



**Topic**

**Autumn Term 1 (8 weeks)**

**Standard form (1½ weeks)**

- Understand and use place value (e.g. when working with very large or very small numbers)
- Calculate with and interpret standard form

**Calculating with percentages (1weeks)**

- Solve problems involving percentage change, including:
  - percentage increase / decrease problems
  - original value problems
  - simple interest, including in financial mathematics

**Measures (1½ weeks)**

- Apply and interpret limits of accuracy
- Use standard units of measure and related concepts (length, area, volume / capacity, mass, time, money etc)
- Use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate
- Change freely between related standard units (e.g. time, length, area, volume / capacity, mass) and compound units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts
- Use compound units such as speed, rates of pay, unit pricing, density and pressure

**Statistical measures (1½ weeks)**

- Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through:
  - appropriate measures of central tendency (median, mean, mode and modal class)
  - spread (range, including consideration of outliers)

**Autumn Term 2 (7 weeks)**

**Indices (1 week)**

- Use positive integer powers and associated real roots (square, cube and higher)
- Recognise powers of 2, 3, 4, 5
- Calculate with roots and with integer indices

**Constructions and loci (2 weeks)**

- Use the standard ruler and compass constructions:
  - perpendicular bisector of a line segment
  - constructing a perpendicular to a given line from / at a given point
  - bisecting a given angle
- Know that the perpendicular distance from a point to a line is the shortest distance to the line
- Use these to construct given figures and solve loci problems

**Algebra recap and extension (1½ weeks)**

- Understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors (review of Year 9)
- Simplify and manipulate algebraic expressions (including those involving surds) by:
  - collecting like terms
  - multiplying a single term over a bracket
  - taking out common factors
- Deduce expressions to calculate the nth term of a linear sequence
- Solve linear equations in one unknown algebraically including those with the unknown on both sides of the equation (review of Year 9)



<b>Assessment</b>	<b>Progress Check 1 on the following topics:</b> Standard form Calculating with percentages <b>Approximate Date of Assessment Week Beginning: 23/09/19</b>	<b>Progress Check 2 on the following topics:</b> Indices <b>Approximate Date of Assessment Week Beginning:</b> <b>11/11/19</b>
	<b>MILESTONE 1 on the following topics:</b> Standard form Calculating with percentages Measures Statistical measures <b>Approximate Date of Assessment Week Beginning: 14/10/19</b>	<b>MILESTONE 2 on the following topics:</b> Indices Construction and loci Algebra recap and extension <b>Approximate Date of Assessment Week Beginning:</b> <b>09/12/19</b>



**Spring Term 1 (6 weeks)**

**Congruence and similarity (Week 2 of 2 weeks)**

- Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)
- Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' Theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs

Apply and use the concepts of congruence and similarity, including the relationships between lengths in similar figures

**Introduction to trigonometry (2 weeks)**

- Know and use the trigonometric ratios
- Apply them to find angles and lengths in right-angled triangles in two dimensional figures
- Compare lengths using ratio notation

**Further perimeter and area (1½ weeks)**

- Identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres (review of Year 9)
- Calculate the perimeter of a 2D shape and composite shapes (review of Year 9)
- Calculate the area of composite shapes (review of Year 9)
- Find the surface area of pyramids and composite solids
- Know and apply formulae to calculate area of:
  - Triangles
  - Parallelograms
  - Trapezia

**Spring Term 2 (6 weeks)**

**Graphs recap and extension (1 week)**

- Solve geometrical problems on co-ordinate axes
- Use the form  $y = mx + c$  to identify parallel lines
- Find the equation of the line through two given points, or through one point with a given gradient

Identify and interpret gradients and intercepts of linear functions graphically and algebraically

**Further circumference and area (2 weeks)**

- circle definitions and properties, including centre, radius, chord, diameter, circumference, tangent, arc, sector and segment (review of Year 9)
- Know and use the formulae
  - Circumference of a circle
  - Area of a circle
- Calculate the perimeter of 2D shapes including circles and composite shapes
- Calculate areas of circles and composite shapes (review of Year 9)
- Calculate surface area of spheres, cones and composite solids
- Calculate arc lengths, angles and areas of sectors of circles
- Calculate exactly with multiples of `pi`

**Simultaneous equations (2 weeks)**

- Solve two simultaneous equations in two variables (linear /



<b>Assesse</b>	<p><b>Progress Check 3 on the following topics:</b> Congruence and similarity Introduction to trigonometry <b>Approximate Date of Assessment Week Beginning: 27/01/20</b></p>	<p><b>MILESTONE 3 on the following topics:</b> Congruence and similarity Introduction to trigonometry Further perimeter and area <b>Approximate Date of Assessment Week Beginning: 24/02/20</b></p>
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Topic	<p><b><u>Summer Term 1 (5 weeks)</u></b></p> <p><b>Properties of polygons (2 weeks)</b></p> <ul style="list-style-type: none"> <li>• Derive and use the sum of angles in a triangle (e.g. to deduce and use the angle sum in any polygon, and to derive properties of regular polygons)</li> <li>• Derive and apply the properties and definitions of:             <ul style="list-style-type: none"> <li>○ special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus</li> <li>○ triangles and other plane figures using appropriate language</li> </ul> </li> </ul> <p><b>Real life graphs (1 week)</b></p> <ul style="list-style-type: none"> <li>• Plot and interpret graphs (including reciprocal graphs) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration</li> <li>• Interpret the gradient of a straight-line graph as a rate of change</li> </ul>	<p><b><u>Summer Term 2 (6 (+1) weeks)</u></b></p> <p><b>Review of basic probability (1 week)</b></p> <ul style="list-style-type: none"> <li>• Record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees (review of Year 9)</li> <li>• Apply the property that the probabilities of an exhaustive set of outcomes sum to one (review of Year 9)</li> <li>• Apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one (review of Year 9)</li> <li>• Construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities (review of Year 9)</li> </ul> <p><b>Probability (2 weeks)</b></p> <ul style="list-style-type: none"> <li>• Apply ideas of randomness, fairness and equally likely events to calculate expected outcomes or multiple future experiments</li> <li>• Relate relative expected frequencies to theoretical probability, using appropriate language and the 0 - 1 probability scale</li> <li>• Understand that empirical unbiased samples tend towards theoretical probability distributions with increasing sample size</li> <li>• Enumerate sets and combinations of sets systematically using tables, grids, Venn diagrams and tree diagrams</li> <li>• Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions</li> </ul>
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<b>Assessm</b>	<b>Progress Check 4 on the following topics:</b> Graphs recap and extension Further circumference and area Simultaneous equations <b>Approximate Date of Assessment Week Beginning: 20/04/20</b>	<b>TRIAL EXAMS w/c 08/06/20</b>
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**SUBJECT: Mathematics Year 10F 2019 2020**

	<b>Topic</b>	<b>Assessment</b>
<b>Autumn Term 1</b>	Standard form Calculating with percentages Measures Statistical measures	Progress Check 1 w/c 23/09/19  *MILESTONE 1 w/c 14/10/19
<b>Autumn Term 2</b>	Indices Constructions and loci Algebra recap and extension Congruence and similarity	Progress Check 2 w/c 11/11/19  *MILESTONE 2 w/c 09/12/19
<b>Spring Term 1</b>	Congruence and similarity (cont) Introduction to trigonometry Further perimeter and area	Progress Check 3 w/c 20/01/20
<b>Spring Term 2</b>	Graphs recap and extension Further circumference and area Simultaneous equations	*MILESTONE 3 w/c 24/02/20
<b>Summer Term 1</b>	Properties of polygons Real life graphs	Progress Check 4 w/c 20/04/20
<b>Summer Term 2</b>	Review of basic probability Probability	TRIAL EXAMS w/c 08/06/230

\*Please note that milestones include topics from the previous progress check.