ASHTON COMMUNITY SCIENCE COLLEGE: MATHS CURRICULUM

	Year 10 Foundation Tier					
	Half term 1	**Half term 2**	**Half term 3**	**Half term 4**	**Half term 5**	**Half term 6**
Knowledge	Topic: ▪ Two way tables ▪ Frequency Trees ▪ Rounding and Error Intervals ▪ Estimation ▪ Use of a Calculator ▪ Product of Prime Factors, HCF and LCM ▪ Real Life Multiples	Topic: ▪ Fractions ▪ Ratio ▪ Direct Proportion ▪ Proportion - Best Value ▪ Proportion - Recipes ▪ Proportion - Exchange Rates	Topic: ▪ Inverse Proportion ▪ Percentages ▪ Interest and Growth ▪ Depreciation and Decay ▪ Reverse Percentages ▪ Index Laws ▪ Expand and Simplify	Topic: ▪ Sequences ▪ Inequalities ▪ Solving Equations ▪ Forming and Solving Equations ▪ Factorising ▪ Subject of	Topic: ▪ Standard Index Form ▪ Alternate/Corresponding Angles ▪ Interior and Exterior Angles ▪ Plans and Elevations ▪ Constructions ▪ Bearings	Topic: ▪ Pythagoras ▪ Trig - Finding Sides ▪ Trig - Finding Angles ▪ Trig - Non Calculator ▪ Pythagoras with Trig ▪ Circles , Arcs and Sectors
Skills	Two way tables - Whilst not a traditional two-way table getting students to plan a journey using bus/train timetables and distance tables provide a good precursor to the topic with a great real-life link. Frequency Trees - There are opportunities to use frequency trees to illustrate their use in medicine Rounding and Error Intervals - Students could consider the cumulative errors that arise when rounding subsequent calculations. Estimation - Questions such as: Phil states $3.44 \times 10 = 34.4$ and Chris states $3.44 \times 10 = 34.40$. Who is correct? Use of a Calculator - Questions that force students to consider the size of their expected answer deepen understanding. Product of Prime Factors, HCF and LCM - Evaluate statements and justify which answer is correct by providing a counter-argument by way of a correct solution. Real Life Multiples- Use of Venn diagrams to help find the LCM and HCF.	Fractions - Students should be able to justify when fractions are equal and provide correct answers as a counterargument. Ratio - Problems involving sharing in a ratio that include percentages rather than specific numbers, such as: In a youth club the ratio of the number of boys to the number of girls is 3 : 2. 30% of the boys are under the age of 14, and 60% of the girls are under the age of 14. What percentage of the youth club is under the age of 14? Direct Proportion -Speed/distance type problems that involve students justifying their reasons why one vehicle is faster than another. Proportion - Calculations involving value for money are a good reasoning opportunity that utilise different skills.	Direct and inverse proportion -Justify and infer relationships in real-life scenarios to direct and inverse proportion such as ice cream sales and sunshine. Percentages - Sale prices offer an ideal opportunity for solving problems allowing students the opportunity to investigate the most effective way to work out the "sale" price. Interest and Growth/Depreciation and Decay - Calculations involving value for money are a good reasoning opportunity that utilise different skills. Reverse Percentages - Calculate original values and evaluate statements in relation to this value justifying which statement is correct. Index Laws -Problems that use indices instead of integers will provide rich opportunities to apply the knowledge in this unit in other areas of Mathematics. Expand and Simplify - Use of algebra tiles/discs.	Sequences - Evaluating statements about whether or not specific numbers or patterns are in a sequence and justifying the reasons. Solving Equations - Forming and solving equations involving algebra and other areas of mathematics such as area and perimeter. Forming and Solving Equations - Problems that could be solved by forming equations such as: Pat and Paul have a combined salary of £800 per week. Pat earns £200 per week more than Paul. How much does Paul earn?	Standard Index Form - Link with other areas of mathematics, such as compound measures, by using speed of light in standard form. Alternate/Corresponding Angles -Multi-step "angle chasing" style problems that involve justifying how students have found a specific angle. Interior and Exterior Angles - Problems whereby students have to justify the number of sides that a regular polygon has given an interior or exterior angle. Constructions - Link problems with other areas of mathematics, such as the trigonometric ratios and Pythagoras' Theorem. Bearings - Interpreting scale drawings and maps involving lengths that need to be measured (rather than given in the problem).	Pythagoras/Trig - Combined triangle problems that involve consecutive application of Pythagoras' Theorem or a combination of Pythagoras' Theorem and the trigonometric ratios. Circles,Arcs and Sectors -Know the impact of estimating their answers and whether it is an overestimate or underestimate in relation to a given context.
Links to prior learning	Two Way Tables - Basic addition and subtraction, probability Frequency Trees – Basic addition and subtraction, probability Rounding and Error Intervals- place value, rounding and inequality symbols Estimation - rounding Use of Calculator - written and mental methods and BIDMAS Product of Prime Factors HCF & LCM - factors, multiples, prime numbers, Venn diagrams and powers Real Life Multiples – factors and product of prime factors	Fractions – Express a given number as a fraction of another, simplifying, fraction of a quantity, convert between mixed and improper Ratio – four operations of number Direct Proportion – four operations, fractions as parts of a whole, conversion between metric units Proportion– four operations, divide money, rounding, converting metric units, fractions as parts of a whole	Inverse Proportion -four operations, fractions, metric units, direct proportion. Percentages - four operations, percentages, multiplication tables. Interest, Growth, Depreciation and Decay – percentages, decimals Reverse Percentages - percentages Index Laws - powers of 10, negative numbers, four operations, BIDMAS , inverse operations. Expand and Simplify - negative numbers, substitution, coordinates	Sequences - negative numbers, use of calculator, index laws Inequalities – inequality signs, number line Solving Equations – inequality sign, substitution, negative numbers, four operations, BIDMAS, inverse operations Forming and Solving Equations - solve linear equations, Factorising - expanding brackets, collecting 'like' terms Subject of – substitution, using formulae BIDMAS and inequalities	Standard Index Form - powers of 10 in index form Alternate/Corresponding angles – angles as a measure of turn, angle sum of a triangle/quadrilateral Interior and Exterior Angles - use ruler and protractor, angles, reflection and symmetry, polygons Plans and Elevations - draw circles and arcs, measure and draw lines and angles, compass directions, sketches of 3D solids, faces, edge, vertices, planes of symmetry, constructing rectangles, triangles, perpendicular and parallel lines. Constructions - measure and draw lines, using pairs of compasses Bearings - measure and draw lines and angles	Pythagoras and Trig - Rearrange formulae and equations, basic angle facts, surd form, coordinates Circles, Arcs and Sectors - area of a rectangle, use of a calculator.
assessment	Check ins Check outs	Check ins Check outs Year 10 Data Capture 1	Check ins Check out	Check ins Check out	Check ins Check outs Year 10 Data Capture 2	Check ins Check outs

ASHTON COMMUNITY SCIENCE COLLEGE: MATHS CURRICULUM

	Year 11 Foundation					
	Half term 1	**Half term 2**	**Half term 3**	**Half term 4**	**Half term 5**	**Half term 6**
Knowledge	Topic: • Surface Area and Volume • Sampling • Averages • Averages from a Table • Averages from Grouped Data • Frequency Diagrams • Scatter Graphs	Topic: • Time Series • Pie Charts • Coordinate Geometry • Straight Line Graphs • Non-linear Graphs • Speed, Distance, Time • Compound Measures	Topic: • Real Life Graphs • Congruence • Similar Shapes • Reflections • Rotations • Translations • Enlargements • Combined Transformations	Topic: • Vectors • Probability from a Table • Probability Trees • Venn Diagrams • Simultaneous Equations	Topic: • Past Papers/QLA	Topic: • Exams
Skills/ application of knowledge	Surface Area and Volume - Combinations of 3D forms such as a cone and a sphere where the radius has to be calculated given the total height. Sampling - When using a sample of a population to solve contextual problem, students should be able to justify why the sample may not be representative of the whole Averages - Given the mean, median and mode of five positive whole numbers, can you find the numbers? Frequency Diagrams - Evaluate statements in relation to data displayed in a graph/chart. Scatter Graphs - Many real-life situations that give rise to two variables provide opportunities for students to extrapolate and interpret the resulting relationship (if any) between the variables.	Time Series - Evaluate statements in relation to data displayed in a graph/chart. Pie Charts - Explain why same-size sectors on pie charts with different data sets do not represent the same number of items but do represent the same proportion. Straight Line Graphs - Students should be able to decide what the scales on any axis should in order to draw a correct graph. Non-linear Graphs - Matching graphs with their respective functions. Speed, Distance, Time/Compound measures - Speed/distance type problems that involve students justifying their reasons why one vehicle is faster than another.	Real Life Graphs - Students should be able to decide what the scales on any axis should be to be able to draw a correct graph. Congruence/similarity - Using scale diagrams, including bearings and maps, provides a rich source of real-life examples and links to other areas of mathematics. Transformations - Students should be given the opportunity to explore the effect of reflecting in two parallel mirror lines and combining transformations.	Vectors - Investigations involving vectors around 2D shapes such as a square can be extended to include considering the area enclosed in the same shapes. Probability from a Table -Students should be given the opportunity to justify the probability of events happening or not happening. Probability Trees - Lotteries provides a real-life link to probability.. Venn Diagrams -Use examples that include ratio, percentages or algebraic terms. Simultaneous Equations - real life scenarios, such as 2 adult and 2 child tickets cost £18, and 1 adult and 3 child tickets costs £17. What is the cost of 1 adult ticket?		
Links to prior learning	Surface area and volume - area of a rectangle, use of a calculator, measure lines, 2D shapes, multiplying and dividing by powers of 10, areas and volumes, interpreting scales Statistics and sampling - midpoints, inequality notation. Averages – midpoints, inequality notation. Averages from a table and grouped data - tally charts, inequality notation, midpoints, time. Frequency Diagrams - read scales on graphs, plot coordinates, tally charts, stem and leaf, inequality notation, midpoints. Scatter graphs - Read scales on graphs and plot coordinates, tally charts.	Time Series - Read scales, coordinates, tally charts. Pie Charts - read scales, draw circles, measure angles, coordinates, angles in a full turn, at a point and on a straight line. Coordinate Geometry - plot coordinates, read scales, substitution. Straight Line Graphs - plot coordinates, read scales, substitution. Non-linear Graphs -negative numbers, substitution, plot coordinates, expand brackets, collect 'like' terms. Speed, Distance, Time and compound measures - interpret scales, percentage of an amount, percentages to decimals, rearrange equations, metric units, area and volume of shapes, s = d/t, d=m/v	Real Life Graphs - plot coordinates, read scales, substitution Congruence and similarity – enlarge shapes and scale factors, area and volume in metric measures. Transformations - 2D shapes, plot points , rotations, draw and recognise lines parallel to axes and y = x, y = –x, congruent shapes	Vectors - column vectors when dealing with translations, Recall and apply Pythagoras' Theorem on a coordinate grid. Probability from a Table - add and multiply fractions and decimals, expressing one number as a fraction of another number. Probability Trees - add and multiply fractions and decimals, expressing one number as a fraction of another number. Venn Diagrams - Basic addition and subtraction, probability is a number between 0 and 1. Simultaneous Equations - set up and solve linear equations.		
assessment	Check ins Check outs Year 11 Data Capture 1	Check ins Check outs	Check ins Check outs Year 11 Data Capture	Check ins Check outs		