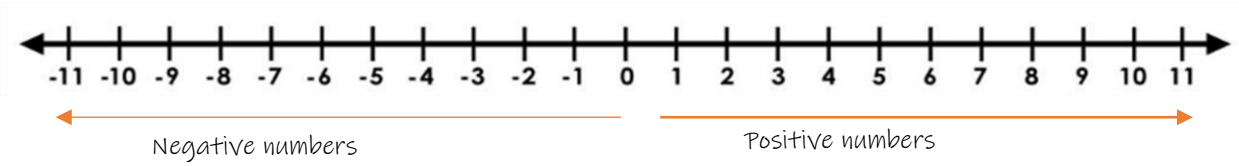
Y7 Maths Knowledge organiser Topic 6: Negative numbers

What must I be able to do?	Key vocabulary	
☐ Represent and order positive and negative integers on a number line ➢ Sparx M527 ☐ Show addition and subtraction on a number line ☐ Apply the four basic operations on positive and negative integers ➢ Sparx M106, M288 ☐ Calculate with rational and other decimal numbers (including negative numbers)	**Positive**	Any number that is greater than zero is a positive number.
	Negative	Any number that is less than zero is a negative number.
	Rational	Any number that can be written as a fraction with integers as the top and bottom numbers of the fraction is a rational number.

Representing Negatives



Multiplying/dividing two numbers which involve negatives

If one of the numbers is negative, the answer is also negative. If both of the numbers are negative, the answer is positive.

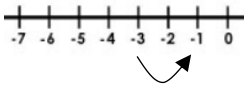
e.g. 3 x -4 = - 12 3 x 4 = 12

-3 x 4 = - 12 -3 x -4 = 12

This rule works for both multiplying and dividing but **not** for addition and subtraction

Addition and subtraction with negatives

The first number is your starting point. It does not determine whether you end up with a positive or negative value. E.g. -3 + 2 starts at -3 then goes up (to the right) 2 places to end at -1



Things to be careful of:

Adding a negative has the same effect as subtraction so

-8 + - 3 is the same as -8 – 3 = -11

start at -8 — Move left 3 places

Subtracting a negative number has the same effect as addition

so -8 - - 3 = -8 + 3 = -5

start at -8 — move right 3 places

Using negative number tables/double sided counters

It can be easier to represent addition/subtractions using a table of positive & negative numbers. The key idea to remember is that +1 and -1 make a zero sum, so they add together to make 0. You can add or cancel these when needed.

e.g. -3 + 2

Start with negative 3

Positive			
Negative	−	−	−

Now add two positives in (+ 2)

Positive	+	+	
Negative	−	−	−

The zero pairs cancel to give -1

Positive	~~+~~	~~+~~	
Negative	~~−~~	~~−~~	−

e.g. -3 - -5

Start with negative 3

Positive			
Negative	−	−	−

We need to take away 5 negatives but there are only 3. Add in 2 zero pair sums to take the total up to 5 negatives.

Positive				+	+
Negative	−	−	−	−	−

Take away 5 negatives to give +2 as a final answer.

Positive				+	+
Negative	~~−~~	~~−~~	~~−~~	~~−~~	~~−~~