Year 7
Maths
Spring 1 Level Ladder

Topic: Algebra
All students are expected to master at least the Level 4 content by the end of the half term.
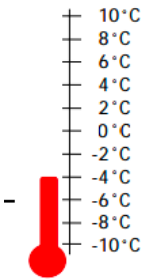
Check Arbor or ask your child what their current working and target level is in Maths

EG:

4A - mastered all of the Level 4 content

4B - mastered some of the Level 4 content

4C - mastered all of the Level 3 content and beginning to master some Level 4 content

3	★ Work out the value of the symbol that makes each of the following statements true. 13 + ☺ = 100 17 + ☺ = ☺ + 73 84 - ☺ = 27 31 + ☺ = 76 ★ What is the same and what is different about these two number sequences? 3, 9, 15, 21, … 23, 17, 11, 5, … ★ Look at the thermometer. What temperature is shown? Write your answer in words.
4	★ The same thing is happening to both the starting numbers, to get the finishing numbers. Write down in words what you have to do to the starting numbers to get the finishing numbers. (HINT: there are two steps) 2 --> 7 4 -->13

★ What are the co-ordinates of the following points?

5

★ The following function machine adds 8 to any numbers that is input

a) What is the output if the input is:
(i) 5
(ii) 7

b) What is the input if the output is:
(i) 26
(ii) 52

c) The input is now called G and the output is now called H. Write a formula linking G and H.

★ Write a formula for, P, the perimeter of each of the following shapes.
Write your answers in the simplest form.

★ If x = 6 and y = 11, what is the value of P for the shape above?

★ What are the co-ordinates of the following points?

★ Insert brackets to make the following calculation true

★

6	★ Bob thinks of a number. When he doubles the number and subtracts 5, he gets the answer 23. Write down Bob's thinking in the form of an equation. Solve the equation to find Bob's number. ★ Solve these equations: i) $4p + 6 = 2$ ii) $3m - 8 = -13$ iii) $3(5x + 2) = 36$ iv) $3y + 6 = y - 2$ ★ In a class of 30 students, there are four more girls than boys. a) Using x as the number of boys, write down and simplify an equation. b) Solve the equation to find the number of girls in the class.
7	★ Expand the following, writing your answer in its simplest form: $(x + 2)(x + 4)$ $(x - 1)(x + 6)$ $(x - 5)^2$ $(x + 3)(x - 3)$ $(x + a)^2$ ★ Find an expression for the area of the whole blue rectangle ★ Using the values $a = 2$, $b = 3$, $c = 1$ and $d = 0$, evaluate these expressions and match them up to their corresponding answers.

★ In each of the following formulae, find the value of the subject variable:
a) P = 2w + 4z: Find P when w = -3 and z = 5
b)

c)

d)

★ Make w the subject of the formula C = 2w + y.

★ Find a formula for the area of this isosceles trapezium. Explain clearly how you found the formula.

8	★ Factorise the following expressions fully
	$x^2 + 5x + 4$
	$x^2 + 3x - 10$
	★ Multiply out and simplify each of the following:
	$(a + 2)(a - 5)$
	$(4b + 1)(3b - 2)$