

INTERMEDIATE 1 – The Maths Pathway

Objective Code	Objective	Exemplification	Links to Prior Objectives	Resources, Enrichment, Notes etc....
I1.1	Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, ≤, ≥, <, >.	Put the following numbers in ascending order: 1, -3.2, 0.1, $-\frac{17}{5}$, 0.12	E1.7/E1.8 Opportunity to consolidate converting between mixed numbers and improper fractions	<u>Pushing them on</u> - Ordering any list of numbers, including fractions.
		Which symbol should go between these numbers, ≤, ≥, <, >: -3 <input type="text"/> -5	E1.4 Short division to write a fraction as a decimal. Opportunity to consolidate ALL work on fractions, decimals and percentages (see I1.2)	
		Put the following in order of size <ul style="list-style-type: none"> $\frac{2}{5}$ of 9 0.75 + 2.39 		
		<ul style="list-style-type: none"> $\frac{2}{3} + 1\frac{1}{4}$ 30% of 7 		
I1.2	Define percentage as 'number parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these	<i>Students should be able to find simple percentage using paper methods.</i> Find 10% of £120 Find 25% of 68 Find 50% of 12	E1.1 Multiplying and dividing by 10, 100 and 1000 E1.3 – E1.5 Short and long multiplication and division. E1.11 Simplifying fractions	<u>Pushing them on</u> - Percentage increase and decrease. - Finding original amount - Repeated percentage change.

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	<p>multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%</p>	<p>Find 1% of 130</p> <hr/> <p><i>Students should be able to find ANY percentage using paper methods.</i></p> <p>Find 40% of £120</p> <p>Find 6% of 68</p> <hr/> <p><i>Students should be able to find ANY percentage using calculator methods.</i></p> <p>Find 40% of £120</p> <p>Find 6% of 68</p> <hr/> <p><i>Students should be able to find ANY percentage increase/decrease using paper methods.</i></p> <p>Increase 80kg by 12%</p> <p>Decrease 99m by 22%</p> <hr/> <p><i>Students should be able to find ANY percentage increase/decrease using calculator methods.</i></p> <p>Increase 80kg by 12%</p> <p>Decrease 99m by 22%</p> <hr/> <p>Dave got 16 marks out of 40 on his Maths test. What percentage was this?</p> <p>Dave got 68% on his test. John scored $\frac{7}{8}$. If the test was out of 80, who did better?</p>	<p>E1.15 Expression on quantity as a fraction of another.</p> <p>E2.2 & E4.3 Compare and order fractions</p>	
<p>I1.3</p>	<p>Understand and use the concept and vocabulary of inequalities (meaning and representation on a number line).</p>	<p>Write the following as inequalities</p> <ul style="list-style-type: none"> • x is less than 3 • y is greater or equal to 4 <p>Represent each of the above on a number line.</p>	<p>E3.5 Understand and use mathematical formulae.</p>	<p><u>Pushing them on</u></p> <p>- More than 1 inequality</p>

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		<p>Write the following as inequalities</p> <ul style="list-style-type: none"> • z is greater than -3.5 but less than 5 <p>Represent each of the above on a number line.</p> <p>Write down all integers that satisfy the following inequality and show the solution on a number line:</p> $-2 < x \leq \frac{5}{2}$		
<p>I1.4</p>	<p>Simplify and manipulate algebraic expressions to maintain equivalence by collecting like terms.</p>	<p><i>Include examples with decimal and fractional coefficients throughout this unit.</i></p> <p>Examples should include</p> <ul style="list-style-type: none"> - Addition and Subtraction - Division and multiplication - Same order examples <p>Simplify</p> <p>(a) $d \times d \times d$</p> <p>(b) $a + a + a + b + b$</p> <p>(c) $p + 3p + 5p + 4q - 2q$</p> <p>(d) $7x + 5 - 2x + 10$</p>	<p>This objective provides an opportunity to consolidate</p> <p>E4.1 Negative numbers</p> <p>E4.2 Order of operations</p> <p>E4.4 Add and subtract fractions</p> <p>E4.5 Multiplying and dividing fractions</p> <p>E3.3 Multiply any two numbers together</p> <p>E2.5 Positive Powers</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> - Adding multiple expressions - Developing power laws for indices - Expanding brackets

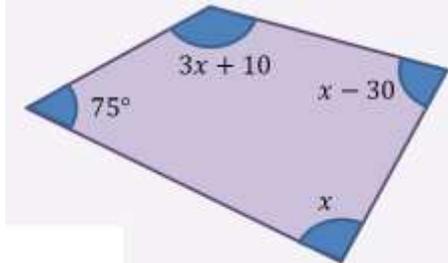
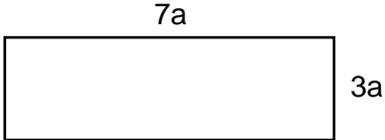
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	<p>(e) $a^2 + 3a^2 - 2b^3 + b^2$ (f) $3ab - 5a + 2b + 4a$</p>	E3.5 Understand and use mathematical formulae.	
	<p>(g) $\frac{3}{4}x \times \frac{2}{5}x$</p> <p>Simplify</p> $\frac{5a - d + 3a - 3d}{2}$		
	<p>Mrs Kay asks her class to simplify $2(a + 3)$ Georgie says it is $2a + 6$ Kieran says it is $2a + 3$ Who is correct and why?</p>		

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I1.5	Model situations or procedures by translating them into algebraic expressions and formulae.	<p>Jess is a years old Her brother is 3 years older Her sister is twice her age, write down expressions in terms of a for Jess' brother and sister.</p> <p>Find an expression for the perimeter of the rectangle below.</p> <div style="text-align: center;">  </div>	<p>E3.5 Understand and use mathematical formulae.</p> <p>I1.3 Simplifying expressions</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> Forming equations of increased difficulty Forming a pair of simultaneous equations.
		<p>Find an expression for the area of the rectangle (this can be done using brackets or without).</p>		
I1.6	Use algebraic methods to solve linear equations in one variable, for equations in the forms $x + a = b$, $nx = b$ and $nx \pm a = b$, where n can be a fraction.	<p><i>Include examples with decimal and fractional coefficients throughout this unit. Answers should be in this form too as well as heavy use of negative answers.</i></p> <p>(a) $b + 5 = 10$ (b) $10 - c = 4$</p>	<p>E4.1 Negative numbers</p> <p>E4.2 Order of operations</p> <p>E4.4 Add and subtract fractions</p> <p>E4.5 Multiplying and dividing fractions</p> <p>E3.3 Multiply any two numbers together</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> Forming word expressions Solve equations that first require rearrangement
		<p>(c) $3p = 9$</p>		
		<p>(d) $6 = 4m + 2\frac{1}{3}$ (e) $0.7x + 6.3 = 9$ (f) $\frac{2}{3}p = 20$</p>		

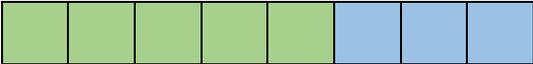
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		<p>Form an expression for the total of all the angles in this quadrilateral. Use this to find the value of x</p> 	<p>E2.5 Positive Powers</p> <p>E3.8 Angles</p> <p>E3.9 Area and perimeter</p> <p>I1.5/E3.5 Form expressions and formulae</p>	
		<p>The area of this rectangle is 84cm^2. Find the value of a.</p> 		
I1.7	<p>Use algebraic methods to solve linear inequalities in one variable, for equations in the form $x + a > b$, $nx < b$ and $nx \pm a \leq b$, where n can be a fraction.</p>	<p>As I1.6, except student solve these as inequalities.</p>	<p>See I1.6</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> - Simplifying simple expressions
		<p>Students should be able to represent these on a number line.</p>	<p>I1.3 Understanding inequalities</p>	
I1.8	<p>Recognise linear functions of one variable of appropriate scaling using</p>	<p>You are given that $f(x) = 2x + 1$</p> <p>Find the value of $f(3)$</p>	<p>E4.10 Substitute values into expressions (including negatives and fractions)</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> - Composite functions

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	<p>equations in x and y (e.g. $f(x) = nx \pm a$, find x when $f(x) = c$).</p>	<p>Solve $f(a) = 11.5$</p>	<p>E4.1 Negative numbers</p> <p>E4.2 Order of operations</p> <p>E4.4 Add and subtract fractions</p> <p>E4.5 Multiplying and dividing fractions</p> <p>I1.6 Solving equations</p>	
<p>I1.9</p>	<p>Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.</p>	<p>Students are presented with situations that involve multiplicative relationships and try and expressions in terms of ratio fraction or expression.</p> <ul style="list-style-type: none"> • The big glass holds three times as much as the small glass. • 'a sweater shrinks to nine tenths of its original size' • 'the gradient of a linear function is 2' can be thought of as doubling <p>'if it takes me 12 minutes to walk to the shops and it takes you 8 minutes, the duration of your walk is $\frac{2}{3}$ the duration of mine'</p>	<p>Potential further use of bar modelling.</p>	<p>Pushing them on</p> <ul style="list-style-type: none"> - Links to gradient

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<p>I1.10</p>	<p>Relate the language of ratios and the associated calculations to the arithmetic of fractions.</p>	<p>Understand how a fraction and ratio are linked.</p>  <p>What fraction of this bar is green? Write the ratio of green to blue?</p>	<p>Potential further use of bar modelling.</p> <p>I1.9 Understanding multiplicative relationships.</p> <p>E1.11 Simplifying fractions</p>	<p>-</p>
<p>I1.11</p>	<p>Use ratio notation, including reduction to simplest form</p>	<p>Write down the ratio of girls to boys in your class?</p> <p>The scale on a map is 1 : 400 What does this mean?</p> <p>A farmer owns some cows and pigs. The ratio of cows to pigs is 4 : 3 Which of the following statements are definitely true, false or could be true?</p> <ul style="list-style-type: none"> • He owns more cows than pigs? • He owns 7 cows and pigs in today? • He owns 18 pigs? • He owns 7 chickens? <p>Simplify the following ratios</p> <p>(a) 2 : 6 (b) 25 : 10 : 35 (c) 10 hours : 1 day (d) £2.50 : £10</p>	<p>Potential further use of bar modelling.</p> <p>E1.4 Short division</p> <p>I1.10 language of ratio</p> <p>E1.11 Simplifying fractions</p> <p>E2.4 Common factors and multiples of numbers</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> - Sharing an amount into a given ratio. - Write a ratio in the form 1 : n or n : 1 - Solving ratio problems.

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		<p>Here are some coloured beads? What is the ratio of red to blue beads? Write this ratio in its simplest form.</p>  <p>Some more red beads are added. The ratio of blue to red now is 3 : 4 How many red beads are added?</p>		
<p>I1.12</p>	<p>Solve problems involving simple direct proportion.</p>	<p>Oranges cost £1.36 for 4 How much do 9 oranges cost?</p> <p>Here is a recipe for 8 pieces Rewrite the recipe for 6 pieces</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;">Makes 8 pieces</p> <p style="text-align: center;">100g of butter 4 eggs 240g of flour 80ml of flour 2 tsp of baking powder</p> </div>	<p>Potential further use of bar modelling.</p> <p>E1.4 Short division</p> <p>E1.3 Long multiplication</p> <p>I1.10 language of ratio</p> <p>E1.11 Simplifying fractions</p> <p>E2.4 Common factors and multiples of numbers</p> <p>E3.12 Changing freely between standard units.</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> - More complicated best buy problems - Imperial to metric conversions.

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		<p>A type of cheese can be bought in 3 sized Which of the following is the best value for money?</p> <table border="1" data-bbox="705 456 1240 676"> <thead> <tr> <th>Weight of Cheese</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>200g</td> <td>£2.56</td> </tr> <tr> <td>500g</td> <td>£6.10</td> </tr> <tr> <td>1.2kg</td> <td>£13.55</td> </tr> </tbody> </table>	Weight of Cheese	Cost	200g	£2.56	500g	£6.10	1.2kg	£13.55		
Weight of Cheese	Cost											
200g	£2.56											
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<p>I1.13</p>	<p>Solve problems involving percentage change including percentage increase and decrease.</p>	<p>Increase £350 by 76%</p> <p>A man weighs 120kg A month later he weighs 117kg Find his percentage decrease.</p>	<p>E1.1 Multiplying and dividing by 10, 100 and 1000</p> <p>E1.3 – E1.5 Short and long multiplication and division.</p>	<p><u>Pushing them on</u></p> <ul style="list-style-type: none"> - Repeated percentage increase - Finding the original amount - Simple and compound interest - Find the percentage increase and decrease 								