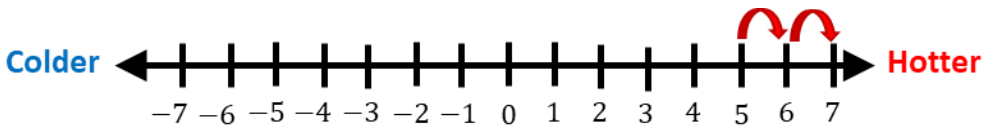
Y7 Mastery: Unit 5 – Positive and Negative Numbers 1

Adding and subtracting negative and positive numbers

Negative numbers are **COLD** numbers **-4** **-1** **-11** **-7** **-56**

Positive numbers are **HOT** numbers **4** **9** **17** **70** **46**

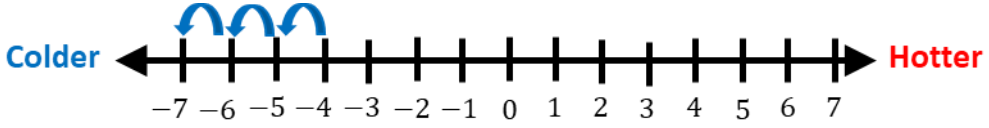
Adding a positive number



5 + 2 = 7

Adding **hot** makes it **hotter**. So, 5 gets **hotter** by 2 degrees to 7

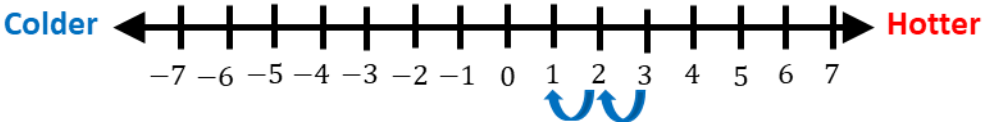
Subtracting a positive number



-4 - 3 = -7

Taking away **hot** makes it **colder**. So, -4 gets **colder** by 3 degrees to -7

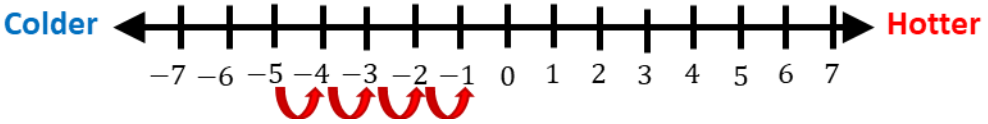
Adding a negative number



3 + -2 = 1

Adding **cold** makes it **colder**. So, 3 gets **colder** by 2 degrees to 1.

Subtracting a negative number



-5 - -4 = -1

Taking away the **cold** makes it **hotter**. So, -5 gets **hotter** by 4 degrees to -1.

Keyword/Skill	Definition/Tips
Integer	Whole number including 0 and negative numbers. No fractions or decimals.
Negative numbers	Number less than zero. Can be integer, decimal or fraction, e.g. -2, -4.7, $-\frac{1}{2}$
Positive numbers	Numbers bigger than zero. Cam be integer, decimal or fraction, e.g. 5, 3.6, $\frac{2}{5}$
Multiple	A multiple of a number is all the numbers in that times table
Commutative	An operation that, in any order, gives the same result, e.g. 4x2=8 and 2x4=8, 5+2=7 and 2+5=7
Equal pairs	Two sums that have the same answer, e.g. -5+-2=-7 and -5-2=-7, 5- -2=7 and 5+2=7
Solution	Answer to a problem
Sum	Total of a series of numbers
Product	Multiply
Difference	Answer after subtraction of two value

Other topic/units this could appear in:

Working Towards:

Unit 1 – Numbers, Powers, roots, decimals and rounding

Unit 2 – Expressing and substituting into simple formulae

Crossover:

Unit 19 - Expand and simplify

Unit 20 – factorising

Unit 29 – straight line graphs

Unit 48 – Vectors

Y7 Mastery: Unit 5 – Positive and Negative Numbers 2

Multiplying and dividing negative and positive numbers

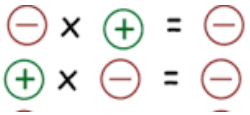
Multiplying + and a -

Multiplying a negative number by a positive number gives a negative answer

5 x -2 = -10
-3 x 4 = -12

negative X positive = negative

positive X negative = negative



Dividing + and -

Dividing a negative number by a positive number gives a negative answer

10 ÷ -2 = -5
-20 ÷ 4 = -5

negative ÷ positive = negative

positive ÷ negative = negative

Multiplying - and -

Multiplying a negative number by a negative number gives a positive answer

-5 x -2 = 10
-3 x -4 = 12

negative X negative = positive

Dividing - and -

Dividing a negative number by a negative number gives a positive answer

-10 ÷ -2 = 5
-20 ÷ -4 = 5

negative ÷ negative = positive

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Working Towards:

Unit 1 – Numbers, Powers, roots, decimals and rounding
Unit 2 – Expressing and substituting into simple formulae

Crossover:

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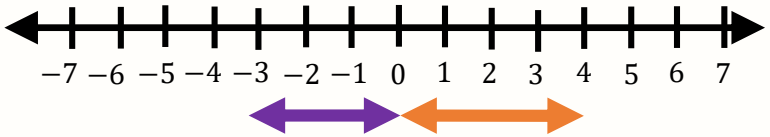
Unit 30 – quadratic and cubic graphs
Unit 48 – Vectors

Y7 Mastery: Unit 5 – Positive and Negative Numbers Challenge

Absolute value is the positive distance from zero.



-3 is 3 from zero. So, its absolute value is 3.

4 is 4 from zero. So, its absolute value is 4.

Inequalities

< less than

> greater than

-3 > -12
"negative 3 is greater than negative 12"

-1 < 5
"negative 1 is less than 5"

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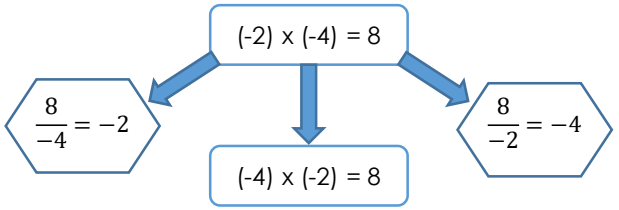
Sum	Total of a series of numbers
Product	Multiply
Difference	Answer after subtraction of two value
Absolute value	Is the number's distance from zero, without regard for signs.
Greater than >	Bigger
Less than <	smaller

Negative Numbers Fact families



More advanced use of the inequality symbols:

Examples:

-3 x 5 < 3 x –2

-15 is less than –6

5 - -2 > 5 – 2

7 is greater than 3

$2n > 4$

$2n$ is more than 4. So, $n > 2$.

Challenge: When multiplying or dividing negative and positive numbers, always work out the answers in pairs if there is more than two numbers in the problem.

Examples:

1. 3 x 4 x -2
   12 x -2
   = -24

2. -20 ÷ -2 ÷ -2
   10 ÷ -2
   = -5

3. -4 x -5 x -3 x 2
   20 x -3 x 2
   -60 x 2 = -120

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