

2014 National Curriculum: Mathematics – Knowledge & Key Facts

1: Number & Place Value	1	2	3	4	5	6
Rounding		If a 2 digit number ends in 5-9 we round up If it ends in 1-4 we round down	If a 3 digit number ends in 50-99 we round up If it ends in 1-49 we round down	If a 4 digit number ends in 500-999 we round up If it ends in 1-499 we round down		
Roman Numerals			In Roman numerals: I = 1, V=5, X=10, L=50, C=100	In Roman numerals: IV=4, IX=9, XL=40, XC=90	In Roman numerals: D=500, M=1000, CD=400, CM=900	
Four Operations - Understanding and Using Statements & Relationships	The answer to an addition is the sum or total The answer to a subtraction is the difference Equals means ' balance ' Doubling a number means to add a number to itself Halving means to split a number into two equal amounts	The answer to a multiplication is the product The answer to a division is a quotient Addition, subtraction, multiplication and division are all types of calculation . All multiplication facts can be shown using an array Doubling means to multiply a number by 2 Halving means to divide a number by 2	The correct name for a 'number sentence' is an equation Addition and subtraction are inverse operations Multiplication and division are inverse operations Doubling and halving are inverse operations Scaling makes a number so many times as big Trebling means to multiply a number by 3	Addition and multiplication are commutative . Subtraction and division are not commutative	Squaring means to multiply a number by itself A square number is the product of a number multiplied by itself A cubed number is the product of a number multiplied by itself and then by itself again	BODMAS means: - Brackets, orders, division & multiplication, addition & subtraction BIDMAS means: - Brackets, indices, division & multiplication, addition & subtraction A square root is the inverse of a square number (a value that when multiplied by itself gives the number)

3: Multiplication & Division	1	2	3	4	5	6
		A remainder is the amount left over when a number cannot be divided equally	A multiple is a number within a given times table (E.g 6, 18, 36 and 60 are multiples of 6)	A factor is a whole number which divides exactly into another number with no remainder. (E.g. 6 is a factor of 18, 36 and 60) Most factors have a factor pair . (E.g. 6 and 3 are factor pairs of 18)	A prime number is a number which has only 2 factors, itself and 1 A composite number is a non prime number – a number which has more than 2 factors	A common multiple is a number that appears in more than one times table. (E.g 24 is a common multiple of 2,3,4,6, 8 and 12) A common factor is a whole number which divides exactly into more than one different number. (E.g 6 is a common factor of 18, 36 and 60) Prime factors are factors which are prime numbers (E.g 2, 3 and 5 are prime factors of 30)
4: Fractions	1	2	3	4	5	6
Fractions	a half is one of two equal parts of an object, shape or quantity a quarter is one of four equal parts of an object, shape or quantity. Fractions means equal sharing	The top part of a fraction is the numerator . It represents how many parts of the whole are shown in a fraction. The bottom part of a fraction is called the denominator . It represents the total number of parts in the whole. Equal fractions are called equivalent fractions (E.g $\frac{1}{2} = \frac{2}{4}$)	Unit fractions are fractions where the numerator is 1 (1 part of the whole) (E.g $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{8}$) Non-unit fractions are fractions where the numerator is greater than 1 (E.g $\frac{3}{4}$, $\frac{2}{5}$, $\frac{7}{8}$) A whole is a fraction where the numerator and denominator are the same. It is worth 1 (E.g. $\frac{3}{3}$, $\frac{5}{5}$, $\frac{8}{8}$) A mixed fraction (or mixed number) is a fraction which contains a whole number and a fraction (E.g. $2\frac{1}{2}$ or $3\frac{1}{4}$)	A proper fraction is a fraction where the numerator is smaller than the denominator – it is a fraction less than 1 (E.g $\frac{2}{3}$ or $\frac{4}{5}$) An improper fraction is a fraction where the numerator is larger than the denominator – it is a fraction greater than 1 (E.g $\frac{5}{3}$ or $\frac{8}{5}$) A decimal number is a number divided into tenths, hundredths etc	To simplify a fraction is to present a fraction in a simpler form. The numerator and denominator are divided by the same number. (E.g $\frac{3}{9}$ is simplified to $\frac{1}{3}$, $\frac{24}{60}$ is simplified to $\frac{2}{5}$) Per cent (%) means 'out of a hundred',	A fraction is in its simplest form when it cannot be simplified any further - the numerator and denominator are as small as they can be. A recurring decimal is a decimal number in which a digit or a group of digits is repeated indefinitely. Ratio compares part to part and is best expressed using the term 'for every' E.g In a group of 20 children, with 5 boys and 15 girls, boys and girls are in a ratio of 5:15 or 1:3 Proportion compares part to whole and is best expressed using the term 'out of' E.g In a group of 20 children, with 5 boys and 15 girls, 5 out of 20 (or $\frac{1}{4}$ or 25%) are boys

6: Measurement	1	2	3	4	5	6
Measuring length, mass, temperature, capacity (volume), perimeter & area		1 metre = 100 centimetres	1 centimetre = 10 millimetres 1 kilometre = 1000 metres 1 kilogram = 1000 grammes 1 litre = 1000 millilitres	1 metre = 1000 millimetres Deci means tenth Centi means hundredth Milli means thousandth	Imperial – Metric Approximately: - 1cm = 0.4 inches 1 inch = 2.5 cm	1 tonne = 1000kg Approximately: - 5 miles = 8 km (or 1km = 5/8 of a mile, 1 mile = 1.6 km)
			Kilo means thousand (Greek)	The perimeter is the distance around the outside edge of a shape. The area is the amount of space taken up by a 2-D shape	1 metre = 3 feet 1 foot = 30cm 1 kg = 2.2 pounds 1 pound = 0.45kg 1 litre = 2 pints 1 pint = ½ litre	1 gallon = 4.5 litres
					Area of a rectangle = length x width Volume of a cuboid = length x height x depth	Area of parallelograms = base x height Area of a triangle = ½ of base x height
Money		100 pence = 1 pound (£1)				
Measurement	The days of the week are: - Monday, Tuesday, Wednesday, Thursday, Friday, Saturday and Sunday The months of the year are January – December) There are 7 days in a week There are 12 months in a year There are 4 seasons – Spring, summer, autumn and winter	There are 60 minutes in an hour There are 24 hours in a day There are 2 weeks in a fortnight There are 52 weeks in a year Morning is am Afternoon is pm	There are 60 seconds in a minute There are 10 years in a decade Deca means ten There are 100 years in a century Cent means hundred There are 30 days in April, June, September and November There are 31 days in January, March, May, July, August, October and December There are 28 days in February (and 29 in a leap year) There are 365 days in a year and 366 days in a leap year	There are 1000 years in a millennium. Mill means thousand (Latin)		
Time						

7: Geometry - Shapes	1	2	3	4	5	6
Recognising, naming, drawing, comparing & classifying 2D & 3D Shapes	A square is a special rectangle A triangle has 3 straight sides A circle has 1 curved side A cuboid has 6 rectangular faces A cube has 6 square faces A sphere has 1 curved face	A shape has symmetry when it can be split into 2 pieces which look exactly the same A polygon is a closed shape with more than 2 straight sides. Types of polygon A quadrilateral has 4 sides A pentagon has 5 sides A hexagon has 6 sides A octagon has 8 sides A regular shape has equal sides and equal angles An irregular shape has sides and angles which are not equal	Types of polygon A heptagon has 7 sides A nonagon has 9 sides A decagon has 10 sides			The circumference of a circle is the distance around the outside edge. The radius of a circle is the distance from the centre of the circle to any point on the circumference The diameter of a circle is the length of a line from one point on the circumference to another, passing through the centre. The diameter is double the length of the radius

Angles and Symmetry	<p>Perpendicular lines are lines that meet at a right angle</p> <p>Parallel lines are lines that always stay exactly the same distance apart and never meet</p> <p>A right angle is 90 degrees</p> <p>A right angle is a quarter of a turn</p> <p>2 right angles is a half turn</p> <p>3 right angles is a $\frac{3}{4}$ turn</p> <p>4 right angles is a complete turn</p> <p>A vertical line is a straight line that goes up and down</p> <p>A horizontal line is a straight line that goes from left to right</p>	<p>Acute angles are angles less than 90 degrees</p> <p>Obtuse angles are angles greater than 90 degrees but less than 180 degrees.</p> <p>An equilateral triangle has 3 equal sides and 3 equal angles (and 3 lines of symmetry)</p> <p>An isosceles triangle has 2 equal sides, 2 equal angles and 1 line of symmetry</p> <p>A scalene triangle has no equal sides, no equal angles and no lines of symmetry</p> <p>A parallelogram is a quadrilateral with 2 pairs of parallel sides (and 2 pairs of equal angles)</p> <p>A rhombus is a parallelogram with 4 equal sides</p> <p>A trapezium is a quadrilateral with one pair of parallel sides</p> <p>A kite is a quadrilateral with 2 pairs of equal adjacent sides and at least one line of symmetry</p>	<p>A half turn (or semi circle) is 180 degrees</p> <p>A straight line / straight angle is 180 degrees</p> <p>A $\frac{3}{4}$ turn is 270 degrees</p> <p>A whole turn (or a circle) is 360 degrees</p> <p>Reflex angles are angles greater than 180 degrees but less than 360 degrees</p>	<p>When 2 lines intersect, opposite angles are equal (and adjacent angles equal 180 degrees).</p> <p>All angles at a point equal 360 degrees.</p> <p>There are 180 degrees in a triangle</p> <p>There are 360 degrees in a quadrilateral.</p>
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8: Geometry – Position & Direction	1	2	3	4	5	6
Describing						<p>Co-ordinate grids are split into 4 quadrants</p> <p>The x axis is horizontal</p> <p>The y axis is vertical</p>

9: Statistics	1	2	3	4	5	6
						<p>The mean (or average) of a set of numbers is the total of the numbers divided by the amount of numbers in the set.</p> <p>(E.g. The mean of 13, 5, 1, 7 and 4 is 6. $13+5+1+7+4 = 30$ then $30 \div 5 = 6$)</p>