illustrating negative numbers) Useful also for illustrating subtraction as difference and inverse operations Interactive Thermometer. Change scale. Show difference in temperature and change in temperature. Great discussion potential	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9994&top_id=0&art_id=0 www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9995&top_id=0&art_id=0

16-21 Properties of numbers and number sequences

<p>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 500, and then back to, say, -100. (p.16)</p>	<p>Primary Resources 'Counting Stick'</p> <p>Ambleside 'Super Sequencer'</p> <p>Turquoise Box 'Counter'</p>	<p>Use to generate desired number. Use negative increment for counting back</p> <p>Counter. Use for chanting, counting on or back. Use negative increment for backwards chant</p> <p>Use to generate sequences, children predict continuation of sequence</p>	<p>www.primaryresources.co.uk/online/numberstick.swf</p> <p>http://ambleweb.digitalbrain.com/ambleweb/ambleweb/mentalmaths/supersequencer.html</p> <p>www.standards.dfes.gov.uk/numeracy/publications/ict_resources/12876/</p>
<p>Recognise odd and even numbers up to 1000, and some of their properties, including the outcome of sums or differences of pairs of odd/even numbers. (p.18)</p>	<p>Primary Games Billy Bug</p> <p>Primary Games 'Splat Squares'</p>	<p>Positioning numbers on an empty 100 square Useful for highlighting numbers</p> <p>Hundred square and/or empty 100 square with 'splats' as highlights. Useful for highlighting numbers</p>	<p>www.primarygames.co.uk/pg2/bug2/bug2.html</p> <p>www.primarygames.co.uk/pg2/splat/splatsq100.html</p>
<p>Recognise multiples of 2, 3, 4, 5 and 10, up to the tenth multiple. (p.18)</p>	<p>Primary Resources 'Counting Stick'</p> <p>Primary Games 'Splat Square'</p> <p>Primary Resources Moon Maths</p> <p>Grid Club 'Alien Tables'</p>	<p>Use as a physical counting stick. Very easy to cover / uncover numbers / multiples</p> <p>Hundred square and/or empty 100 square with 'splats' as highlights. Useful for highlighting numbers</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.primarygames.co.uk/pg2/splat/splatsq100.html</p> <p>www.primaryresources.co.uk/online/moonmaths.swf</p> <p>www.gridclub.com/have_a_go/maths/alien_tables/index.shtml</p>

22-33 Fraction, decimals, percentages, ratio and proportion

<p>Use fraction notation. Recognise simple fractions that are several parts of a whole, such as $\frac{2}{3}$ or $\frac{5}{8}$, and mixed numbers, such as $5\frac{3}{4}$; recognise the equivalence of simple fractions (e.g. fractions equivalent to $\frac{1}{2}$, $\frac{1}{4}$ or $\frac{3}{4}$). Identify two simple fractions with a total of 1 (e.g. $\frac{3}{10}$ and $\frac{7}{10}$). (p.22)</p>			
<p>Order simple fractions: for example, decide whether fractions such as $\frac{3}{8}$ or $\frac{7}{10}$ are greater or less than one half. (p.22)</p>			

Begin to relate fractions to division and find simple fractions such as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{10}$ of numbers or quantities. Find fractions such as $\frac{2}{3}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{7}{10}$... of shapes. (p.24)			
Begin to use ideas of simple proportion: for example, 'one for every' and 'one in every' (p.26)	Grid Club 'Robot Chef'	Simple proportion recipe problems	www.gridclub.com/have_a_go/maths/robot_chef/index.shtml
Understand decimal notation and place value for tenths and hundredths, and use it in context. For example: order amounts of money; convert a sum of money such as £13.25 to pence, or a length such as 125cm to metres; round a sum of money to the nearest pound. (p.28)			
Recognise the equivalence between the decimal and fraction forms of one half and one quarter, and tenths such as 0.3. (p.30)			
<u>CALCULATIONS</u>			
34-37 <u>Understanding addition and subtraction</u>			
Consolidate understanding of relationship between + and -. Understand the principles (not the names) of the commutative and associative laws as they apply or not to addition and subtraction. (p.34,36)			
38-39 <u>Rapid recall of addition and subtraction facts</u>			
Consolidate knowing by heart: addition and subtraction facts for all numbers to 20. Derive quickly: all number pairs that total 100 (e.g. 62 + 38, 75 + 25, 40 + 60); all pairs of multiples of 50 with a total of 1000 (e.g. 850 + 150). (p.38)	Primary Resources 'Missing Numbers' Primary Resources 'Bricks' Ambleside 'NumberBond Machine'	Missing number problems Addition pyramid, possible extension of rearranging numbers to create largest total Number bonds - to 5, 10, 100 or set your own.	www.primaryresources.co.uk/online/missing.swf www.primaryresources.co.uk/online/bricks2.swf http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/numberbond.html
40-47 <u>Mental calculation strategies (+ and -)</u>			
Find a small difference by counting up (e.g. 5003 - 4996). (p.40)			
Count on or back in repeated steps of 1, 10 or 100. (p.40)			
Partition into tens and units, adding the tens first. (p.40)			

Identify near doubles, using known doubles (e.g. 150 + 160). (p.40)			
Add or subtract the nearest multiple of 10, then adjust. (p.40)			
Continue to use the relationship between addition and subtraction. (p.42)			
Add 3 or 4 small numbers, finding pairs totalling 10, or 9 or 11. Add three two-digit multiples of 10, such as 40 + 70 + 50. (p.42)	Ambleside 'Callum Addition Pyramid'	Addition activity. Use levels easy and medium. (Can be used for problem solving activities by rearranging base numbers to make largest total)	http://ambleweb.digitalbrain.com/ambleweb/ambleweb/ambleweb/mentalmaths/pyramid.html
Use known number facts and place value to add or subtract mentally, including any pair of two-digit whole numbers. (p.44,46)	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/subtractions. Develop and refine written methods for: column addition and subtraction of two whole numbers less than 1000, and addition of more than two such numbers; money calculations (for example, £7.85 ± £3.49). (p.48,50)			
<u>52-57 Understanding multiplication and division</u>			
Extend understanding of the operations of × and ÷, and their relationship to each other and to + and -. Understand the principles (not the names) of the commutative, associative and distributive laws as they apply to multiplication. (p.52,54)			
Find remainders after division. Divide a whole number of pounds by 2, 4, 5 or 10 to give £.p. Round up or down after division, depending on the context. (p.56)			
<u>58-59 Rapid recall of multiplication and division facts</u>			
Know by heart: multiplication facts for 2, 3, 4, 5 and 10 times-tables. (p.58)	Primary Games 'Billy Bug'	Positioning numbers on an empty 100 square Useful for highlighting numbers	www.primarygames.co.uk/pg2/bug2/bug2.html
	Primary Resources 'Counting Stick'	Use as a physical counting stick. Very easy to cover / uncover numbers / multiples	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
Begin to know: multiplication facts for 6, 7, 8 and 9 times-tables. (p.58)	Primary Games Billy Bug	Positioning numbers on an empty 100 square Useful for highlighting numbers	www.primarygames.co.uk/pg2/bug2/bug2.html
	Primary Resources 'Counting Stick'	Use as a physical counting stick. Very easy to cover / uncover numbers / multiples	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
Derive quickly: division facts corresponding to 2, 3, 4, 5 and 10 times-tables; doubles of all whole numbers to 50 (e.g. $38 + 38$, or 38×2); doubles of multiples of 10 to 500 (e.g. 460×2); doubles of multiples of 100 to 5000 (e.g. 3400×2); and the corresponding halves (e.g. $74 \div 2$, $\frac{1}{2}$ of 420). (p.58)	Standards Site 'NumberGrid'	Interactive number square. Highlight numbers, change start number, change number of columns, show multiples and primes. VERY versatile. Change column width to discuss different arrays.	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9969&top_id=0&art_id=0
<u>60-65 Mental calculation strategies (mult and div)</u>			
Use doubling or halving, starting from known facts. For example: double/halve two-digit numbers by doubling/halving the tens first; to multiply by 4, double, then double again; to multiply by 5, multiply by 10 then halve; to multiply by 20, multiply by 10 then double; find the 8 times-table facts by doubling the 4 times-table; find quarters by halving halves. (p.60)			
Use closely related facts (e.g. to multiply by 9 or 11, multiply by 10 and adjust; develop the $\times 6$ table from the $\times 4$ and $\times 2$ tables). (p.62)			
Partition (e.g. $23 \times 4 = (20 \times 4) + (3 \times 4)$). (p.62)			
Use the relationship between multiplication and division. (p.62)			

Use known number facts and place value to multiply and divide integers, including by 10 and then 100 (whole-number answers). (p.64)			
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. Develop and refine written methods for $TU \times U$, $TU \div U$. (p.66,68)			
72-73 Checking results of calculations			
Check with the inverse operation. (p.72)			
Check the sum of several numbers by adding in reverse order. (p.72)			
Check with an equivalent calculation. (p.72)			
Estimate and check by approximating (round to nearest 10 or 100). (p.72)			
Use knowledge of sums or differences of odd/even numbers. (p.72)			
SOLVING PROBLEMS			
74-75 Making decisions			
Choose and use appropriate number operations and appropriate ways of calculating (mental, mental with jottings, pencil and paper) to solve problems. (For examples of problems see pages 78, 82-89, 100.) (p.74)			
76-81 Reasoning and generalising about numbers or shapes			
Explain methods and reasoning about numbers orally and in writing. (p.76)			
Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions by asking 'What if...?' (p.78)	Standards Site 'PlayTrain' (Turquoise Box)	Arranging passengers onto a train in specified grouping. Great problem solving possibilities.	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=510&top_id=0&art_id=0
	Primary Resources 'Bricks 2'	Addition pyramid, possible extension of rearranging numbers to create largest total	www.primaryresources.co.uk/online/bricks2.swf
Make and investigate a general statement about familiar numbers or shapes by finding examples that satisfy it. (p.80)	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 word problems involving numbers in 'real life', money and measures (including time), using one or more steps, including converting pounds to pence and metres to centimetres and vice versa. (p.82-89)			
<u>HANDLING DATA</u>			
114-117 Organising and interpreting data			
Solve a problem by collecting quickly, organising, representing and interpreting data in tables, charts, graphs and diagrams, including those generated by a computer, for example: tally charts and frequency tables; pictograms - symbol representing 2, 5, 10 or 20 units; bar charts - intervals labelled in 2s, 5s, 10s or 20s; Venn and Carroll diagrams (two criteria). (p.114,116)	Primary Resources 'Venn Diagram' Standards / numeracy 'Data Handling'	Use of a pre-made venn diagram. Sorting multiples of 3 and 5 Pre set information for interegation and representation as bar chart (horizontal and vertical) and pie chart. Create own chart also an option.	www.primaryresources.co.uk/online/venn.swf www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9991&top_id=0&art_id=0
<u>MEASURES, SHAPE AND SPACE</u>			
90-101 Measures			
Use, read and write standard metric units (km, m, cm, mm, kg, g, l, ml), including their abbreviations, and imperial units (mile, pint). (p.90)			
Know and use the relationships between familiar units of length, mass and capacity. Know the equivalent of one half, one quarter, three quarters and one tenth of 1km, 1m, 1kg, 1litre in m, cm, g, ml. Convert up to 1000 centimetres to metres, and vice versa. (p.90)			
Suggest suitable units and measuring equipment to estimate or measure length, mass or capacity. Record estimates and readings from scales to a suitable degree of accuracy. (p.92,94)	Standards Site 'Measuring Cylinder' Standards Site 'Measuring Scales'	Interactive Measuring Cylinder. Change scale, increments. Fill / empty cylinder. Fill / empty by desired amount of liquid or constant running. Interactive measuring scales with option to change scale and interval.	www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9992&top_id=0&art_id=0 www.standards.dfes.gov.uk/numeracy/publications/?pub_id=9993&top_id=0&art_id=0
Measure and calculate the perimeter and area of rectangles and other simple shapes, using counting methods and standard			

units (cm, cm ²). (p.96)			
Use, read and write the vocabulary related to time. Estimate/check times using seconds, minutes, hours. Read the time from an analogue clock to the nearest minute, and from a 12-hour digital clock. Use am and pm and the notation 9:53. Read simple timetables and use this year's calendar. (p.98,100)	TeachingTime.co.uk	Matching analogue to digital activity Analogue recognition activity, stopping clock at stated time (5 minute intervals). Whole class and individual opportunities.	www.teachingtime.co.uk/draggames/sthec4.html www.teachingtime.co.uk/clock2/clockwordsres.html
<u>102-111 Shape and Space</u>			
Describe and visualise 3-D and 2-D shapes, including the tetrahedron and heptagon. Recognise equilateral and isosceles triangles. Classify polygons using criteria such as number of right angles, whether or not they are regular, symmetry properties. (p.102)	Primary Resources 'Shape Reveal'	Mental and Oral possibilities similar to physically holding a shape behind a book. Children predict what the shape will be. Oral explanation possibilities	www.primaryresources.co.uk/online/shapereveal.swf
Make shapes: for example, construct polygons by paper folding or using pinboard, and discuss properties such as lines of symmetry. Visualise 3-D shapes from 2-D drawings and identify simple nets of solid shapes. (p.104)			
Sketch the reflection of a simple shape in a mirror line parallel to one side (all sides parallel or perpendicular to the mirror line). (p.106)	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: for example, describe and find the position of a point on a grid of squares where the lines are numbered. Recognise simple examples of horizontal and vertical lines. Use the eight compass directions N, S, E, W, NE, NW, SE, SW. (p.108)	Standards / numeracy '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
Make and measure clockwise and anti-clockwise turns: for example, from SW to N, or from 4 to 10 on a clock face. Begin to know that angles are measured in degrees and that:	Primary Resources 'Rotation'	Visual demonstration of rotation of 90 degrees (and 45 degrees) about the origin	www.primaryresources.co.uk/online/rotation.swf

one whole turn is 360° or 4 right angles; a quarter turn is 90° or one right angle; half a right angle is 45° . Start to order a set of angles less than 180° . (p.110)			
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