

YEAR 9 MATHS

YEAR 9 MATHS INTENT	Students will continue to develop and extend their knowledge through learning new concepts. They will also be able to interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. They will extend their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically. Looking closely at analysis and interpretation of data will develop students' oracy skills and will allow them to explore mathematical data in the real world.
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Exam Information (Y10-11)	Board:	Edexcel
	Qualification:	Level 1/Level 2 GCSE (9–1) in Mathematics (1MA1)
	Website link to specification/resources:	Maths GCSE Edexcel GCSE Mathematics (2015) Pearson qualifications

Autumn 1	Autumn 1	Autumn 2	Autumn 2	Spring 1	Spring 1
Indices and standard form	Number	Dealing with data	Multiplicative reasoning	Constructions	Sequences, inequalities, equations and proportion
Calculate with powers and roots Use powers of 10 Round numbers to given decimal places Multiply and divide with powers of 10 Recognise prime numbers Round numbers to significant figures	Understand negative numbers HCF LCM Use invers operations Understand what is an integer Factors / Multiples	Know the difference between statement a question Calculate Averages from a set of numbers Plot co-ordinates Draw a bar chart Find the mid-point of 2 numbers	Enlarge shapes without a point of enlargement Calculate simple percentages with and without a calculator Understand direct and invers proportion Substitute in simple expressions Know the compound measures	Recall the names of 2d and 3d shapes Draw lines, angles and circles accurately Convert between metric unit of measure Know the properties of special triangles and quadrilaterals Identify a solid form a its net	Use function machines Find the next term of a sequence Know square and cube numbers Solve equations Negative numbers operations Know the inequalities signs
Mastery: The fractional and negative powers. Knowing and applying all index laws including fractional and negative powers. Estimating roots into 1 decimal place. Estimate calculations with positive and negative powers. Calculate with numbers in standard form. Securing: Knowing and applying all index laws. To estimate answers for calculations including powers, roots, fractions and brackets. To be able to convert between standard form and ordinary numbers. Developing: To know how to calculate powers and roots. To apply index laws for multiplication and division. To round to significant figures and estimate answers to calculate. To be able to convert between	Mastery: Fluency with all operations in context and use them to solve problems. To be able to find HCF and LCM. To use prime numbers and square numbers fluently. To solve contextual problems, including working inversely. Securing: Fluency with the 4 operations in context and knowledge of BIDMAS. To be able to list factors and multiples for different integers. To identify square and prime numbers. Developing: Able to add, subtract, divide and multiply integers. Demonstrate understanding the concept of negative numbers. To demonstrate understanding of factors and multiples.	Mastery: Understanding averages to solve real-life mathematical problems. To understand the advantages and disadvantages for different data collection sheets. Identify outliers for data and give potential reasons for this. Being able to choose appropriate graphs to represent data. Securing: To be able to identify factors that affect data collection and a sample. Calculate averages from a grouped frequency table. Be able to understand the relationship of variables via scatter graphs and use a line of best fit to estimate missing values. Drawing back-to-back stem-and-leaf diagrams and calculate the averages and range. Developing: To be able to identify primary and secondary data. Be able to complete a frequency table and calculate averages from a	Mastery: Enlarge 2-D shapes using a fractional negative. Solve multi-step problems using compound measures. Apply understanding of inverse proportion to compound measures. Securing: Enlarge 2-D shapes using positive whole numbers and fractional scale factors. Solve problems requiring changing units. Being able to solve problems using inverse proportion. Developing: Enlarge 2-D shapes using positive whole number scale factors and find the centre of enlargement. Be able to calculate percentage change and use formulae for compound measures. Solve best-buy problems using the unitary method.	Mastery: Understand and use a map scale given as a ratio. Be able to construct the perpendicular bisector of a line. Construct accurate angles of 45, 30, 60 based on known constructions of perpendicular bisector, angle bisector and equilateral triangle. Securing: To be able to draw diagrams to scale. Use drawing equipment to bisect a line segment and an angle. Being able to construct accurate triangles when given SSS, and construct accurate nets of solids involving triangles. Developing: Accurately use a ruler to measure and use scales on maps. Use drawing equipment correctly to construct a circle and an angle. Being able to construct accurate triangles when given SAS or ASA.o interpret and draw simple distance time-graphs. To plot and use line	Mastery: Recognising and continuing geometric, arithmetic and quadratic sequences. Be able to find the nth term of a quadratic sequence. Solve linear inequalities involving dividing by negative numbers. Answer questions on direct and inverse proportion involving square and cube roots. Securing: To use the nth term to generate arithmetic sequences and find terms. Find integer values that satisfy an inequality and solve 1-step and 2-step linear inequalities. Write formulae connecting variables in direct or inverse. Use algebra to solve problems involving direct or inverse proportion. Developing: Be able to find the next term in a sequence. To be able to find the nth term. To be able to understand inequalities and use signs. Represent inequalities

stand form and ordinary numbers.		frequency table. Plot missing points on a scatter graph and draw a line of best fit. Being able to construct a stem-and-leaf diagram.		graphs to identify trends within the data. Draw and interpret a range of real-life graphs.	on a number line. Understand if variables are directly or inversely proportional and be able to use the unitary method.
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Spring 2	Summer 1	Summer 1	Summer 2
Circles, Pythagoras and Prisms	Graphs	Probability	Comparing Shapes and Trigonometry
<p>Substitute into simple formulae</p> <p>Solve equations</p> <p>Round to a given decimal place and significant figures</p> <p>Know the parts of a circle</p> <p>Evaluate squares and square roots</p>	<p>Plot coordinates</p> <p>Re-arrange equations</p> <p>Draw conversion graphs</p> <p>Know properties of parallel lines</p> <p>Substitute positive and negative numbers in simple expressions</p>	<p>Apply the four operations to integers, decimals and simple fractions</p> <p>Define percentage as “number of parts per hundred”</p> <p>Recognise that some fractions can be written as recurring decimals</p> <p>Find simple probabilities</p> <p>Know the probability scale</p> <p>Know that all probabilities add up to 1</p>	<p>Recognise special types of triangles and quadrilaterals</p> <p>Name polygons and understand the meaning of “regular polygon”</p> <p>Calculate the sum of interior angles in a triangle</p> <p>Find squares and square roots of numbers</p>
<p>Mastery: Be able to calculate area and circumference of sectors of circles. Be able to understand when a decimal value is not appropriate for an error bound or interval, and how this can change the inequality signs. Be able to understand how to use Pythagoras’s Theorem to show that a triangle is NOT a right-angled triangle.</p> <p>Securing: Be able to solve problems involving area and circumference – eg. find the radius knowing the area. Be able to calculate Volume and Surface Area of Cylinders. Be able to calculate with bounds and convert between m, cm and mm. Be able to solve problems involving right-angled triangles.</p> <p>Developing: Be able to calculate area and circumference of circles. Be able to calculate Volume and Surface Area of 3D shapes. Be able to find lower and upper bounds of measurements. Be able to calculate the length of an unknown side of a right-angled triangle.</p>	<p>Mastery: Be able to recognise and find the gradient of perpendicular lines. Be able to draw the graph of cubic equation. Be able to solve simultaneous equations from their graphs.</p> <p>Securing: Be able to find the gradient and y-intercept of a line and write the equation of the straight line. Be able to draw and interpret graphs showing direct and inverse proportion. Be able to draw simulates equations.</p> <p>Developing: Be able to draw the graph of an equation and recognise equations of parallel lines. Be able to draw the graph of quadratic equation. Be able to form simultaneous equations from word problems.</p>	<p>Mastery: Understand that 'A' and 'not A' are mutually exclusive and so $P(A) + P(\text{not } A) = 1$, which leads to $P(\text{not } A) = 1 - P(A)$. Understand by seeing patterns in a sample space that you do not always need to fill in all the possible outcomes in a sample space diagram in order to work out the probability. Understand that Venn diagrams represent sets of data that are not mutually exclusive, and allow us to calculate probability of $P(A \text{ and } B)$ when A and B are not mutually exclusive.</p> <p>Securing: Be able to work out the probabilities of mutually exclusive outcomes and events. Be able to decide whether a dice or spinner is unbiased. Be able to list all possible outcomes of one or two events using a sample space diagram and calculate different probabilities. Be able to calculate probabilities from Venn diagrams and Two-way tables.</p> <p>Developing: Be able to identify mutually exclusive outcomes and events. Be able to calculate estimates of probability from experiments. Be able to list all possible outcomes of an event using a sample space diagram. Be able to draw a Venn Diagram. Be able to complete a Two-way table.</p>	<p>Mastery: Be able to use congruent shapes to solve problems about shapes other than triangles and quadrilaterals. Be able to solve problems involving similar shapes, other than triangles. Be able to use trigonometry to find missing lengths and angles in cubes and cuboids</p> <p>Securing: Be able to use congruent shapes to solve problems about triangles and other polygons. Be able to solve problems involving similar triangles. Be able to calculate sides and angles in right angles triangles using SOHCAHTOA ratios.</p> <p>Developing: I can recognise congruent shapes. I can recognise similar shapes. Be able to label the sides of a right-angle triangle. Be able to calculate the sin, cos and tan of an angle using a calculator.</p>