



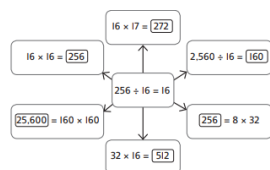
- Solve subtraction (with exchange) multi-step problems in contexts, deciding which operations and methods to use and why.
- Use a given additive calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding)
- Identify common factors and common multiples.
- Recognise prime numbers up to 100.
- Multiply numbers up to 4 digits by a 2-digit number using the formal written method of long multiplication.
- Express relationship between two given numbers additively or multiplicatively; use this representation in reasoning and problem solving e.g. to calculate a missing numbers in measures and statistics contexts.

E.g. Holly has cycled 20km. Lola has cycled 60km. Relationship between the distances can be described additively (L cycled 40km further than H) or multiplicatively (L cycled x3 further).

- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division.
- Interpret remainders of division calculations (based on the context) as whole number remainders, fractions, or by rounding.
- Use written division methods where answers have up to 2 dp.
- Use estimation to check answers to calculations, in the context of a problem, an appropriate degree of accuracy.
- Solve problems, involving the four operations; decide the most appropriate operation.
- Perform calculations, which include mixed operations and large numbers, mentally, reasoning from known facts; use a given multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding)

e.g.  $300 \times 60 = 1,800$

- $\div 21 \rightarrow 300 \div 3 = 100$  then  $100 \div 7 = 14 \text{ r}2$ .



### Order of operations

- Know that calculations which include mixed operations should be completed in a particular order (brackets, indices, division & multiplication, addition & subtraction):
- Complete multiplication & division before addition & subtraction no matter where it is located in the calculation:  $3 + 2 \times 7$  **Complete  $2 \times 7 = 14$  then  $14 + 3 = 17$**
- Complete operations within brackets of a calculation first:  
E.g.  $10 - (2 \times 3) \rightarrow 10 - 6 = 4$

*Addition vocab: sum, totals, altogether, combine, plus, more*  
*Subtraction: finding the difference, minus, less than, left, take away*  
*Crossing the boundary*  
*Exchange*  
*Language associated with multiplication: product, repeated addition, groups/lots of*  
*Language associated with division: share, split equally, equal groups, dividend, divisor, quotient, division bracket*

Place value columns  
 Operations  
 Most efficient  
 Mental  
 Formal (written)  
 Short multiplication  
 Long multiplication  
 Short division  
 Long division  
 Remainders  
 Decimal places  
 Fractions  
 Rounding  
 To the nearest...  
 Most/least accurate  
 Estimation  
 Mixed operations  
 Known facts  
 Factor pairs  
 Common factor  
 Common multiples  
 Prime number  
 Prime factor  
 Composite number

<p><b>Review</b></p> <p><b>Fractions</b></p> <ul style="list-style-type: none"> <li>• Know that fractions are simplified to increase efficiency of calculating with fractions.</li> <li>• Recognise when fractions can be simplified and use common factors (of numerator and denominator) to simplify.</li> <li>• Know that common multiples are used to express fractions in the same denomination. Use this to compare fractions similar in value:</li> <li>• Identify the lowest common multiple (LCM) of fractions to compare fractions, including fractions <math>&gt;1</math>.</li> <li>• Identify the lowest common multiple (LCM) of fractions to order fractions, including fractions <math>&gt;1</math>.</li> <li>• Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions and identification of LCM.</li> <li>• Add and subtract mixed numbers, choosing the most efficient method according to context e.g. wholes and parts separately or converting to improper fractions.</li> <li>• Multiply proper fractions by whole numbers, writing the answer in its simplest form (supported by concrete resources and diagrams).</li> <li>• Divide proper fractions by whole numbers e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math></li> </ul> <p><b>Autumn Term review</b></p>	<p>Simplify Numerator Denominator LCM Mixed numbers Proper fractions Improper fractions Equivalent fractions</p>
<p><b>Spring Term</b></p> <p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>• Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.</li> <li>• Know that data can be represented in many ways, including a line graph and pie chart.</li> <li>• Interpret information from a line graph, including solving comparison problems and questions involving the four operations.</li> <li>• Construct line graphs.</li> <li>• Interpret information from a pie chart, including solving comparison problems and questions involving the four operations.</li> <li>• Construct pie charts.</li> <li>• To know that the mean is an average of a data set.</li> <li>• To calculate and interpret the mean by finding the sum of the data set and dividing this total by how many numbers there are (sum divided by count).</li> </ul> <p><b>Fractions, Decimals, Percentages</b></p> <ul style="list-style-type: none"> <li>• Identify the value of each digit in numbers given to three decimal places.</li> </ul>	<p>Line graph Pie chart Data set Interpret Data representation Construct Comparison Four operations Mean Average Sum Divide</p> <p>Parts Whole Denominator</p>

- Multiply numbers by multiples of 10, giving answers up to three decimal places.
- Divide numbers by multiples of 10, giving answers up to three decimal places.
- Multiply 1-digit numbers (with up to two decimal places) by whole numbers.
- Recall and use equivalences between simple fractions, decimals and percentages in different contexts.
- Associate fractions with division to calculate equivalences e.g.  $(0.375 = \frac{3}{8})$
- Solve problems which require answers (with up to 2 decimal places) to be rounded to specified degrees of accuracy.
- Use equivalences between simple fractions, decimals and percentages ( $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$  and fractions with denominator of a multiple of 10 and 25), including in different contexts. E.g. 25% of £36 = finding  $\frac{1}{4}$  of £36.
- Find missing values with percentages e.g. 50% of ? 3.75. Calculate by applying multiplication of decimals ( $3.75 \times 2$ )
- Convert fractions to percentages.
- Use percentages to make comparisons.

Review

**Measurement– metric and imperial measures**

**Build upon knowledge of this content through morning maths tasks.**

- Recognise and decide to use the most appropriate unit of measure, according to what is being measured.
- Use, read, write and convert between standard units of measure:
- Know that to compare measurements, first convert them into the same unit of measure.
- Convert between metric units of measure e.g. length, mass, capacity and time, applying knowledge of what one unit is worth.
- Multiply to convert from a larger to smaller unit of measure, including using decimal notation up to 3 d.p.
- Divide to convert from a smaller to larger unit of measure, including using decimal notation to 3 d.p.
- Know that you can convert between metric and imperial units of measure, and between imperial – imperial e.g. 12 inches = 1 foot.
- Know that miles = an imperial unit of measure used to measure long distances.
- Know that 8 km = 5 miles to convert between kilometres and miles (metric and imperial respectively).
- Convert between imperial and metric units using approximate equivalences e.g. 1 pint 550ml. ≈

Numerator  
 Unit fraction  
 Non-unit fraction  
 Simplifying  
 Equivalent  
 Vinculum (fraction line)  
 Specified degrees of accuracy  
 Associate fraction line with division  
 Mixed numbers  
 Proper fractions  
 Improper fractions  
 Convert  
 Greater than 1  
 Multiples  
 Common denominator  
 Lowest common multiple  
 Highest common multiple  
 Operator  
 Scaling  
 Per cent  
 Out of 100  
 Multiples

Same unit of measure  
 Compare/Convert  
 Metric  
 Length  
 Millimetres/Centimetres  
 Metres/Kilometres  
 Mass  
 Grams/Kilograms  
 Capacity  
 Litres  
 Millilitres  
 Four operations  
 Decimal notation  
 Money  
 Scaling  
 Estimate  
 Non-standard  
 Imperial units  
 Approximate  
 Inch  
 Feet  
 Pounds  
 Gallon  
 Pints

**Measurement – perimeter and area**

- Identify shapes with the same and different perimeters.
- Identify shapes with the same and different areas.
- Recognise when it is possible to use the formulae for the area of shapes.
- Recognise that shapes can have different perimeters and the same area.
- Recognise that shapes with the same areas can have different perimeters.
- Know that a parallelogram is a 2D quadrilateral with opposite sides are parallel and equal in length.
- Know that the perpendicular height is the distance from the base to the top of the shape.
- Calculate area of a parallelogram using base x perpendicular height.
- Know that area of a triangle can be calculated using number of squares (non-standard unit of measure).
- Calculate area of a triangle using the formula:  $\frac{\text{base} \times \text{height}}{2}$
- Know that volume is the amount of space a solid shape takes up and that it is often measured in cubic centimetres (cm<sup>3</sup>).
- Recognise when it is possible to use formulae for calculating volume of shapes.
- Calculate volume of a cuboid using formula length x width x height.
- Estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [eg: mm<sup>3</sup> and km<sup>3</sup>].

**Ratio and proportion**

- Know that ratio compares two or more parts of a whole e.g. for every adult there are three children.
- Know that : represents 'to' in ratio e.g. 1:3
- Use ratio to express relationships.
- **Solve problems involving ratio relationships:**
  - the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts.
  - unequal sharing and grouping using knowledge of fractions and multiples.
- Solve problems involving the calculation of percentages [eg: of measures such as 15% of 360] and the use of percentages for comparison.
- Solve problem involving similar shapes where the scale factor is known or can be found

Kilometres/Miles

Formulae  
Perimeter  
2D shape  
Shape properties  
Parallel sides  
Equal sides  
Sum of sides/lengths  
Standard measurement units: centimetres, metres.  
Composite, rectilinear shapes  
Compound shapes  
Non-standard units: squares, half squares  
Square centimetres (cm<sup>2</sup>)  
Square metres (m<sup>2</sup>)  
Area  
Area of a rectangle = Base x Height  
Area of a triangle  
Perpendicular height  
Estimate  
Parallelogram  
Volume  
Cubic centimetres  
Cubic metres  
Cuboid  
Cubes

Parts  
Whole  
Ratio  
Integer  
Relative sizes  
Quantities  
Relationships  
Unequal sharing  
Equal sharing  
Percentages  
Compare  
Scale factor

**Review**

Summer Term	
<p><b>Geometry – angles &amp; properties of shapes</b></p> <ul style="list-style-type: none"> <li>Use knowledge of shape properties and angles to classify shapes E.g. Equilateral triangles (regular polygon); isosceles triangles (2 equal angles; 2 equal sides) Sum of interior angles in a quadrilateral is <math>360^\circ</math>; parallelograms have opposite angles that are equal; a trapezium has one pair of parallel sides.</li> <li>Compare geometric shapes based on their properties and sizes.</li> <li>Accurately measure and draw angles using a protractor.</li> <li>Draw 2D shapes accurately using given properties e.g. dimensions, area and angles.</li> <li>Know that the sum of angles in a triangle = <math>180^\circ</math>; quadrilateral = <math>360^\circ</math>.</li> <li>Using given angles, calculate unknown angles in any triangles, quadrilaterals and any other regular polygons.</li> <li>Recognise angles where they meet at a point, on a straight line, or are vertically opposite.</li> <li>Calculate missing angles from given angles, applying knowledge of e.g. angles on a straight line (<math>180^\circ</math>), angles around a point (<math>360^\circ</math>) and opposite angles (equal).</li> <li>Name parts of a circle: radius, diameter and circumference. <ul style="list-style-type: none"> <li>Know that radius is a straight line from the centre to the circumference of a circle.</li> <li>Know that the diameter of a circle is the distance from one side of a circle to the other through the centre.</li> <li>Know that the diameter is twice the radius.</li> <li>Know that the circumference is the distance around the circle.</li> </ul> </li> <li>Illustrate parts of a circle using given measurements e.g. calculate the radius when given the diameter (<math>\div 2</math>).</li> </ul>	<p>Shape properties Angles Classify Equivalences Regular polygon Isosceles triangles Equal angles Equal sides Sum Interior angles Opposite angles Trapezium Protractor Measure Draw Dimensions Degrees Quadrilateral Unknown angles Angles at a point Straight line Vertically opposite Opposite angles equal</p> <p>Circle Radius Diameter Circumference Straight line Twice Distance Illustrate</p>
<p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>Know that algebra can involve using letters to represent a value we do not know for certain or that can change.</li> <li>Find and write algebraic rules using given information.</li> <li>Express missing number problems algebraically e.g. write algebraic expressions <math>5 \times n</math> as <math>5n</math>.</li> <li>Use simple formulae to calculate missing values.</li> <li>Know that when a specific value is given for <math>n</math>, substitute the value for <math>n</math> into the rule. E.g. <math>n = 13</math> so <math>5n = 5 \times 13 = 65</math>.</li> <li>Generate and describe linear number sequences.</li> <li>Find pairs of numbers that satisfy an equation with two unknowns.</li> <li>Enumerate possibilities of combinations of two variables.</li> </ul>	<p>Algebra Letters Value Algebraic rules Substitute Expressions Formulae <math>N = \text{number}</math> Linear number sequences Equation Variables</p>
<p><b>Revision of content</b></p>	

**Co-ordinates**

- Know that a co-ordinate grid has four quadrants.
- Recognise that co-ordinates describe the position of a point on a grid.
- Know that co-ordinates have positive and negative values.
- Know that two quadrants on the co-ordinate grid have negative numbers on one or both of the X or Y axes.
- Know that points on a co-ordinate grid are described and plotted in the format (x, y).
- Describe positions on the full co-ordinate grid (all four quadrants).
- Know that the first number (x) counts along the x-axis and the second number (y) counts up/down the y-axis.
- Plot co-ordinates on all four quadrants.
- Draw shapes, by plotting points, on a co-ordinate grid and apply knowledge of 2-D shape properties to identify the shape.
- Translate simple shapes on the co-ordinate plane by plotting the co-ordinates of the translated shape.
- Reflect simple shapes in the axes by plotting the co-ordinates of the reflected shape.
- Read translations and reflections on a co-ordinate grid.

**Geometry – 3D shapes**

- Recognise and describe 3-D shapes.
- Build simple 3D shapes, including making nets of 3D shapes.
- Know a net is a 3D shape opened out flat.

**Yearly assess and review with application of skills in all content areas.**

Quadrants  
Co-ordinates  
Position  
Grid  
Plot data  
X axis  
Y axis  
Translate  
Reflect

3D shapes  
Vertices  
Edges  
Faces  
Nets  
Flat  
Curved  
Regular polygons  
Equal length sides  
Parallel lines  
Perpendicular lines  
Cubes  
Cuboids

## Year 6

Declarative Knowledge (Facts)	Processes (Methods)
<p><b><u>Number and Place value</u></b></p> <ul style="list-style-type: none"> <li>Determine the place value of each digit in numbers, including up to 10,000,000).</li> <li>Read and write numbers up to 10,000,000.</li> <li>Use negative numbers in context.</li> <li>Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).</li> </ul> <p><b><u>Four operations</u></b> Include appropriate reasoning using learnt facts/methods throughout:</p> <ul style="list-style-type: none"> <li>Know that a given additive calculation can be used to complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding)</li> <li>Identify common factors and common multiples.</li> <li>Know prime numbers up to 100.</li> <li>Interpret remainders of division calculations (based on the context) as whole number remainders, fractions, or by rounding.</li> <li>Use estimation to check answers to calculations, in the context of a problem, an appropriate degree of accuracy.</li> <li>Solve problems, involving the four operations; decide the most appropriate operation.</li> <li>Know that a multiplicative calculation can be derived to complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding) e.g. <math>300 \times 60 = 1,800</math></li> <li><math>\div 21 \rightarrow 300 \div 3 = 100</math> then <math>100 \div 7 = 14 \text{ r}2</math>.</li> </ul> <p><b><u>Order of operations</u></b></p> <ul style="list-style-type: none"> <li>Know that calculations which include mixed operations should be completed in a particular order (brackets, indices, division &amp; multiplication, addition &amp; subtraction):</li> </ul> <p><b><u>Fractions</u></b></p> <ul style="list-style-type: none"> <li>Recognise that (and when to) fractions can be simplified to increase efficiency of calculating with fractions.</li> </ul>	<p><b><u>Number and Place value</u></b></p> <ul style="list-style-type: none"> <li>Count forwards and backwards in powers of 10 for numbers up to 1,000,000.</li> <li>Reason about the location of any number up to 10 million, comparing and ordering numbers up to 10,000,000.</li> <li>Round any whole number up to 10,000,000 to any required degree of accuracy.</li> <li>Calculate intervals across zero.</li> </ul> <p><b><u>Four operations</u></b></p> <ul style="list-style-type: none"> <li>Add and subtract in multi-step problems.</li> <li>Choose most efficient operations and methods to use.</li> <li>Multiply numbers up to 4 digits by a 2-digit number using the formal written method of long multiplication.</li> <li>Express between two given numbers additively or multiplicatively; apply representation to calculate a missing numbers in measures and statistics contexts.</li> <li>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division and long division, where appropriate, interpreting remainders according to the context.</li> <li>Use written division methods where answers have up to 2 DP.</li> <li>Perform calculations, which include mixed operations and large numbers, mentally, reasoning from known facts:</li> </ul> <p><b><u>Order of operations</u></b></p> <ul style="list-style-type: none"> <li>Follow the correct order of operations: brackets, indices, multiplication, division, addition, subtraction.</li> </ul> <p><b><u>Fractions</u></b></p> <ul style="list-style-type: none"> <li>Simply fractions by selecting a common factor of the numerator and denominator.</li> </ul>



<ul style="list-style-type: none"> <li>• Know that common multiples are used to express fractions in the same denomination.</li> <li>• Know the most efficient method to add and subtract mixed numbers, according to context e.g. wholes and parts separately or converting to improper fractions.</li> </ul> <p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>• Know that data can be represented in many ways, including a line graph and pie chart.</li> <li>• To know that the mean is an average of a data set.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the lowest common multiple (LCM) of fractions to compare and order fractions, including fractions <math>&gt;1</math>.</li> <li>• Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions and identification of LCM.</li> <li>• Multiply proper fractions by whole numbers, writing the answer in its simplest form (supported by concrete resources and diagrams).</li> <li>• Divide proper fractions by whole numbers e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math></li> </ul> <p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>• Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.</li> <li>• Interpret information from a line graph, including solving comparison problems and questions involving the four operations.</li> <li>• Construct line graphs.</li> <li>• Interpret information from a pie chart, including solving comparison problems and questions involving the four operations.</li> <li>• Construct pie charts.</li> <li>• Calculate and interpret the mean by finding the sum of the data set and dividing this total (sum divided by count).</li> </ul>
<p><b>FDP</b></p> <ul style="list-style-type: none"> <li>• Identify the value of each digit in numbers given to three decimal places.</li> <li>• Know equivalences between simple fractions, decimals and percentages (<math>\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}</math> and fractions with denominator of a multiple of 10 and 25).</li> <li>• Know that percentages can be used to make comparisons.</li> </ul>	<p><b>FDP</b></p> <ul style="list-style-type: none"> <li>• Multiply and divide numbers by multiples of 10, giving answers up to three decimal places.</li> <li>• Multiply 1-digit numbers (with up to two decimal places) by whole numbers.</li> <li>• Use equivalences between simple fractions, decimals and percentages in different contexts.</li> <li>• Associate fractions with division to calculate equivalences e.g. <math>(0.375 = \frac{3}{8})</math></li> <li>• Solve problems which require answers (with up to 2 decimal places) to be rounded to specified degrees of accuracy.</li> <li>• Find missing values with percentages e.g. 50% of ? 3.75.</li> <li>• Convert fractions to percentages.</li> </ul>

<p><b><u>Measurement– metric and imperial measures</u></b></p> <ul style="list-style-type: none"> <li>• Know the metric units of measure e.g. length, mass, capacity and time, applying knowledge of what one unit is worth.</li> <li>• Know that you can convert between metric and imperial units of measure, and between imperial – imperial e.g. 12 inches = 1 foot.</li> <li>• Know that miles = an imperial unit of measure used to measure long distances.</li> <li>• Know that 8 km = 5 miles to convert between kilometres and miles (metric and imperial respectively).</li> </ul> <p><b><u>Measurement – perimeter, area and volume</u></b></p> <ul style="list-style-type: none"> <li>• Identify shapes with the same and different perimeters and areas.</li> <li>• Recognise that shapes can have different perimeters and the same area.</li> <li>• Recognise that shapes with the same areas can have different perimeters.</li> <li>• Know that a parallelogram is a 2D quadrilateral with opposite sides are parallel and equal in length.</li> <li>• Know that the perpendicular height is the distance from the base to the top of the shape.</li> <li>• Know that volume is the amount of space a solid shape takes up and that it is often measured in cubic centimetres (cm<sup>3</sup>).</li> </ul> <p><b><u>Ratio and proportion</u></b></p> <ul style="list-style-type: none"> <li>• Know that ratio compares two or more parts of a whole e.g. for every adult there are three children.</li> <li>• Know that : represents ‘to’ in ratio e.g. 1:3</li> <li>• Know what a scale factor is.</li> </ul>	<p><b><u>Measurement– metric and imperial measures</u></b></p> <ul style="list-style-type: none"> <li>• Use the most appropriate unit of measure, according to what is being measured.</li> <li>• Use, read, write, compare and convert between standard units of measure.</li> <li>• Multiply to convert from a larger to smaller unit of measure, including using decimal notation up to 3 d.p.</li> <li>• Divide to convert from a smaller to larger unit of measure, including using decimal notation to 3 d.p.</li> <li>• Convert between imperial and metric units using approximate equivalences e.g. 1 pint ≈ 550ml.</li> </ul> <p><b><u>Measurement – perimeter, area and volume</u></b></p> <ul style="list-style-type: none"> <li>• Use the formulae for the area and volume of shapes where possible:</li> <li>• Calculate area of triangle using number of squares (non-standard)</li> <li>• Calculate area of a parallelogram using base x perpendicular height.</li> <li>• Calculate area of a triangle using the formula: <math display="block">\frac{\text{base} \times \text{height}}{2}</math></li> <li>• Calculate volume of a cuboid using formula length x width x height.</li> <li>• Estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [eg: mm<sup>3</sup> and km<sup>3</sup>].</li> </ul> <p><b><u>Ratio and proportion</u></b></p> <ul style="list-style-type: none"> <li>• Use ratio to express relationships.</li> <li>• <b>Solve problems involving ratio relationships:</b> <ul style="list-style-type: none"> <li>- involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts.</li> <li>- involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul> </li> <li>• Solve problems involving the calculation of percentages [eg: of measures such as 15% of 360] and the use of percentages for comparison.</li> <li>• Solve problem involving similar shapes where the scale factor is known or can be found.</li> </ul>
<p><b><u>Geometry – angles &amp; properties of shapes</u></b></p> <ul style="list-style-type: none"> <li>• Know that the sum of angles in a triangle = 180°; quadrilateral = 360°.</li> <li>• Recognise angles where they meet at a point, on a straight line, or are vertically opposite.</li> </ul>	<p><b><u>Geometry – angles &amp; properties of shapes</u></b></p> <ul style="list-style-type: none"> <li>• Classify shapes using knowledge of shape properties and angles.</li> </ul>

- Know that the diameter of a circle is the distance from one side of a circle to the other through the centre.
- Know that the diameter is twice the radius.
- Know that the circumference is the distance around the circle.
- Name parts of a circle: radius, diameter and circumference.
- Know that radius is a straight line from the centre to the circumference of a circle.

### Algebra

- Know that algebra can involve using letters to represent a value we do not know for certain or that can change.
- Know that when a specific value is given for  $n$ , substitute the value for  $n$  into the rule. E.g.  $n = 13$  so  $5n = 5 \times 13 = 65$ .

### Co-ordinates

- Know that a co-ordinate grid has four quadrants.
- Recognise that co-ordinates describe the position of a point on a grid.
- Know that co-ordinates have positive and negative values.
- Know that two quadrants on the co-ordinate grid have negative numbers on one or both of the X or Y axes.
- Know that points on a co-ordinate grid are described and plotted in the format  $(x, y)$ .
- Know that the first number ( $x$ ) counts along the x-axis and the second number ( $y$ ) counts up/down the y-axis.

### Geometry – 3D shapes

- Recognise and describe 3-D shapes.
- Know a net is a 3D shape opened out flat.

- Compare geometric shapes based on their properties and sizes.
- Accurately measure and draw angles using a protractor.
- Draw 2D shapes accurately using given properties e.g. dimensions, area and angles.
- Using given angles, calculate unknown angles in any triangles, quadrilaterals and any other regular polygons.
- Calculate missing angles from given angles, applying knowledge of e.g. angles on a straight line ( $180^\circ$ ), angles around a point ( $360^\circ$ ) and opposite angles (equal).

Illustrate parts of a circle using given measurements e.g. calculate the radius when given the diameter ( $\div 2$ ).

### Algebra

- Express missing number problems algebraically e.g. write algebraic expressions  $5 \times n$  as  $5n$ .
- Use simple formulae to calculate missing values.
- Generate and describe linear number sequences.
- Find pairs of numbers that satisfy an equation with two unknowns.
- Enumerate possibilities of combinations of two variables.

### Co-ordinates

- Describe positions on the full co-ordinate grid (all four quadrants).
- Plot co-ordinates on all four quadrants.
- Draw shapes, by plotting points, on a co-ordinate grid and apply knowledge of 2-D shape properties to identify the shape.
- Translate simple shapes on the co-ordinate plane by plotting the co-ordinates of the translated shape.
- Reflect simple shapes in the axes by plotting the co-ordinates of the reflected shape.
- Read translations and reflections on a co-ordinate grid.

### Geometry – 3D shapes

- Build simple 3D shapes, including making nets of 3D shapes.