

Year 11 GCSE Revision -		
Week beginning	Topics for revision	Re-visit work
6 th February	Expressions, Equations and Formulae	☐ Derive formulae ☐ Substitute numbers (positive or negative) into a formula, including formulae with x^2 or x^3 terms ☐ Change the subject of a simple formula ☐ Change the subject of a formula where the subject appears on both sides of the formula ☐ Change the subject of a formula that includes a power of the subject ☐ Simplify by collecting like terms ☐ Multiply out a single bracket ☐ Factorise a single bracket by taking out a common factor ☐ Expand two brackets ☐ Factorise quadratics into two brackets ☐ Factorise quadratics using the difference of two squares, eg. $4y^2 - 25 = (2y+5)(2y-5)$ ☐ Simplify algebraic expressions by cancelling, adding, subtracting and multiplying ☐ Set up simple equations for a problem ☐ Rearrange simple equations ☐ Solve simple equations ☐ Solve equations with the unknown on either side ☐ Solve equations with the unknown on both sides ☐ Solve equations that include brackets ☐ Solve equations with negatives, including negative answers ☐ Solve equations involving fractions
	Interior and exterior angles of polygons	☐ Calculate the sum of interior angles in a polygon ☐ Understand the polygon names; hexagon, heptagon, octagon and decagon ☐ Use the angle sum of an irregular polygon in a problem ☐ Calculate and use the sum of the interior angles of a regular polygon ☐ Understand and use fact that the exterior angles of a polygon add up to 360° ☐ Understand and use the fact that the interior and exterior angles at one vertex of a polygon add up to 180° ☐ Be able to calculate the exterior angle of a regular polygon ☐ Be able to calculate the interior angle of a regular polygon ☐ Be able to deduce the number of sides of a regular polygon, given one of its angles ☐ Understand tessellations of regular and irregular polygons

13 th March	Ratio Direct and indirect proportion Angles on intersecting lines, in triangles and quadrilaterals, and on parallel lines	☐ Write a ratio in its simplest form ☐ Divide a quantity in a given ratio ☐ Solve problems using ratios ☐ Calculate an unknown quantity where quantities are in direct proportion ☐ Calculate an unknown quantity where quantities are in inverse proportion ☐ Set up equations to solve word problems involving direct proportion ☐ Set up equations to solve word problems involving indirect proportion ☐ Understand and use graphs of equations involving direct and indirect proportion ☐ Angles round a point add up to 360° ☐ Angles on a straight line add up to 180° ☐ Perpendicular lines ☐ Know the properties of scalene, isosceles, equilateral and right-angled triangles ☐ Angles in a triangle add up to 180° ☐ Angle properties of intersecting lines, and vertically opposite angles are equal ☐ Be able to mark parallel lines on a diagram ☐ Corresponding angles in parallel lines ☐ Alternate angles in parallel lines ☐ Calculate angles and give reasons ☐ Explain why the angle sum of a quadrilateral is 360° ☐ Understand a proof that the angle sum of a triangle is 180° ☐ Understand the proof that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices ☐ Calculate angles in more complex problems
20 th March	Graphs Gradients of parallel and perpendicular lines	☐ Draw, label and add a scale to axes ☐ Understand that an equation of the form $y = mx + c$ corresponds to a straight line graph ☐ Plot straight line graphs from their equations ☐ Plot and draw a graph of an equation in the form $y = mx + c$ ☐ Find the gradient of a straight line graph ☐ Find the gradient of a straight line graph from its equation ☐ Understand that a graph of an equation in the form $y = mx + c$ has gradient of m and a y intercept of c (ie. crosses the y axis at c) ☐ Understand how the gradient of a real life graph relates to the relationship between the two variables ☐ Understand how the gradients of parallel lines are related

	Simultaneous equations (one linear and one quadratic) Other graphs Graphs of loci Graphs from quadratic and other functions	☐ Understand how the gradients of perpendicular lines are related ☐ Understand that if the gradient of a graph in the form $y = mx + c$ is m, then the gradient of a line perpendicular to it will be $-\frac{1}{m}$ ☐ Generate equations of a line parallel or perpendicular to a straight line graph ☐ Show the solution to several inequalities with two variables on a graph ☐ Find the intersection of a linear and a quadratic graph to find (approximate) solutions to simultaneous equations ☐ Solve simultaneous equations (one linear, one quadratic in one variable) by elimination ☐ Solve simultaneous equations where one equation is of the form $x^2 + y^2 = r^2$ ☐ Plot, sketch or recognise graphs of cubic functions ☐ Plot, sketch or recognise graphs of $y = 1/x$ ☐ Plot, sketch or recognise graphs of $y = k^x$ for integer values of x ☐ Plot, sketch or recognise graphs of $y = \sin x$ and $y = \cos x$ from -360° to $+360^\circ$ ☐ Draw or plot other mathematical functions ☐ Recognise or analyse other mathematical functions ☐ Construct the graphs of simple loci including the circle, $x^2 + y^2 = r^2$ ☐ Find the points of intersection of a circle and a straight line ☐ Apply understanding of loci to construct graphs based on circles and perpendicular lines ☐ Generate points for quadratic functions ☐ Plot graphs of quadratic functions ☐ Find (approximate) solutions to a quadratic equation from the graph of its function ☐ Find (approximate) solutions to simultaneous equations, one quadratic and one linear from the intersections of their graphs
27 th March	Straight edge and compass constructions	☐ Construct a given triangle ☐ Construct an equilateral triangle ☐ Understand that SSS, SAS, ASA and RHS triangles are unique but ASS ones are not ☐ Construct a perpendicular bisector of a line ☐ Construct a perpendicular from a point to a line ☐ Construct a perpendicular from a point on a line ☐ Bisect an angle ☐ Construct angles of 60°, 90°, 30° and 45° ☐ Construct parallel lines ☐ Draw circles and arcs of a given radius ☐ Construct a regular hexagon inside a circle

	Bearings Solve quadratic equations	☐ Construct diagrams involving any of the above ☐ Construct diagrams from given information ☐ Use 3 figure bearings to specify direction ☐ Mark a point on a diagram, given a bearing and distance from another point ☐ Measure or draw a bearing on a map or scale plan ☐ Given a bearing of one point from another, find the bearing of the first point from the second ☐ Solve quadratic equations by factorisation ☐ Solve quadratic equations by completing the square ☐ Solve quadratic equations using the quadratic formula
3 rd April	Charts and diagrams Interpreting graphs and diagrams	Draw the following charts or diagrams ☐ Bar chart ☐ Dual bar chart ☐ Pie chart ☐ Histogram with equal class intervals ☐ Frequency polygon ☐ Frequency diagram for grouped discrete data ☐ Scatter graph ☐ Line graph ☐ Frequency polygon for grouped data ☐ Grouped frequency table for continuous data ☐ Stem and leaf diagram ☐ Two-sided stem and leaf diagram ☐ Cumulative frequency table ☐ Cumulative frequency graph ☐ Box plots (from raw data, or when given the median and quartiles) ☐ Histograms with unequal class intervals, using frequency density Understand and find information from ☐ pie charts ☐ stem and leaf diagrams ☐ scatter graphs ☐ frequency polygons ☐ box plots ☐ cumulative frequency diagrams ☐ histograms

		☐ Find the median or other information from a histogram, for example the number of people in a particular group ☐ Find information from line graphs, frequency polygons and frequency diagrams ☐ Find information from pie charts ☐ Find median, mode, range and interquartile range from stem and leaf diagrams ☐ Estimate values and find median, quartiles and interquartile range from a cumulative frequency graph ☐ Complete a frequency table from a histogram ☐ Understand and define frequency density ☐ Draw a line of best fit ☐ Understand positive, negative and no correlation ☐ Understand that correlation does not always imply one thing causes the other ☐ Predict values using a line of best fit ☐ Understand that "no correlation" does not necessarily mean no relationship between the values, just no linear relationship
10th April <u>EASTER</u>	Probability	☐ Impossible, unlikely, even chance, likely and certain events ☐ Mark events or probabilities on a 0 to 1 probability scale ☐ Write probabilities as fractions, decimals or percentages ☐ Find probabilities of events using dice, spinners, coins ☐ Understand and use relative frequency as estimates of probability ☐ Calculate an estimate of how many times an event will occur, given its probability and the number of trials ☐ List the outcomes for one or two events ☐ Use and draw diagrams to show all possibilities ☐ Understand that the sum of all the mutually exclusive outcomes is 1 ☐ Know that if P is a probability of an outcome occurring, then $1 - P$ is the probability of the same outcome not occurring ☐ Fill in a missing probability in a table ☐ Know and use the fact that, for mutually exclusive events, $P(A \text{ OR } B) = P(A) + P(B)$ ☐ Know that, for independent events, $P(A \text{ AND } B) = P(A) \times P(B)$ ☐ Understand the difference in calculation for selection of an object with or without replacement ☐ Draw a probability tree diagram ☐ Calculate probability of compound events from a tree diagram ☐ Compare experimental data with theoretical probability ☐ Understand that the same experiment repeated can have different results, and that increasing sample size increases accuracy ☐ Compare results from different sample sizes

1st May	Circumference and area of a circle	☐ Find circumference of a circle using $C = nd$ or $C = 2\pi r$ ☐ Find the area of a circle using $A = \pi r^2$ ☐ Use $\pi = 3.142$ or the π button on a calculator ☐ Find the perimeter and area of semicircles and quarter circles ☐ Calculate the length of an arc ☐ Calculate the area of a sector ☐ Give answers in terms of π if required ☐ Find the surface area of a cylinder
	Maps and scale drawings	☐ Use, interpret and construct maps and scale drawings ☐ Draw lines and shapes to scale ☐ Estimate lengths using a scale diagram
	Comparing data	☐ Compare two sets of data using shapes of distributions ☐ Compare two sets of data using averages and spread, such as median, range and quartiles ☐ Compare spread using box plots or cumulative frequency graphs ☐ Compare two pie charts ☐ Compare data from dual bar charts ☐ Understand the advantages and disadvantages of different types of average
8th May	Measure and draw lines and angles	☐ Measure and draw straight lines to the nearest mm ☐ Measure and draw angles to the nearest degree
		☐ Make accurate drawings of triangles and other 2D shapes using ruler and protractor
		☐ Make an accurate scale drawing from a diagram
		☐ Use accurate drawing to solve bearings problems
	Rounding and approximation	☐ Round to the nearest integer (whole number)
		☐ Round numbers to any given power of 10
		☐ Round to a number of decimal places
		☐ Round to a number of significant figures
		☐ Estimate the answer to a calculation by using rounding
	Solve simultaneous equations with two unknowns	☐ Use elimination to solve simultaneous equations ☐ Use substitution to solve simultaneous equations
		☐ Draw straight line graphs and find the solution from the intersection of the two graphs ☐ Write simultaneous equations for a problem
15th May	Sequences	☐ Understand odd and even numbers

		☐ Generate number sequences from diagrams ☐ Describe the rule for a number sequence ☐ Find a particular term in a sequence, or explain why a particular number is not in a sequence ☐ Find the n th term expression for a sequence ☐ Use the n th term expression to find a number in the sequence
	Transformations	<u>Rotations</u> ☐ Rotate a 2D shape around the origin or other point ☐ Understand that a rotation is defined by an angle, direction and a centre of rotation ☐ Find the centre of rotation ☐ Understand that a rotation produces a shape congruent to the original
		<u>Reflections</u> ☐ Understand and describe reflections ☐ Identify the mirror line for a reflection, and find its equation ☐ Understand that a reflection produces a shape congruent to the original <u>Translations</u> ☐ Understand and use translations ☐ Understand that translations are defined by a distance and a direction using vector notation ☐ Translate a shape by a given vector ☐ Understand that a translation produces a shape congruent to the original <u>Enlargements</u> ☐ Understand that an enlargement is defined by a centre of enlargement and a scale factor ☐ Understand that angles remain the same in an enlargement ☐ Enlarge a shape using (0, 0) or any other point as the centre ☐ Enlarge a shape by a positive scale factor ☐ Enlarge a shape by a fractional scale factor ☐ Enlarge a shape by a negative scale factor ☐ Find the centre of a given enlargement ☐ Identify the scale factor of a given enlargement <u>Combined transformations</u> Describe a transformation using a combination of rotation, reflection, translation or enlargements.
22 nd May	Thursday 25th May Paper 1 Non Calculator	
29 th May HALF TERM	Use a calculator effectively	☐ Simple and complex calculations, including involving time or money ☐ Use the following functions ☐ +, -, $\times$, $\div$

		☐ x^2 and $\sqrt{x}$ ☐ memory functions ☐ brackets ☐ x to the power of y ☐ x to the power of 1 over y ☐ brackets ☐ trigonometrical functions ☐ Understand that rounding too early can causes inaccuracy ☐ Understand numbers shown in standard form, and be able to enter numbers in standard form ☐ Calculate in standard form ☐ Use for dividing to do reverse percentage calculations ☐ Use a multiplier and the power key to calculate exponential growth or decay
5 th June	Coordinates Real life graphs Volumes of prisms Complex shapes and solids	Thursday 8th June Paper 2 Calculator ☐ Use axes and coordinates, both positive and negative in 2D ☐ Understand and plot points in four quadrants ☐ Use axes and coordinates in 3D ☐ Find the coordinates of a point ☐ Plot a point given the coordinates, in 2D or 3D ☐ Find the mid-point of a line ☐ Calculate the length of a line using coordinates ☐ Plot a linear graph ☐ Interpret information on linear and non-linear graphs ☐ Use the formula to calculate the volume of a cuboid ☐ Calculate volume of a prism, such as a triangular prism ☐ Calculate the volume of a prism made from cuboids ☐ Find the volume of a cylinder ☐ Find the surface area of cubes, cuboids, cones, pyramids, spheres and hemispheres ☐ Find the volumes of cones, pyramids, spheres and hemispheres, frustrums ☐ Find the surface area or volume of a compound solid made up of other solid shapes, eg. a cuboid with pyramid on top, or cyclinder with cone on top. ☐ Use volumes in complex problems ☐ Find the area of a segment of a circle given the radius and length of the chord
		Tuesday 13th June Paper 3 Calculator

Suggested activities:

- Look through your exercise books to find any information on the topic.
- Make revision notes/mind map/prompt cards on all you know about the topic.
- Find any information you have about the topic from your revision guide, maths watch CD or mymaths website and any other resources your teacher has guided you to.
- Do some practice questions from revision guide, maths watch CD or mymaths website.
- Look back through mock papers or other exam papers you have. Find any questions you have done on the topic. Did you get them correct? If not try to correct them. Do you understand the method you used?

Other topics to think about:

- ☐ Vectors
 - ☐ Functions
 - ☐ Iteration
 - ☐ Loci
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