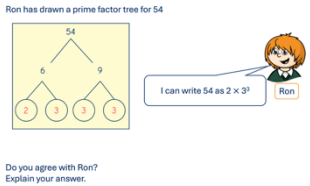
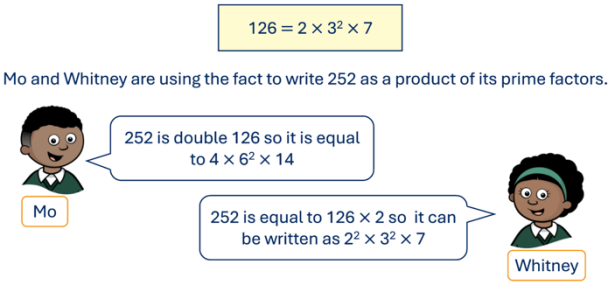
Holy Family Catholic School – Faculty of Mathematics Autumn Half-term 1 Year 9

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 1 (Thurs & Fri) - ORIENTATION & EXPECTATIONS						
Week 2 Lesson 1 To find factors, multiples & primes. Step 1	Factor Multiple Prime Common factor Common multiple	NUMBER	Nth term Circumference of a circle Opposite angles Ratio notation	I will be able to: • Recall multiples, factors and primes. • Solve problems involving multiples, factors & primes.	Slide 19 Is the statement true or false? A multiple of a number can also be a factor of the same number.	Slide 26 Annie is thinking of a number. The number is odd. It is a prime number. It is a factor of 24 Annie's number can't be... Annie's number could be...
Week 2 Lesson 2 To write a number as a product of prime factors. Step 2 To use prime factors Step 3 Extension	Factor Multiple Prime number	NUMBER	Area of a circle. Factors Parallel line facts Share the whole in a ratio.	I will be able to: • Draw a prime factor tree • Write a number as a product of prime factors	Slide 16  	Slide 19 

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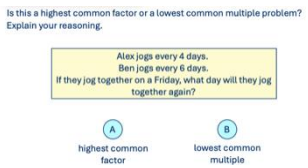
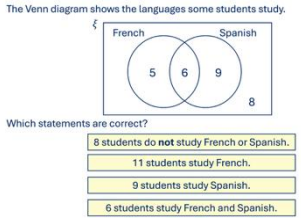
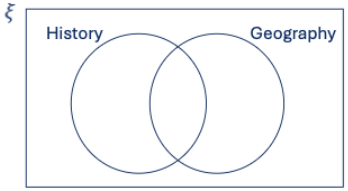
Week 2 Lesson 3 To find HCF and LCM. Step 4	Factor Highest common factor Multiple Lowest common multiple	NUMBER	Product of prime factors. Term to term rules Angle reasoning Ratio problem (difference given)	I will be able to: • Identify common factors and list the HCF • Identify common multiples and list the LCM • Link HCF & LCM to worded problems	Slide 19 	Slide 22 Two numbers x and y • Are greater than 4 • Have a highest common factor of 4 • Have a lowest common multiple of 48 Work out the values of x and y
Week 3 Lesson 1 To understand how to use a venn diagram. Step 5	Venn diagram Set Element Intersection Universal set	NUMBER	HCF Terms in a sequence Quadrilateral fact Write ratio to 1:n (adapt to simplify)	I will be able to: • Use a venn to sort shapes • Use a venn to sort numbers	Slide 20 	Slide 24 In a class of 40 students. • 14 study History • 22 study Geography • 5 do not study either subject One student in the class is selected at random. Find the probability that this student studies both subjects. 

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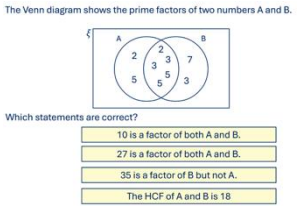
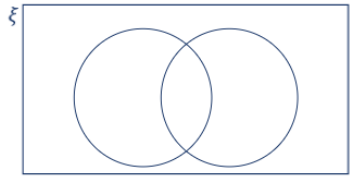
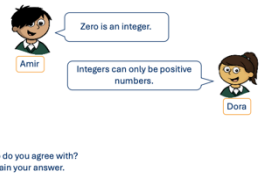
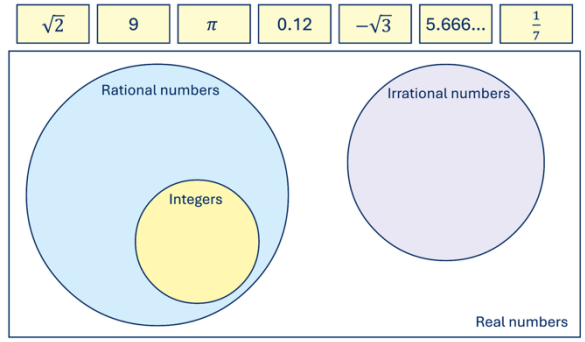
Week 3 Lesson 2 To use a venn diagram to calculate HCF & LCM Step 6	Venn diagram Intersection HCF LCM Prime factor Product	RATIO & PROPORTION	Populate a venn Nth term Angles in a quadrilateral Ratio to fraction conversion	I will be able to: • To populate a venn with prime factors for two values. • To calculate HCF & LCM from the venn.	Slide 17 	Slide 23 The highest common factor of two numbers is 28 The lowest common multiple of the two numbers is 10 080  What could the two numbers be? Is there more than one correct answer?
Week 3 Lesson 3 To identify integers, real and rational numbers. Step 7 To introduce surds. Step 8 Extension	Real number Rational number Irrational number Recurring Terminating	RATIO & PROPORTION	LCM using a venn diagram. Multiples Exterior angle of a regular hexagon. Angles in a triangle expressed as a ratio.	I will be able to: • To solve problems using ratios by setting up a bar model. • To use ratio in angle reasoning.	Slide 10 	Slide 15 Sort the numbers into the Venn diagram. 

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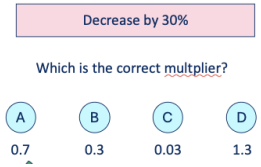
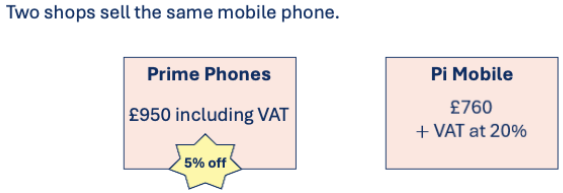
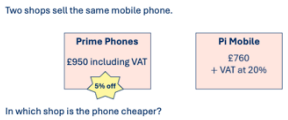
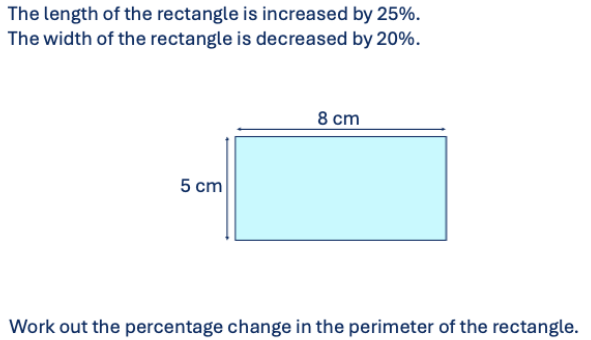
Week 4 Lesson 1 To calculate percentage increase and decrease. Step 1	Increase Percentage Decrease Multiplier	NUMBER	Simplify surds (adapt) LCM Angles in polygons Direct proportion	I will be able to: • Find a decimal equivalent to a percentage. • Calculate a percentage increase or decrease.	Slide 20 	Slide 24 
Week 4 Lesson 2 To express change as a percentage. Step 2	Profit Loss Change Original Percentage change	NUMBER	Decrease by a % Venn interpretation Probability words Exchange rates	I will be able to • Express change as a percentage • Calculate the overall percentage change after repeated change.	Slide 12 	Slide 23 

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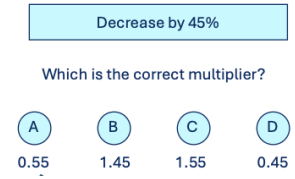
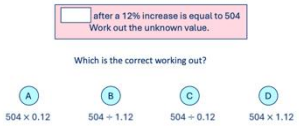
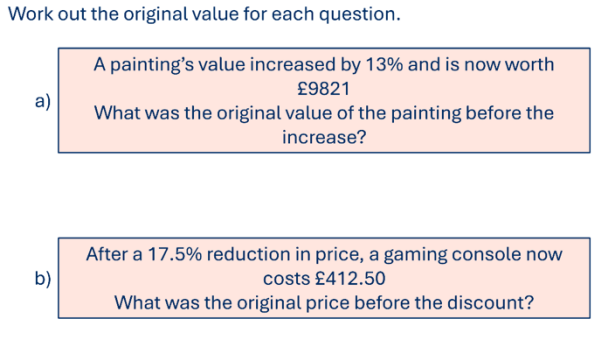
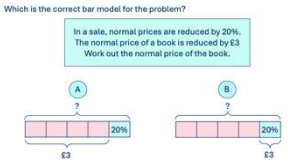
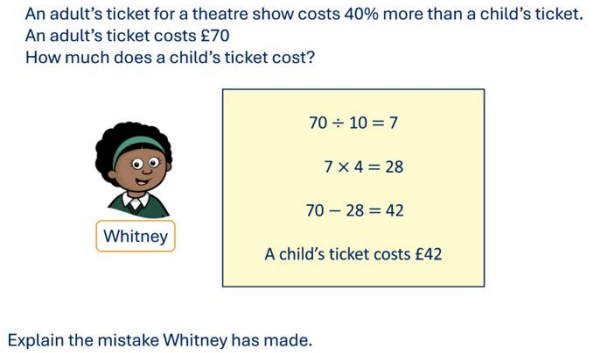
Week 4 Lesson 3 To work with a reverse percentage. Step 3	Original Increase Depreciate Change Decrease Multiplier	NUMBER	Percentage change Venn interpretation Probability Convert metric units	I will be able to: • Find the original amount after a percentage change.	Slide 8  Slide 27 	Slide 29 
Week 5 Lesson 1 To solve problems with percentages. Step 6	Increase Original Decrease Change	NUMBER	Reverse percentage Irrational number Probability Metric conversion.	I will be able to: • Solve problems with percentages without a calculator.	Slide 13 	Slide 15 

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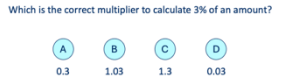
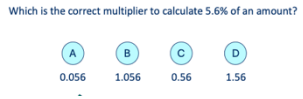
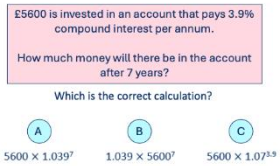
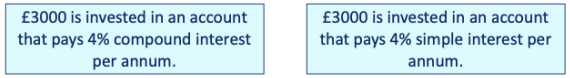
Week 5 Lesson 2 To calculate using simple interest. Step 8 Step 7 Understanding interest (optional)	Simple interest Deposit Principal amount Investment	NUMBER	Interest calculation Reverse percentage Two way table Scale drawing	I will be able to • Calculate using simple interest.	Slide 7  Slide 8 	Slide 18 
Week 5 Lesson 3 To calculate using compound interest Step 9	Compound interest Multiplier Per annum Rate Balance	NUMBER	Simple interest Percentage of an amount Two way table Substitution	I will be able to • Calculate using compound interest for appreciation • Amend the method for a depreciation.	Slide 17 	Slide 21  What's the same? What's different? Calculate both total amounts after interest is added.

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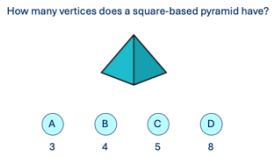
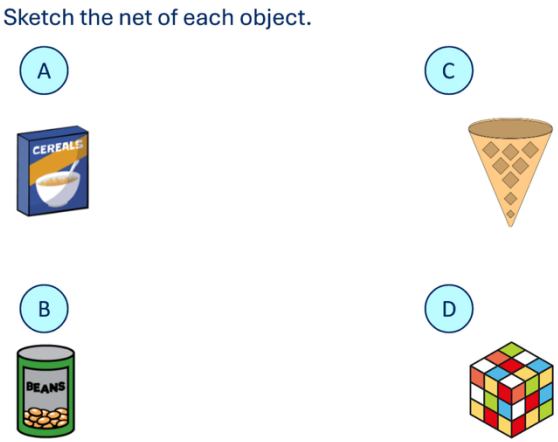
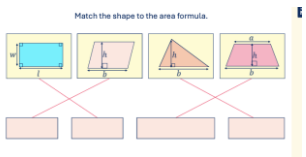
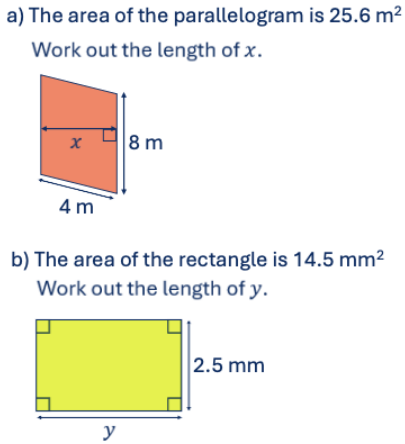
Week 6 Lesson 1 To investigate the net of a 3D object. Step 1	Face Edge Vertex Dimensions 3D shape 2D shape	SHAPE, SPACE & MEASURES	Compound interest Reverse percentage Frequency tree Simplify algebraic fraction	I will be able to: • To form algebraic expressions. • To understand the meaning of an algebraic expression.	Slide 10 	Slide 24 
Week 6 Lesson 2 To find the area of a 2D shape. Step 2	Area Perpendicular height Unit Formula Compound shape	SHAPE, SPACE & MEASURES	Sketch a net Repeated percentage change Frequency tree Solve an equation	I will be able to • Find the area of a 2D shape. • Given an area, find a missing dimension.	Slide 11 	Slide 16 

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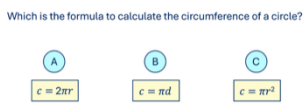
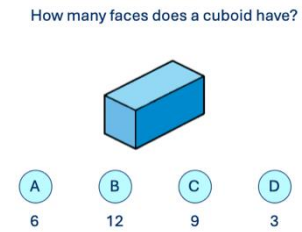
Week 6 Lesson 3 To find the area and circumference of a circle. Step 3	Radius Diameter Perimeter Circumference Pi	SHAPE, SPACE & MEASURES	Area of triangle Interest Parts of circle Substitution	I will be able to • To find the circumference of a circle. • To find the area of a circle.	Slide 13 	Slide 32 The area of a circle is 141 cm^2 Work out the circumference of the circle. Give your answer to the nearest cm.
Week 7 Lesson 1 To find the surface area of cubes & cuboids. Step 4 To find the surface area of a triangular prism. Step 5 Extension	Face Dimensions Area Surface area	SHAPE, SPACE & MEASURES	Area of circle Simple interest Parts of circle Expand single bracket	I will be able to • To find the surface area of a cube • To find the surface area of a cuboid	Slide 8 	Slide 21 The total surface area of a cube is 54 cm^2 Work out the length of one side of the cube.

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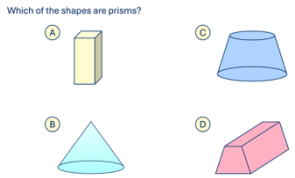
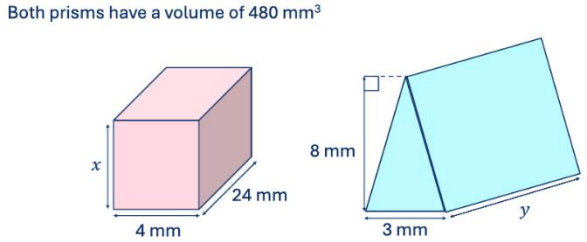
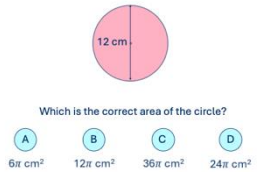
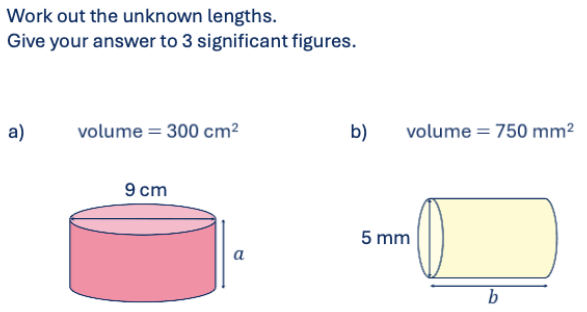
To find the surface area of a cylinder. Step 6 Extension						
Week 7 Lesson 2 To find the volume of a prism. Step 7	Volume Prism Constant cross-section Dimensions	SHAPE, SPACE & MEASURES	Surface area (adapt) Area of parallelogram Area of circle Expand brackets (adapt)	I will be able to • Identify a prism and it's cross-section • Find the volume of a prism.	Slide 10 	Slide 22 
Week 7 Lesson 3 To find the volume of a cylinder Step 8 To calculate the volume of cones, pyramids & spheres	Constant cross-section Volume Cylinder	SHAPE, SPACE & MEASURES	Volume of prism Formula for circumference Area of sector (adapt) Factorise (adapt)	I will be able to • To calculate the area of the cross-section (circle) • To calculate the volume of a cylinder	Slide 7 	Slide 21 

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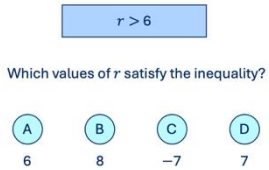
Step 9 To convert metric units of area & volume Step 10 Extension						
Week 8 Lesson 1 To solve equations and inequalities Step 1	Equation Inequality Solution Unknown Inverse operation	ALGEBRA	Metric conversions (adapt) Surface area of cylinder (adapt to volume) Multiples Table of values	I will be able to: • To solve an equation. • To solve an inequality	Slide 14 	Slide 33 Solve the inequalities. $p - 8 \leq 6$ $2v > 25$ Solve the inequalities. $4m \geq 12$ $h + 11 < 3$

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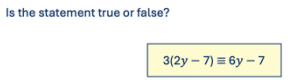
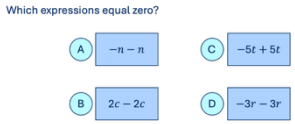
Week 8 Lesson 2 To solve equations and inequalities with brackets. Step 2 To solve inequalities with negative numbers. Step 3 Extension	Equation Inequality Solution Unknown Expand	ALGEBRA	Solve inequality Volume of cuboid Product of prime factors Points on y = x	I will be able to: • solve equations and inequalities with brackets.	Slide 9 	Slide 18 Solve the inequalities. a) $5(e+3) < 20$ c) $5(2k+6) \leq 60$ b) $4(m-2) > 24$ d) $54 \leq 2(3w-3)$
Week 8 Lesson 3 To solve equations and inequalities with unknowns on both sides. Step 4	Equation Inequality Coefficient Unknown	ALGEBRA	Solve inequality (adapt) Volume of cone LCM Substitution	I will be able to: • To solve equations and inequalities with unknowns on both sides.	Slide 7 	Slide 20 Solve the equations. a) $16-2k > 3k+6$ c) $2t-18 < 7-3t$ b) $x+7 \leq 15-3x$ d) $19-f \geq 1-3f$