Algebra with Reasoning

National Centre for Excellence in the Teaching of Mathematics

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

Algebra with Reasoning

National Centre for Excellence in the Teaching of Mathematics

Connected Calculations	**Connected Calculations**	**Connected Calculations**	**Connected Calculations**	**Connected Calculations**	**Connected Calculations**
11 = 3 + 8 12 = 4 + 8 13 = ☐ + 8 14 = ☐ + 8 What numbers go in the boxes? Can you continue this sequence of calculations?	Put the numbers 19, 15 and 4 in the boxes to make the number sentences correct. ☐ = ☐ - ☐ ☐ = ☐ + ☐	Put the numbers 3, 12, 36 in the boxes to make the number sentences correct. ☐ = ☐ x ☐ ☐ = ☐ ÷ ☐	Put the numbers 7.2, 8, 0.9 in the boxes to make the number sentences correct. ☐ = ☐ x ☐ ☐ = ☐ ÷ ☐	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 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.
FORMULAE					
			Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)		use simple formulae *recognise when it is possible to use **formulae** for area and volume of shapes* (copied from Measurement)
			Undoing 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	**Undoing** The perimeter of a rectangular garden is between 40 and 50 metres. What could the dimensions of the garden	**Undoing** The diagram below represents two rectangular fields that are next to each other. Field A | Field B

Algebra with Reasoning

National Centre for Excellence in the Teaching of Mathematics

<table>
<tr><td></td><td></td><td></td><td>answer.</td><td>be?</td><td>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?

If y stands for a number complete the table below
<table><tr><td>y</td><td>3y</td><td>3y + 1</td></tr><tr><td>25</td><td></td><td></td></tr><tr><td></td><td></td><td>28</td></tr></table>What is the largest value of y if the greatest number in the table was 163?</td></tr>
<tr><td colspan="6">SEQUENCES</td></tr>
<tr><td>sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening
(copied from Measurement)</td><td>compare and sequence intervals of time
(copied from Measurement)

order and arrange combinations of mathematical objects in patterns
(copied from Geometry: position and direction)</td><td></td><td></td><td></td><td>generate and describe linear number sequences</td></tr>
<tr><td></td><td>True or false?
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.</td><td></td><td></td><td></td><td>Generalising

Write a formula for the 10th, 100th and nth terms of the sequences below.
4, 8, 12, 16 ……
0.4, 0.8, 1.2, 1.6, ……..</td></tr>
</table>

Algebra with Reasoning

National Centre
for Excellence in the
Teaching of Mathematics