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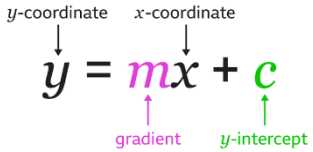
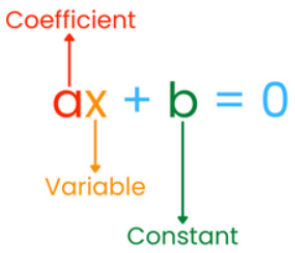
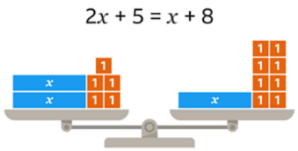
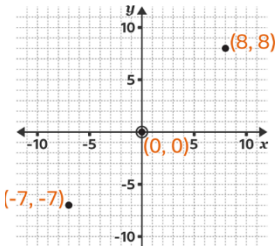
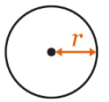
Stage 9	**Linear Equations: Graphically and algebraically**  - Working with linear functions -Understanding gradient and intercept (y=mx+c)	**Linear equations**  - Solving linear equations in one variable (unknown on one side)	**Linear equations with unknowns on both sides**  - Solving linear equations in one variable (unknowns on both sides)	**Linear equations: graphically and algebrically**  - Working with graphs of linear functions - Understanding gradient and intercept (y=mx+c)	**Rearranging and solving linear equations** A = area of a circle r = radius  $A = \pi r^2$ $r = ?$ - Solving linear equations in one variable (inc rearranging)

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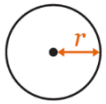
Stage 9

Expressions and formulae

C = circumference r = radius

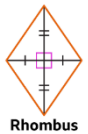


$C = 2\pi r$ $r = ?$

-Squaring and cubing binomials

-Changing the subject of a formula

Properties of shapes



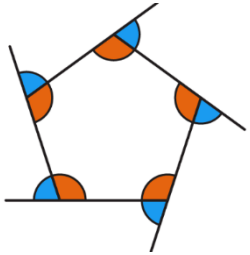
Rhombus
Unequal diagonals
Bisect at right angles

Parallelogram
Unequal diagonals
Bisect with opposite equal angles

- Naming, describing and sorting 2d shapes based on number of sides and simple symmetry

-Naming and describing 3d shapes

Identifying shapes

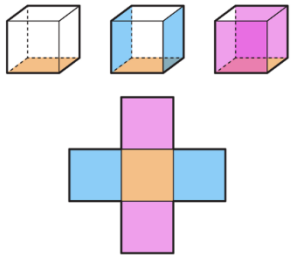


-Using the properties of rectangles

-Distinguishing between regular and irregular polygons

- Identifying 3d shapes from 2d representations

Properties of shapes and solids



- Deriving and illustrating properties of plane figures

-Using the properties of 3d shapes to solve problems

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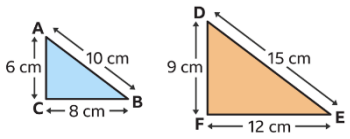
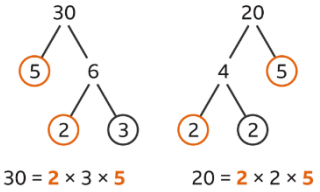
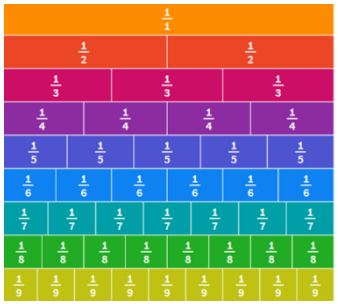
Stage 9	**Diagrams and constructions**  - Working with scale diagrams and maps - Constructing similar shapes using enlargement	**Multiples. Factors and primes**  30 = 2 × 3 × 5 20 = 2 × 2 × 5 - Working with prime factors LCM and HCF	**Arithmetic with fractions**  - Arithmetic with mixed numbers (inc negative) -	**Percentages**  -Considering fractions and percentages as operators -Working with percentages and percentage changes using fractions or decimals

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Stage 9

Ratio and percentage change

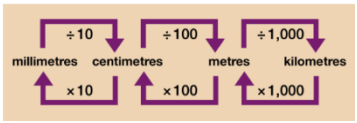
Ratio	Fractional Form	Percentage
1:2	$\frac{1}{2}$	$\left[\frac{1}{2} \times 100\right]\% = 50\%$
1:3	$\frac{1}{3}$	$\left[\frac{1}{3} \times 100\right]\% = 33.33\%$
1:5	$\frac{1}{5}$	$\left[\frac{1}{5} \times 100\right]\% = 20\%$
4:5	$\frac{4}{5}$	$\left[\frac{4}{5} \times 100\right]\% = 80\%$
1:10	$\frac{1}{10}$	$\left[\frac{1}{10} \times 100\right]\% = 10\%$
2:5	$\frac{2}{5}$	$\left[\frac{2}{5} \times 100\right]\% = 40\%$
1:8	$\frac{1}{8}$	$\left[\frac{1}{8} \times 100\right]\% = 12.5\%$
1:50	$\frac{1}{50}$	$\left[\frac{1}{50} \times 100\right]\% = 2\%$
1:100	$\frac{1}{100}$	$\left[\frac{1}{100} \times 100\right]\% = 1\%$

-Understand that a multiplicative relationship between two quantities can be expressed as a ratio or fraction

-Solving percentage change problems

-Relating ratios to fractions and functions

Solving problems with measures and time



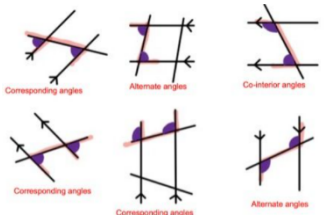
-Converting between units of metric measure

-Using approximate metric and imperial equivalences

-Solving problems involving converting between units of time

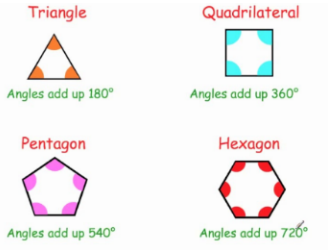
-Solving problems involving measure inc decimals and scaling

Parallel, alternate and corresponding



-Understanding alternate and corresponding angles

Angles and polygons



- Deriving angle sum of triangles and regular polygons

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Stage 8	**Angles, shapes and solids** -Working with angles at a point, on a straight line or vertically opposite -Working with properties of polygons -Knowing the correct terminology for circles parts -Representing and building 3d shapes -	**Angles and polygons** -Deriving angle sum of triangle and regular polygons	**Accuracy with perimeter, area and volume** -Calculating with approximations and finding the possible range of errors -Solving problems involving circumference and area of circles and shapes that include circular parts -Deriving and using formula to find surface area and volume of prisms and cylinders	**Symmetries and constructions** -Drawing polygons -Working with standard ruler and compass constructions

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Stage 9	**Translations and reflections** -Using coordinates to describe position -Translating and reflecting shapes on a coordinate plane	**Translations rotations and reflections** -Describing translations, rotations and reflections	**Geometrical relationships and Pythagoras' theorem** -Interpreting mathematical relationships -Deriving results about angles and side lengths	**Pythagoras' theorem and trigonometry in right-angled triangles** - Using Pythagoras' theorem and trigonometric ratios to solve problems involving right-angled triangles

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Stage 9	**Diagrams and constructions** -Working with scale diagrams and maps -Constructing similar shapes using enlargement	**Ratio** *two* to *three* 2 : 3  -Representing and simplifying ratios	**Dividing quantities into ratios** Share £300 in the ratio 8 : 5 : 2 8 + 5 + 2 = 15 300 ÷ 15 = **20** - Dividing quantities into ratios	**Mathematical models** - Modelling situations algebraically and graphically -Solving direct and inverse proportion

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Stage 9	**Compound units** -Using compound units	**The probability scale** -Understanding the probability scale -Understanding that the probabilities of all possible outcomes sum to 1	**Sample spaces to calculate theoretical probabilities** - Using sample spaces for single and combined events	**Using graphs to solve equations** - Graphing quadratic functions -Finding approximate solutions to linear simultaneous equations