Maths Long Term Plan Year 9

Chichester Free School
Nurture • Challenge • Inspire

Temperance Term

W/C	1	2	3	4	5	6	7	8	
Area of Study	Geometry 3							Assessment	
Core learning for all sets / **Core learning for sets 1 and 2**	**3D properties** Count faces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres. Identify planes of symmetry. Construct and interpret isometric drawings. Draw plans and elevations. Given plans and elevations, sketch a 3D shape. Draw isometrically from plans and elevations and vice versa.		**Metric measurements** Recap of place value. Multiply and divide by powers of 10. Convert between larger and smaller metri units. Calculate perimeters of irregular shapes given their side lengths. Calculate the perimeter of regular shapes given one side. Calculate the perimeter of rectangles given length and width. Calculate perimeters when lengths are given in different metric units. Calculate the area of rectilinear shapes including with decimals and/or fractions. Calculate perimeters of L- and T-shapes. Find the length given the area and width of a rectangle. Solve problems inolving area and perimeter of rectilinear shapes and algebra. Convert between different metric units of area.		**Volume** Count cubes to find volume. Calculate the volume of a cube or cuboid. Calculate the volume of composite shapes made from cubes or cuboids. Convert between different metric units of volume. Calculate the area of a triangle (recap). Calculate the volume of a triangular prism. Calculate the volume of a prism with a composite shape cross-section. Recap circle definitions and properties. Calculate area of a circle (recap). Calculate the volume of a cylinder. Calculate in terms of pi.				HALF TERM
	Opportunities for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.								
Assessment				Progress Check				Formal, summative	

W/C	9	10	11	12	13	14		
Area of study	Algebra 5							
Core learning for all sets / **Core learning for sets 1 and 2**	**Equations and graphs** Solve linear equations with one unknown on one side of the equation. Start with positive integer coefficients and solutions. Move on to negative, decimal, fractions coefficients and solutions. Solve linear equations with the unknown on both sides of the equation. Plot linear graphs using a table. Plot linear graphs using the gradient-intercept method. Identify and interpret gradients and intercepts both graphically and algebraically.		**Simultaneous equations** Solve linear simultaneous equations graphically. Solve linear simultaneous equations algebraically using substitution. Solve linear simultaneous equations algebraically using elimination.		**Inequalities** Understand the notation involved. Verbally express an inequality and suggest possible numbers that work. Write inequalities on number lines and vice versa. List integer solutions to double inequalities. Solve linear inequalities with the unknown on one side. Represent the answer on a number line. Solve linear inequalities with the unknown on both sides. Solving double inequalities and represent the answer on a number line.		**CHRISTMAS**	
	Opportunity for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.							
Assessment		Progress Check			Progress Check			

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Justice Term

W/C	15	16	17	18	19	20	
Area of study	Geometry 4					Assessment	**HALF TERM**
Core learning for all sets / Core learning for sets 1 and 2	**Surds** Recap factors, squares, cubes, roots, irrational roots, index laws. Simplifying surds using the highest square factor. Collecting "like" surds. Expanding a single bracket with surds. Expand and siimplify two single brackets with surds. Expand and simplify double brackets with surds.		**Pythagoras** Label a RA triangle with the hypotenuse and the two shorter sides. Calculate the hypotenuse of a RA triangle given the other two sides. Calculate one of the shorter sides given the other two sides. Identify whether the hypotenuse or a shorter sides is being asked for and then carry out the correct procedure. Calculate missing sides of a RA triangle given context-based problems. Calculate the height of an isosceles or equilateral triangle. Calculate a side of an isosceles or equilateral triangle given the height. Solve problems in 3D using Pythagoras' theorem. Solve problems involving pythagoras' theorem and surds.	**Trigonometry** Label RA triangle with hypotenuse, opposite and adjacent given theta. Use a calculator to find sin, cos and tan of any number. Use a calculator to find inverse sin, cos and tan of any number. Find the missing side of a RA triangle given an angle and another side. Find the missing angle of a RA triangle given two of the sides. Learn and remember exact values for sin, cos and tan for 0, 30, 45, 60 , 90.		Assessment and review	
	Opportunity for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.						
Assessment			Progress Check			Formal, summative	

W/C	21	22	23	24	25	26	
Area of study	Algebra 6						**EASTER**
Core learning for all sets / Core learning for sets 1 and 2	**Quadratic expressions** Recap: expand single brackets, expand and simplify two single brackets. Expand and simplify double brackets. Include difference of two squares. Factorise quadratic expressions where the coefficient of the quadratic term is 1. Factorise quadratic expressions when the coefficient of the quadratic term is more than 1. Re-write a quadratic expression in completed square form.		**Quadratic graphs** Recap: plotting linear graphs. Plot quadratic equations using input/output table. Identify important points on a quadratic graph such as intercepts and turning points. Use a graph to find solutions to quadratic equations. Sketch quadratic graphs using key features.		**Quadratic equations** Recap: Solving linear equations. Solve quadratic equations by factorising when the coefficient of the quadratic term is 1. Solve quadratic equations by factorising when the coefficient of the quadratic term is more than 1. Solve quadratic equations by completing the square. Solve quadratic equations by using the quadratic formula.		
	Opportunity for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.						
Assessment			Progress Check		Progress Check		

Maths Long Term Plan Year 9

Courage Term

W/C	27	28	29	30	31		
Area of study			Statistics 3				HALF TERM
Core learning for all sets / Core learning for sets 1 and 2	Averages – Ungrouped Calculate measures of central tendencies (mean, median and mode) for a list of discrete items or numbers. Calculate the range for a list of discrete numbers. Identify pros and cons of different averages. Identify which average should be used (or not used) in a given situation. Calculate the averages and range for a frequency table of discrete data.		Averages – Grouped <u>Averages for discrete data for grouped frequency</u> Calculate the averages and range for a grouped frequency table of discrete data. <u>Averages for continuous data for grouped frequency</u> Calculate the averages and range for a grouped frequency table of continuous data.		Graphical representations <u>Recap</u> Create and interpret pictograms. Create and interpret bar charts and dual bar charts. <u>Statistical graphs</u> Create and interpret pie charts. Create and interpret stem and leaf diagrams and find averages/range from this. <u>Statistical graphs (extension)</u> Create and interpret boxplots from a list of discrete numbers. Create and interpret cumulative frequency graphs for continuous data. Create and interpret boxplots from frequency tables or cumulative frequency graphs.		
	Opportunity for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.						
Assessment		Progress Check			Progress Check		

W/C	32	33	34	35	36	37	
Area of study	**Assessment**		Geometry 5				SUMMER
Core learning for all sets / Core learning for sets 1 and 2		**Reflections, rotations and translations** <u>Recap</u> Congruency. Equations of vertical and horizontal lines. Equations of simple diagonal lines (y=x and y=-x). <u>Reflections</u> Reflect 2D shapes in vertical, horizontal and diagonal lines. Describe a reflection by identifying the equation of the mirror line. <u>Rotations</u> Rotate 2D shapes by 90, 180, 270 degrees. Describe a rotation by identifying the centre of rotation and the amount and direction of turn. <u>Translations</u> Translate a 2D shape using a column vector. Describe a translation by identifying the column vector. <u>Combinations of transformations</u> Transform a shape and then preform a subsequent transformation. Describe multiple transformations on the same 2D shape.		**Enlargements** <u>Enlargements</u> Enlarge 2D shapes without reference to a centre of enlargement and with positive integer scale factors. Enlarge 2D shapes with a centre of enlargement with positive integer scale factors. Describe enlargements by identifying the centre of enlargement and the scale factor. Enlarge 2D shapes with a centre of enlargement with fractional and/or negative scale factors.	**Similarity** <u>Similar shapes</u> Identify similar shapes from given information about side lengths and angles. <u>Similar Triangles</u> Identify similar triangles using the rules to do with sides and angles. Solve problems to do with similar triangles.	
	Opportunity for Challenge: Open middle, goal free, exam questions, "by example", SSDD are good resources but always choose problems based on the current topic.						
Assessment	**Formal, summative**			**Progress Check**			