**YEAR 8**

# Autumn Term 1: Equations, Inequalities & Graphs

THE MILTON KEYNES ACADEMY
Creative Education Trust

**NB: YEAR 8 HOMEWORK MAY ALSO INCLUDE RETRIEVAL OF KNOWLEDGE THAT WAS TAUGHT IN YEAR 7**

**Equations, Inequalities & Graphs**

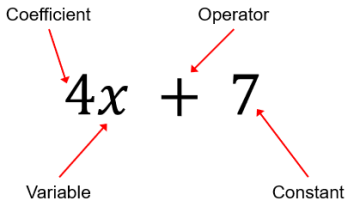
***Key Vocabulary***

| | |
|---|---|
| Balance | To make something the same on both sides of the equation |
| Calculate | To work out |
| Cartesian Plane | A two-dimensional coordinate plane, which is formed by the intersection of the x-axis and y-axis. |
| Change | The difference between two numbers |
| Collecting | Group together |
| Conversion | To change from unit to another for example litre to millilitre |
| Coordinates | The two numbers in brackets that define where on the x line and y line a place is on a graph |
| Difference | The result of subtracting one number from another |
| Equal | The same |
| Equation | Terms put together which is equal to something |
| Estimate | To use rounding to come to an answer near the actual answer |
| Evaluate | To solve |
| Expand | To get rid |
| Expression | Terms put together but has no value |
| Formulae | A rule for example: base x height is the formula of area of a rectangle or square |
| Function | A relation between a set of inputs having one output each. |
| Gradient | How steep a line on a graph is |
| Graphically | Using a graph |
| Identify | To select |
| Inequality | the relationship between two values that are not equal |
| Interpret | To understand and make conjectures from a question |
| Inverse | The opposite |
| Linear | Has the same difference each time |
| Multiply | To make bigger in even quantities |
| Negative | A number below zero or a line coming from the top of a graph to the bottom |
| Notation | The correct written format |
| Numerically | Using numbers not words |
| Operation | Add, multiply, subtract or divide |
| Plot | To position on a graph |
| Positive | A number above 0 or an increasing line on a graph |
| Quadrants | The sections of a graph |
| Rearrange | To change the order of the equation without changing its value |
| Sketch | To draw |
| Solve | To find an answer |
| Substitute | To replace |

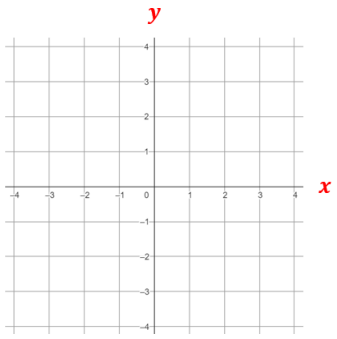
| | |
|---|---|
| Terms | A number or algebraic unknown |
| Trend | A pattern in a set of results displayed in a graph. |
| Unknown, | A number/variable that will be represented algebraically until it is found |
| Variable | Something which isn't known yet. This would be represented with a letter |
| X-axis | The horizontal line on a graph |
| Y=mx+c | The formula for a straight line |
| Y-axis | The vertical line on a graph |
| Y-intercept | Where a line crosses the y-axis |

**Retrieval Questions**

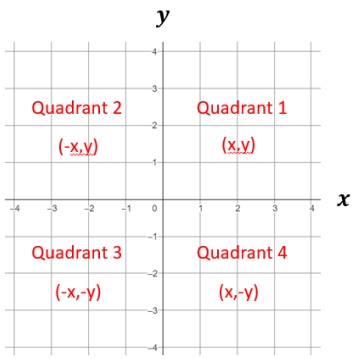
1) Correctly label the different parts of this expression:



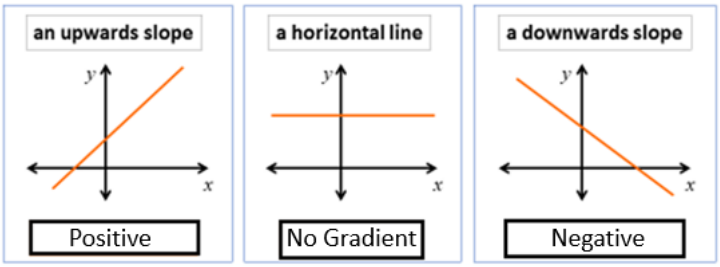

2) What is the correct way to show $a \div b$ in algebra? $\frac{a}{b}$
3) What is the correct way to show $x \times y$ in algebra? $xy$
4) What does it mean to expand brackets? Multiply the term outside of the bracket by each term inside the bracket to give an expanded expression.
5) What is the first step to solving an equation where the unknown appears on both sides of the equals sign? Collect the variables together on one side (by using an inverse operation).
6) Correctly label the $x$-axis and $y$-axis on this coordinate grid:




7) A coordinate has two numbers e.g. (4 , 7) which number, the first or second, is the horizontal movement? The first.
8) Correctly label the quadrants of this coordinate grid:



9) What type of line is $x = "a"$ (where "a" is a constant e.g. $x = 4$)? A vertical straight line that crosses the $x$-axis at "a".
10) What type of line is $y = "b"$ (where "b" is a constant e.g. $y = 5$)? A horizontal straight line that crosses the $y$-axis at "b".
11) What is the equation of the $x$-axis? $y = 0$
12) What is the equation of the $y$-axis? $x = 0$
13) In the straight-line equation $y = mx + c$, what does the $m$ represent? The gradient of the line.
14) In the straight-line equation $y = mx + c$, what does the $+c$ represent? The y-intercept.
15) For each of the lines below, state whether the gradient is positive, negative or zero:




16) What is the gradient of a vertical line? The gradient is **undefined**.
17) What is the gradient of the line $y = x$? 1
18) What is the formula for calculating the gradient of a straight line? $gradient = \frac{y_2 - y_1}{x_2 - x_1}$

**Homework**

- Homework will be set each week.
- Tasks will alternate between online tasks using Sparx Maths and retrieval practice revising the key words and variations on the retrieval questions shown above.
- All tasks will be focused on reinforcing the learning to date in Key Stage 3.

**Additional Opportunities**

If you wish to further develop your skills and knowledge for Key Stage 3 maths, you can use the following links:

https://www.thenational.academy/teachers/programmes/maths-secondary-ks3/units