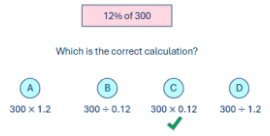
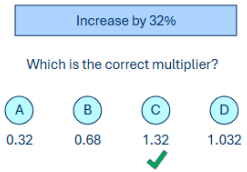
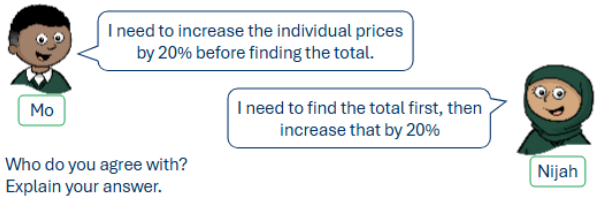
Holy Family Catholic School – Faculty of Mathematics Autumn Half-term 2 Year 10 H

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 9 Lesson 1 missed due to training day 02/11/2026						
Week 9 Lesson 2 To calculate percentages of quantities using a range of methods. Step 1	Percentage, Fraction, Decimal, Multiplier	NUMBER	FDP conversion, multiplication, division	Find simple percentages; Use multipliers and decimals; Solve contextual problems.	Slide 25 	Slide 29 A garden is in the shape of a rectangle. Flowers grow in 36% of the garden. The rest of the garden is grass. Work out the area of the garden that is grass. 
Week 9 Lesson 3 To calculate percentage increases and decreases efficiently. Step 2	Increase, Decrease, Percentage, Original Value	NUMBER	Percentage of an amount	Identify increase/decrease; Calculate the percentage amount; Find the new value.	Slide 16 	Slide 24 The table shows information about ticket prices for an amusement park in winter. Type of ticket / Ticket price Adult / £22 Child / £16 In summer, the amusement park increases the prices by 20% Calculate the cost for 2 adults and 2 children to visit in summer.  Who do you agree with? Explain your answer.

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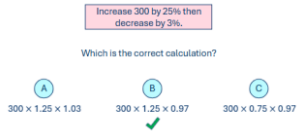
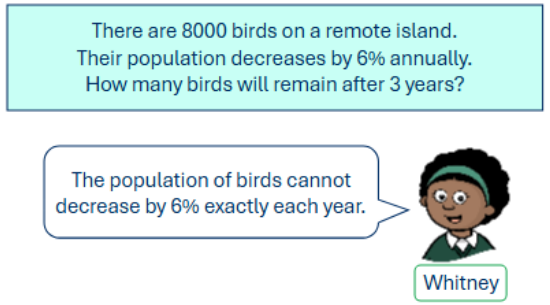
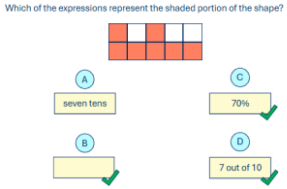
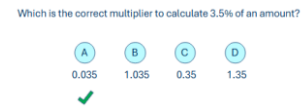
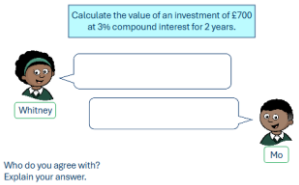
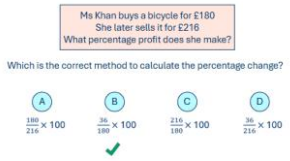
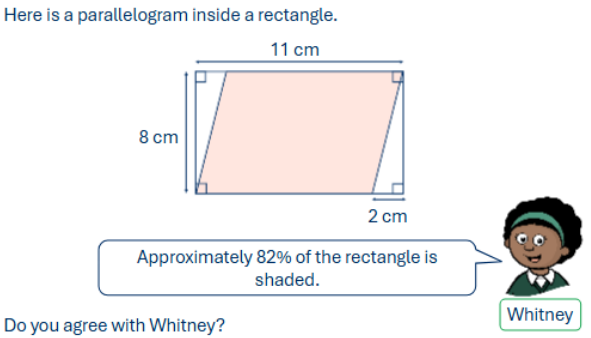
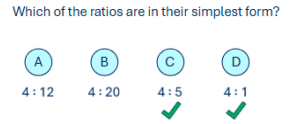
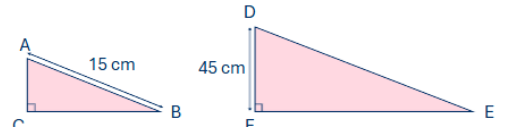
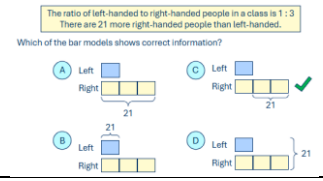
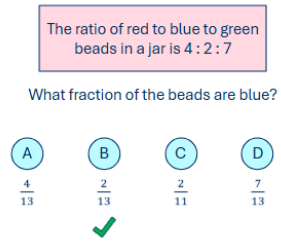
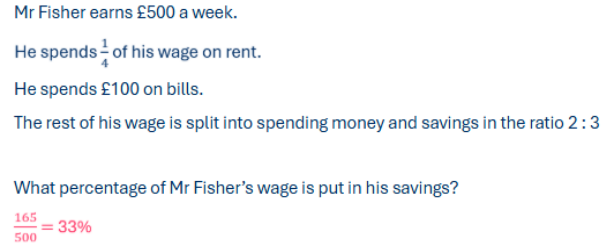
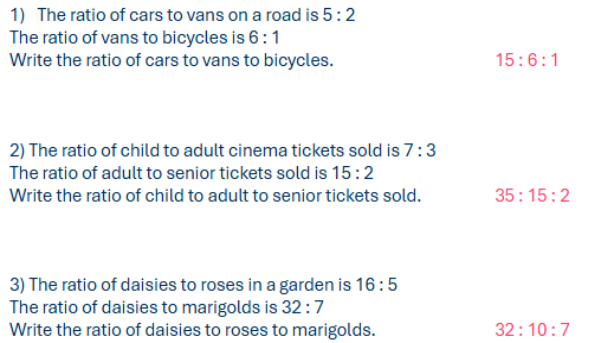
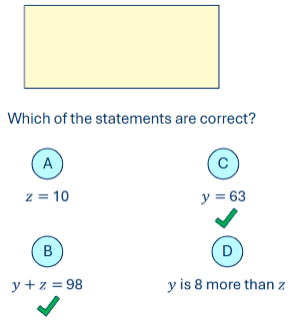
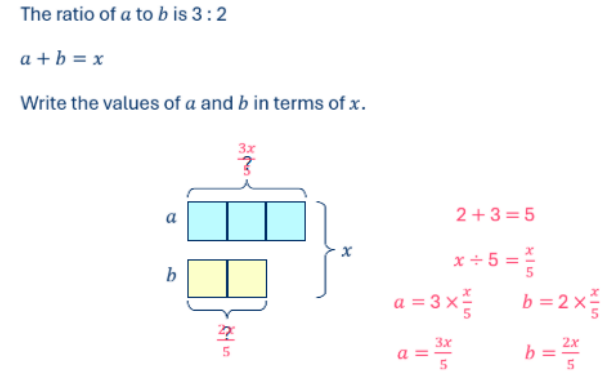
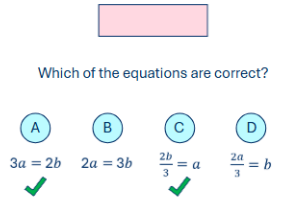
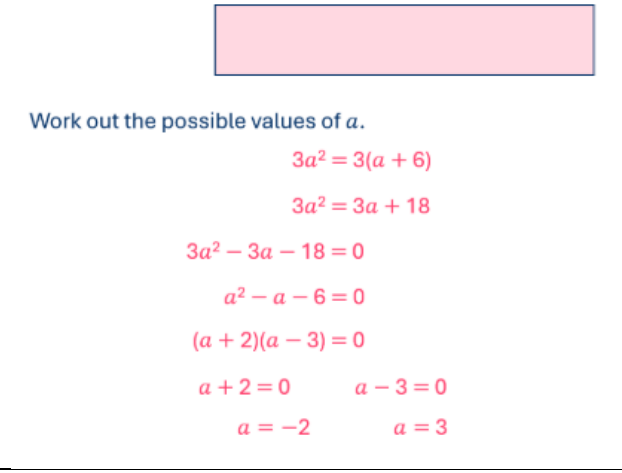
Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 9 Lesson 4 To calculate repeated percentage change using multipliers. Step 3	Multiplier, Growth, Decay, Repeated Change	NUMBER	Percentage increase and decrease	Find percentage multipliers; Apply repeated multipliers; Interpret growth and decay.	Slide 11 	Slide 16  xplain why Whitney is correct.
Week 10 Lesson 1 To express one quantity as a fraction or percentage of another quantity. Step 4	Fraction, Percentage, Equivalent, Simplify	NUMBER	Fractions, percentages, division	Form a fraction; Simplify the fraction; Convert to a percentage.	Slide 11 	Slide 19 Calculate the percentage mass of carbon (C) in carbon dioxide (CO_2). Relative atomic mass: C = 12 Relative formula mass: CO_2 = 44 $\frac{12}{44} = 12 \div 44 = 0.\dot{2}\dot{7}$ $0.\dot{2}\dot{7} \times 100 = 27.\dot{2}\dot{7}\%$ $\approx 27\%$
Week 10 Lesson 2 To calculate percentage change	Percentage Change, Difference, Increase, Decrease	NUMBER	Percentages, fractions, decimals	Calculate the difference; Divide by the original value; Express as a percentage.	Slide 12	Slide 20

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
between two values. Step 5					Mr Smith buys a tablet for £200 He later sells it for £230 What percentage profit does he make? Which fraction is the correct first step to calculate percentage change? A $\frac{200}{230}$ B $\frac{30}{230}$ C $\frac{30}{200}$ ✓ D $\frac{230}{200}$	Some students set up an experiment using osmosis to find the concentration of sucrose solution on potato cells. The results show the initial and final mass of a piece of potato from each beaker. Which beaker contained the piece of potato with the greatest percentage change in mass? beaker / A / B / C initial mass (g) / 10.5 / 9.2 / 6 final mass (g) / 8 / 11.7 / 7.9 23.8% 27.2% 31.7% Beaker C contained the piece of potato with the greatest percentage change in mass
Week 10 Lesson 3 To calculate original values using reverse percentages. Step 6	Reverse Percentage, Original Value, Multiplier, Inverse	NUMBER	Percentage multipliers	Identify the multiplier; Use inverse operations; Calculate the original value.	Slide 12 Complete the statements. a) 10% of 300 = 30 b) 25% of 160 = 40 c) 30% of 90 = 27 d) 120% of 50 = 60 How can we check the answers?	Slide 19 A town's population increased by 8%. The population is now 32 400 people. What was the population before the increase? 100% + 8% = 108% input × 1.08 output 32 400 30 000 ÷ 1.08 32 400 The population was 30 000 people.

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 10 Lesson 4 To calculate simple interest in financial contexts. Step 7	Interest, Principal, Rate, Investment	NUMBER	Percentage of an amount	Find annual interest; Calculate total interest; Calculate final value.	Slide 8 	Slide 17 £4800 is deposited into an account that pays 2.15% simple interest annually on the principal amount. a) What is the value of the interest per annum? £103.20 b) How much money would be in the account after 2 years? £5006.40 c) How much money would be in the account after 8 years? £5625.60 d) After how many years will there be more than £6500 in the account? 17 years
Week 11 Lesson 1 To calculate compound interest using repeated multipliers. Step 8	Compound Interest, Multiplier, Growth, Investment	NUMBER	Repeated percentage change	Determine the multiplier; Apply powers and repeated multiplication; Interpret financial growth.	Slide 13 	Slide 20 £8500 is invested in an account that pays 4% compound interest per annum. How many years until the investment has doubled? Year 1 $8500 \times 1.04 = 8840$ Year 5 $8500 \times 1.04^5 = 10\,341.549...$ Year 10 $8500 \times 1.04^{10} = 12\,582.076...$ Year 15 $8500 \times 1.04^{15} = 15\,308.019...$ Year 17 $8500 \times 1.04^{17} = 16\,557.154...$ Year 18 $8500 \times 1.04^{18} = 17\,219.440...$ It takes 18 years for the investment to double in value.

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 10 Lesson 2 To select efficient methods for solving percentage problems. Step 9	Method, Percentage, Multiplier, Efficiency	NUMBER	All percentage topics	Identify the problem type; Choose an efficient strategy; Explain the chosen method.	Slide 8 	Slide 20 
Week 10 Lesson 3 Review and assess.						
Week 10 Lesson 4 To recognise, simplify and generate equivalent ratios. Step 1	Ratio, Equivalent, Simplify, Scale Factor	NUMBER	Multiplication facts, division facts, simplifying fractions	I can simplify ratios using common factors. I can create equivalent ratios by multiplying and dividing. I can determine whether two ratios are equivalent.	Slide 14 	Slide 26 
Week 11 Lesson 1 To solve sharing problems	Ratio, Share, Parts, Difference	NUMBER	Equivalent ratios, multiplication, division	I can find the value of one part. I can use a ratio to find missing values. I can solve problems when the total or	Slide 19 	Slide 28 A cinema sells adult and child tickets. The ratio of adult tickets to child tickets is 3 : 10 There are 250 child tickets available to buy for £8.50 each. The cinema sells all the tickets for a total of £3025 Work out the cost of one adult ticket.

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
involving ratios. Step 2				difference is known.		
Week 11 Lesson 2 To connect ratios, fractions and proportions. Step 3	Ratio, Fraction, Proportion, Whole	NUMBER	Fractions, equivalent fractions, simplifying	I can express a ratio as a fraction. I can convert between fractions and ratios. I can interpret proportions in context.	Slide 17 	Slide 21 
Week 11 Lesson 3 To combine multiple ratios using a common value. Step 4	Common Value, Equivalent, Ratio, Combine	NUMBER	Equivalent ratios, simplifying ratios	I can identify common terms. I can form equivalent ratios. I can combine ratios accurately.	Slide 19 	Slide 36 

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 11 Lesson 4 To use algebra to solve ratio-sharing problems. Step 5	Algebra, Ratio, Variable, Equation	NUMBER	Basic algebra, sharing in a ratio	I can represent ratios algebraically. I can form and solve equations. I can find unknown quantities from ratios.	Slide 18 	Slide 21 
Week 12 Lesson 1 To solve multi-step problems involving ratio and algebra. Step 6	Ratio, Algebra, Equation, Reasoning	NUMBER	Algebraic manipulation, ratio	I can model problems algebraically. I can use ratio relationships. I can justify my solutions.	Slide 21 	Slide 25 

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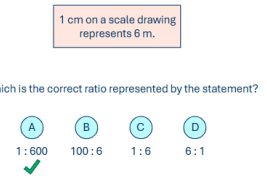
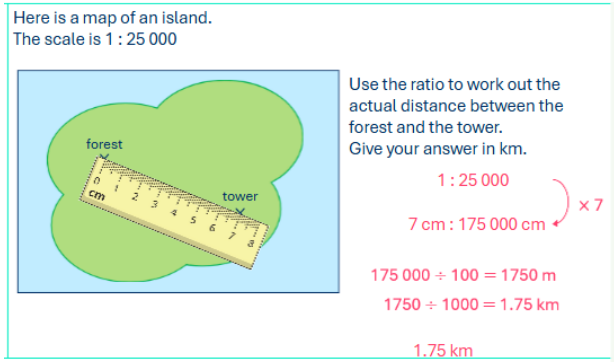
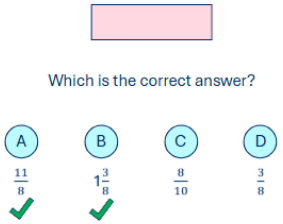
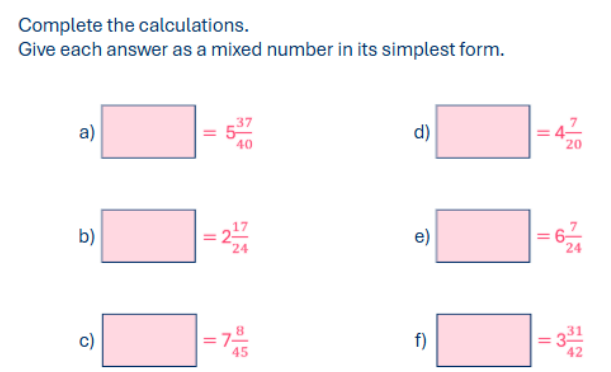
Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 12 Lesson 2 To interpret and use scale ratios in maps, drawings and models. Step 7	Scale, Map, Model, Conversion	NUMBER	Ratio, units of measure, multiplication and division	I can interpret a scale ratio correctly. I can convert between scaled and actual measurements. I can solve problems involving scales and dimensions.	Slide 13 	Slide 20 
Week 12 lesson 3 & 4 Review and Assess						
Week 13 Lesson 1 To add and subtract fractions with different denominators. Step 1	Fraction, Denominator, Equivalent, Simplify	NUMBER	Equivalent fractions, factors and multiples	I can find common denominators. I can add and subtract fractions accurately. I can simplify my final answer.	Slide 18 	Slide 28 

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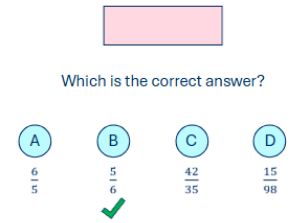
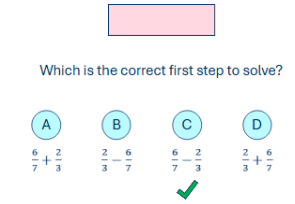
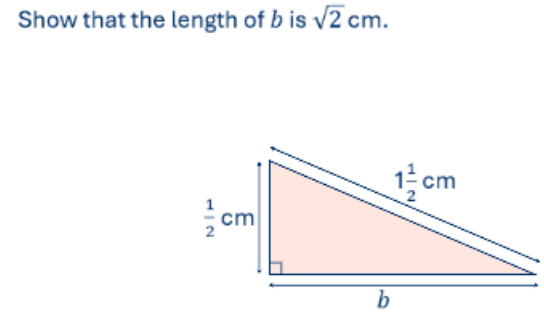
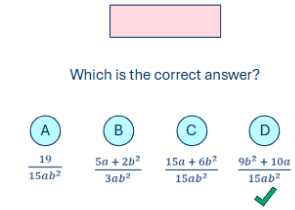
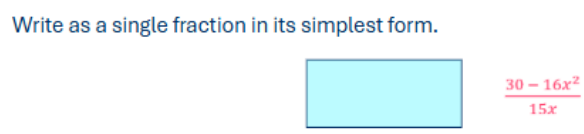
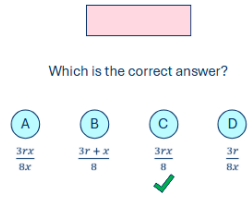
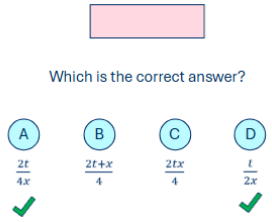
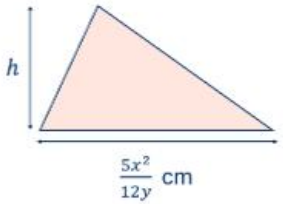
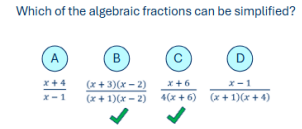
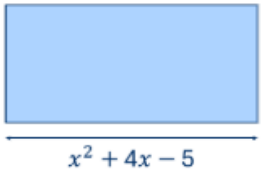
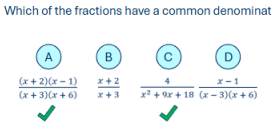
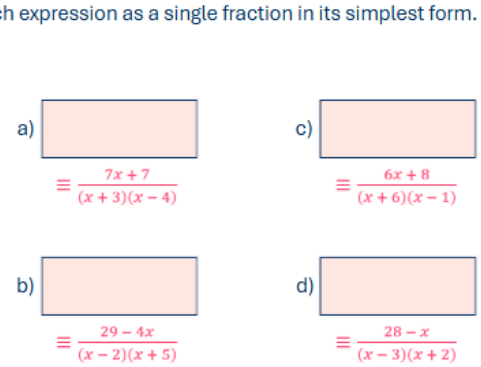
Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 13 Lesson 2 To multiply and divide fractions efficiently. Step 2	Fraction, Reciprocal, Multiply, Divide	NUMBER	Fraction arithmetic, simplifying fractions	I can multiply fractions. I can use reciprocals when dividing. I can simplify answers.	Slide 26 	Slide 30 
Week 13 Lesson 3 To apply fraction skills in multi-step problems. Step 3	Fraction, Problem Solving, Method, Context	NUMBER	Adding, subtracting, multiplying and dividing fractions	I can identify the operations required. I can complete accurate calculations. I can interpret answers in context.	Slide 21 	Slide 22 
Week 13 Lesson 4 To add and subtract simple algebraic fractions.	Algebraic Fraction, Denominator, Expression, Simplify	NUMBER	Fractions, algebraic expressions	I can identify common denominators. I can combine algebraic fractions. I can simplify expressions.	Slide 19 	Slide 320 

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Step 4						
Week 14 Lesson 1 To multiply algebraic fractions and simplify results. Step 5	Algebraic Fraction, Factorise, Simplify, Product	NUMBER	Multiplying fractions, algebraic manipulation	I can multiply algebraic numerators and denominators. I can simplify before multiplying. I can write answers in simplest form.	Slide 12 	Slide 19 Show that $\frac{4a^3}{6gh} \times \frac{9g^2h}{12a^2} \equiv \frac{ag}{2}$
Week 14 Lesson 2 To divide algebraic fractions using reciprocals. Step 6	Reciprocal, Algebraic Fraction, Divide, Simplify	NUMBER	Multiplying algebraic fractions	I can identify reciprocals. I can rewrite division as multiplication. I can simplify answers fully.	Slide 12 	Slide 18  The area of the triangle is $\frac{7xy}{36}$ cm² Work out the height, h, of the triangle.
Week 14 Lesson 3 To simplify algebraic fractions through factorisation.	Factorise, Common Factor, Algebraic Fraction, Simplify	NUMBER	Factorising, algebraic fractions	I can factorise expressions. I can identify common factors. I can cancel factors correctly.	Slide 16 	Slide 23

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Step 7						The area of the rectangle is $2x^2 + 11x + 5$  $x^2 + 4x - 5$ Show that the width of the rectangle is $\frac{2x+1}{x-1}$
Week 14 Lesson 4 To add and subtract complex algebraic fractions. (E) Step 8	LCM, Denominator, Algebraic Fraction, Simplify	NUMBER	Adding simple algebraic fractions	I can find algebraic common denominators. I can combine fractions accurately. I can simplify the final expression.	Slide 8 	Slide 19 
Week 15 Lesson 1 Review and consolidation						
Week 15 Lesson 2 Review and consolidation						

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 15 Lesson 3 Review and consolidation						