

# Algebra with Reasoning

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>EQUATIONS</b>					
<p><i>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and <b>missing number problems</b> such as <math>7 = \square - 9</math></i> (copied from Addition and Subtraction)</p>	<p><i>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and <b>missing number</b> problems.</i> (copied from Addition and Subtraction)</p>	<p><i>solve problems, including <b>missing number</b> problems, using number facts, place value, and more complex addition and subtraction.</i> (copied from Addition and Subtraction)</p>		<p><i>use the properties of rectangles to deduce related facts and find <b>missing lengths and angles</b></i> (copied from Geometry: Properties of Shapes)</p>	<p>express missing number problems algebraically</p>
		<p><i>solve problems, including <b>missing number</b> problems, involving multiplication and division, including integer scaling</i> (copied from Multiplication and Division)</p>			
	<p><i>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</i> (copied from Addition and Subtraction)</p>				<p>find pairs of numbers that satisfy number sentences involving two unknowns</p>
<p><i>represent and use number bonds and related subtraction facts within 20</i> (copied from Addition and Subtraction)</p>					<p>enumerate all possibilities of combinations of two variables</p>

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<p><b>Connected Calculations</b></p> <p>11 = 3 + 8 12 = 4 + 8 13 = <input type="text"/> + 8 14 = <input type="text"/> + 8</p> <p>What numbers go in the boxes? Can you continue this sequence of calculations?</p>	<p><b>Connected Calculations</b></p> <p>Put the numbers 19, 15 and 4 in the boxes to make the number sentences correct.</p> <p><input type="text"/> = <input type="text"/> - <input type="text"/></p> <p><input type="text"/> = <input type="text"/> + <input type="text"/></p>	<p><b>Connected Calculations</b></p> <p>Put the numbers 3, 12, 36 in the boxes to make the number sentences correct.</p> <p><input type="text"/> = <input type="text"/> x <input type="text"/></p> <p><input type="text"/> = <input type="text"/> ÷ <input type="text"/></p>	<p><b>Connected Calculations</b></p> <p>Put the numbers 7.2, 8, 0.9 in the boxes to make the number sentences correct.</p> <p><input type="text"/> = <input type="text"/> x <input type="text"/></p> <p><input type="text"/> = <input type="text"/> ÷ <input type="text"/></p>	<p><b>Connected Calculations</b></p> <p>The number sentence below represents the angles in degrees of an isosceles triangle. A + B + C = 180 degrees A and B are equal and are multiples of 5. Give an example of what the 3 angles could be. Write down 3 more examples</p>	<p><b>Connected Calculations</b></p> <p>p and q each stand for whole numbers. p + q = 1000 and p is 150 greater than q. Work out the values of p and q.</p>		
<b>FORMULAE</b>							
			<p><i>Perimeter can be expressed algebraically as <math>2(a + b)</math> where <math>a</math> and <math>b</math> are the dimensions in the same unit. (Copied from NSG measurement)</i></p>		<p>use simple formulae</p> <p><i>recognise when it is possible to use <b>formulae</b> for area and volume of shapes (copied from Measurement)</i></p>		
			<p><b>Undoing</b></p> <p>If the longer length of a rectangle is 13cm and the perimeter is 36cm, what is the length of the shorter side? Explain how you got your</p>	<p><b>Undoing</b></p> <p>The perimeter of a rectangular garden is between 40 and 50 metres. What could the dimensions of the garden</p>	<p><b>Undoing</b></p> <p>The diagram below represents two rectangular fields that are next to each other.</p> <table border="1"> <tbody> <tr> <td style="padding: 5px;">Field A</td> <td style="padding: 5px;">Field B</td> </tr> </tbody> </table>	Field A	Field B
Field A	Field B						

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			answer.	be?	<p>Field A is twice as long as field B but their widths are the same and are 7.6 metres. If the perimeter of the small field is 23m what is the perimeter of the entire shape containing both fields?</p> <p>If <math>y</math> stands for a number complete the table below</p> <table border="1"> <tbody> <tr> <td><math>y</math></td> <td><math>3y</math></td> <td><math>3y + 1</math></td> </tr> <tr> <td>25</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>28</td> </tr> </tbody> </table> <p>What is the largest value of <math>y</math> if the greatest number in the table was 163?</p>	$y$	$3y$	$3y + 1$	25					28
$y$	$3y$	$3y + 1$												
25														
		28												
<b>SEQUENCES</b>														
<p><i>sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening</i> (copied from Measurement)</p>	<p><i>compare and sequence intervals of time</i> (copied from Measurement)</p> <p><i>order and arrange combinations of mathematical objects in patterns</i> (copied from Geometry: position and direction)</p>				generate and describe linear number sequences									
	<p><b>True or false?</b> Explain The largest three digit number that can be made from the digits 2, 4 and 6 is 264. Is this true or false? Explain your thinking.</p>				<p><b>Generalising</b></p> <p>Write a formula for the 10<sup>th</sup>, 100<sup>th</sup> and <math>n</math><sup>th</sup> terms of the sequences below. 4, 8, 12, 16 ..... 0.4, 0.8, 1.2, 1.6, .....</p>									

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