

Text in red applies to higher only

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
<b>Key focus</b>	Congruence, similarity and enlargement Trigonometry	Equations and inequalities Angles and bearings	Circles Vectors Ratios and fractions	Percentages and interest Probability	Data Non-calculator methods Types of number and sequences	Indices and roots Manipulating expressions
<b>Key knowledge and skills</b>	<ul style="list-style-type: none"> <li>- Identify similar and congruent shapes</li> <li>- Find missing lengths or angles in similar and congruent shapes</li> <li>- <b>Surface area and volume of similar 3D shapes</b></li> <li>- Describe and carry out enlargements of shapes including with negative scale factors</li> <li>- Use trigonometry to find missing lengths and angles in 2D shapes and 3D shapes</li> <li>- <b>Cosine rule</b></li> <li>- <b>Sine rule</b></li> <li>- <b>Area of a triangle</b></li> <li>- <b>Trigonometric graphs</b></li> <li>- Use Pythagoras' theorem to find missing lengths</li> </ul>	<ul style="list-style-type: none"> <li>- Form and solve equations</li> <li>- Form and solve inequalities</li> <li>- Represent inequalities on a number line</li> <li>- Draw straight line graphs</li> <li>- <b>Draw graphs of inequalities</b></li> <li>- <b>Solve quadratic equations by factorising</b></li> <li>- Form and solve simultaneous equations</li> <li>- Draw and interpret scale diagrams</li> <li>- Draw, measure and calculate bearings</li> <li>- Use Pythagoras and trigonometry to solve bearings problems</li> <li>- <b>Use sine and cosine rule to solve bearings problems</b></li> </ul>	<ul style="list-style-type: none"> <li>- Area and circumference of a circle</li> <li>- Area and perimeter of a sector</li> <li>- <b>Know and use circle theorems</b></li> <li>- Work out volume and surface area of a cylinder, cone or sphere</li> <li>- <b>Surface area and volume of similar 3D shapes</b></li> <li>- Understand vector notation</li> <li>- Add vectors/ apply scalars</li> <li>- <b>Solve geometric problems involving vectors</b></li> <li>- <b>Understand parallel vectors</b></li> <li>- <b>Use vectors to construct proofs</b></li> <li>- Link ratios and fractions</li> <li>- Simplify ratios, including to the form 1:n or n:1</li> <li>- Share in a ratio</li> <li>- Currency conversion</li> <li>- Best buy</li> <li>- <b>Ratio in area and volume problems</b></li> </ul>	<ul style="list-style-type: none"> <li>- Convert between fractions, decimals and percentages</li> <li>- Calculate percentages of amounts, percentage increases and decreases</li> <li>- Express one number as a percentage of another</li> <li>- Simple and compound interest</li> <li>- Reverse percentages</li> <li>- <b>Iterative processes</b></li> <li>- Work out the probability of an event</li> <li>- Mutually exclusive events</li> <li>- Sample space diagrams</li> <li>- Relative frequency</li> <li>- Probability trees</li> <li>- <b>Conditional probability</b></li> </ul>	<ul style="list-style-type: none"> <li>- Understand populations, samples and types of data</li> <li>- Construct a stratified sample</li> <li>- Construct and interpret frequency tables, frequency polygons, two-way tables, line charts, bar charts, pie charts, time series graphs, stem and leaf diagrams, scatter graphs, <b>cumulative frequency diagrams, box plots and histograms</b></li> <li>- Work out averages from a list or table</li> <li>- Use mental and written methods to add, subtract, multiple and divide</li> <li>- Round and estimate calculations</li> <li>- Solve financial maths problems</li> <li>- <b>Convert recurring decimals to fractions</b></li> <li>- <b>Understand and use surds</b></li> <li>- <b>Calculate upper and lower bounds</b></li> <li>- Understand factors, multiples and prime numbers</li> <li>- Express a number as a product of its prime factors</li> <li>- Describe and continue sequences</li> <li>- Find the nth term of a linear or quadratic sequence</li> <li>- <b>Continue sequences involving surds</b></li> </ul>	<ul style="list-style-type: none"> <li>- Calculate powers and roots</li> <li>- Convert numbers to and from standard form</li> <li>- Calculate with numbers in standard form</li> <li>- Know and use index laws</li> <li>- <b>Work out fractional indices</b></li> <li>- Simplify algebraic expressions</li> <li>- <b>Add, subtract, multiply and divide algebraic fractions</b></li> <li>- Form and solve equations and inequalities with fractions and algebraic fractions</li> <li>- Use algebraic proof</li> </ul>

<b>Key words/ vocabulary</b>	Similar, congruent, scale factor, enlarge, trigonometry, sine, cosine, tangent, opposite, adjacent, hypotenuse, Pythagoras	Solve, plot, factorise, simultaneous, intersection, scale, bearings	Radius, diameter, area, perimeter, circumference, sector, volume, surface area, cone, sphere, cylinder, vector, resultant, parallel, simplify, share	Fractions, decimals, percentages, compound, simple, interest, probability, mutually exclusive, independent, relative frequency, <b>conditional</b>	Population, sample, primary data, secondary data, stratified, frequency, cumulative frequency, <b>frequency density</b> , mean, median, mode, range, <b>rational, irrational, bounds</b> , factors, multiple, prime numbers, linear, geometric, <b>quadratic</b>	Square numbers, cube numbers, roots, standard form, simplify, prove
<b>Assessment method</b>	Topic tests Exit tickets	Topic tests Exit tickets Assessment point 1	Topic tests Exit tickets	Topic tests Exit tickets	Topic tests Exit tickets	Topic tests Exit tickets Assessment point 2
<b>Wider links</b>	Congruent shapes and enlargements may be used in art	Bearings used in geography Solving equations will be used in science	Volume may be needed in science with mass and density calculations	Percentages may be used in science	Several parts of the data topic will overlap with areas of science/ geography	Standard form will be used for large/ small numbers in science
<b>Enrichment opportunities</b>	<a href="http://www.nrich.maths.org">www.nrich.maths.org</a> , STEM outreach team at the University of Leeds, Bletchley Park, Bank of England Museum, The Royal Observatory' LEGOLAND					
<b>Careers links</b>	Pythagoras and trigonometry used in construction Jewellers and interior designers may work with congruent shapes to make patterns	Air traffic controllers use simultaneous equations to make sure two planes won't collide Simultaneous equations are useful when working with loans or investments Air traffic controllers, automotive designers and surveyors, among others, work with angles Pilots use bearings when navigating	Engineers need to be able to calculate volume Painters calculate surface area to see how much paint they need Chemists use surface area to work out how quickly a substance will react A dentist uses surface area to determine the size of dental restorations	Those who work in finance work with interest Economists and meteorologists work with probability Video game designers work with probability Engineers work with vectors	Statisticians collect and analyse data	Scientists regularly work with very small objects and will use standard form for this