

Maths Knowledge Organiser

YEAR 9 HIGHER – UNITS 1 to 2

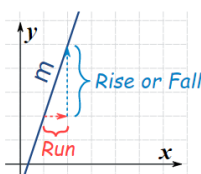
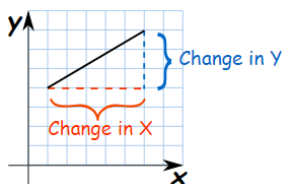
Key Language

1	Linear Equation	An equation that produces a straight line graph
2	Unknown	A letter representing what you want to find out
3	Variable	Another word for unknown
4	Trial and improvement	A process to solve equations by trying a value, and then making an improvement to that value until a suitable answer is found
5	Accuracy	How close to an answer you are/need to be (decimal places or significant figures)
6	Expand	Multiplying to get rid of brackets
7	Difference of two squares	Two terms that are squared and separated by a subtraction sign, e.g. $a^2 - b^2$
8	$y = a$	A line on a graph parallel to the x-axis, cutting the y-axis at 'a'
9	$x = a$	A line on a graph parallel to the y-axis, cutting the x-axis at 'a'
10	$y = mx + c$	General equation of a straight line, m=gradient, c=y-intercept
11	Gradient	How steep a line is, or a rate of change
12	y-intercept	Where the line crosses the y-axis
13	Parallel lines	Two lines with the same gradient are parallel
14	Line Segment	A part of a line

Formulae to Learn

$y = mx + c$; m=gradient, c=y-intercept

Gradient = $\frac{\text{increase in } y}{\text{increase in } x}$ or $\frac{\text{rise}}{\text{run}}$ or $\frac{\text{height}}{\text{base}}$ or $\frac{y_2 - y_1}{x_2 - x_1}$



Know



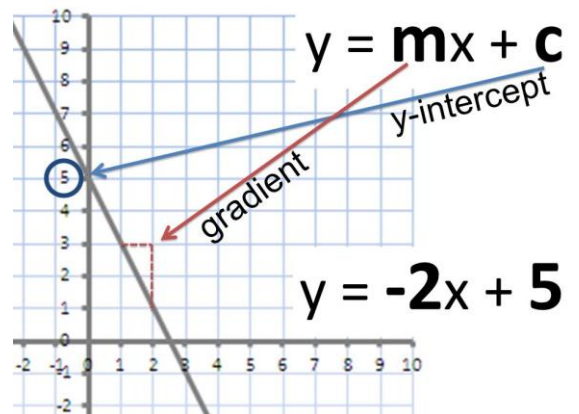
More to Learn

Positive or Negative Slope?

Going from left-to-right, the cyclist has to **Push** on a **Positive Slope**:



Notes Section:



ORDER OF OPERATIONS

G

GROUPING SYMBOLS

$() \{ []$

E

EXPONENTS

$3^2 \quad x^2 \quad 10^5$

M

MULTIPLICATION **OR** DIVISION

GO FROM LEFT TO RIGHT

S

SUBTRACTION **OR** ADDITION

GO FROM LEFT TO RIGHT

Know

PRACTICE QUESTIONS

1. What do linear equations draw?
2. What do we use to represent an unknown?
3. What is another word for unknown?
4. What process solves equations by guessing and guessing again?
5. What word describes how close you are to the correct value?
6. What word describes multiplying to remove brackets?
7. What phrase best describes the expression $64 - x^2$?
8. Which axis would $x=3$ be parallel to?
9. Would $y=7$ be horizontal or vertical?
10. What is the general form for the equation of a straight line?
11. What is another word for steepness?
12. What does 'c' represent in $y=mx+c$?
13. Which gradient is steeper 3 or 5?
14. Which gradient is steeper 4 or -6?
15. Where would $y=3x+4$ cross the y-axis?
16. What is the gradient of $y = 2x - 5$?
17. What gradient produces a 'downhill' slope?
18. Give another equation parallel to $y = 7x - 4$?
19. What do we call part of a line?
20. Which of these expressions isn't the difference of two squares?
 a) $9x^2 + 81$ b) $25x^2 - 16y^2$ c) $3x^2 + 100$

ANSWERS

- | | |
|------------------------------|------------------|
| 1. Straight line | 11. gradient |
| 2. A letter | 12. y-intercept |
| 3. Variable | 13. 5 |
| 4. Trial and improvement | 14. -6 |
| 5. Accuracy | 15. (0,4) |
| 6. Expand(ing) | 16. 2 |
| 7. Difference of two squares | 17. Negative |
| 8. Y-axis | 18. $y=7x+c$ |
| 9. Horizontal | 19. Line segment |
| 10. $Y=mx+c$ | 20. C |


 Do