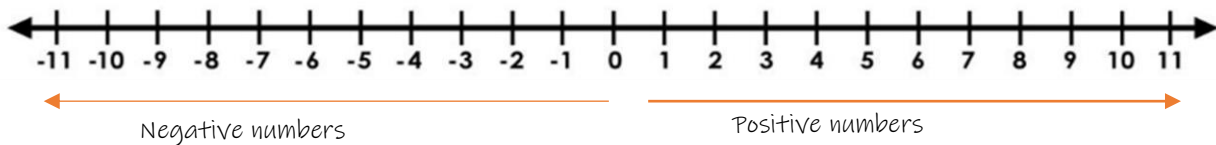


Y7 Maths Knowledge organiser Topic 7: Negative numbers

<p>What must I be able to do?</p> <ul style="list-style-type: none"> □ 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) 	<p>Key vocabulary</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Positive</td> <td>Any number that is <u>greater than zero</u> is a positive number.</td> </tr> <tr> <td>Negative</td> <td>Any number that is <u>less than zero</u> is a negative number.</td> </tr> <tr> <td>Zero sum pair</td> <td>One plus negative one equals zero. $1 + -1 = 0$</td> </tr> </table>	Positive	Any number that is <u>greater than zero</u> is a positive number.	Negative	Any number that is <u>less than zero</u> is a negative number.	Zero sum pair	One plus negative one equals zero. $1 + -1 = 0$
Positive	Any number that is <u>greater than zero</u> is a positive number.						
Negative	Any number that is <u>less than zero</u> is a negative number.						
Zero sum pair	One plus negative one equals zero. $1 + -1 = 0$						

Representing Negatives



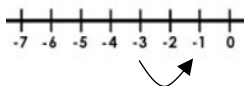
Multiplying/dividing two numbers which involve negatives

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. $3 \times -4 = -12$ $3 \times 4 = 12$ This rule works for both multiplying and dividing but
 $-3 \times 4 = -12$ $-3 \times -4 = 12$ **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	⊖	⊖	⊖	⊖