Plotting Graphs Given their Equations

Starter

1. **(Review of last lesson)** Complete the table of value for the straight line $y = 7 - 3x$.

x	-4	0	5
y			

Notes

Gradients

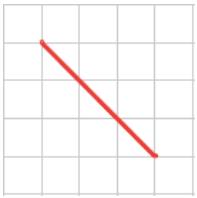
Postive gradients

A line with a positive gradient goes up when looked at from left to right.

A gradient of 2 means that for every unit we go across to the right, we go **up** 2 units.

Negative gradients

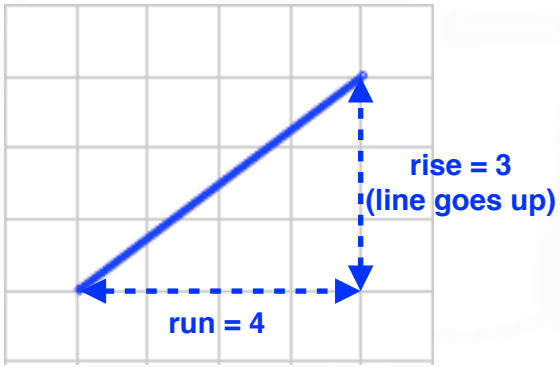
A line with a negative gradient goes up when looked at from left to right.



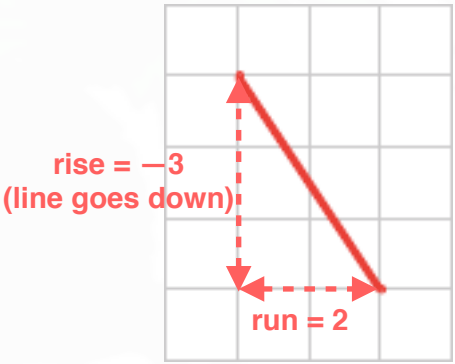
A gradient of 1 means that for every unit we go across to the right, we go **down** 1 unit.

Geogebra: Gradient of line with run of 1

The gradient of a line is given by: $\text{Gradient} = \dfrac{\text{rise}}{\text{run}}$



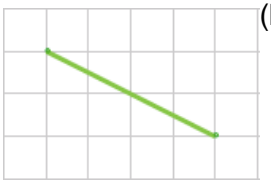
$$\text{Gradient} = \frac{\text{rise}}{\text{run}} = \frac{3}{4}$$



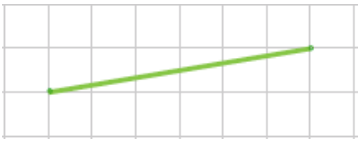
$$\text{Gradient} = \frac{\text{rise}}{\text{run}} = \frac{-3}{2} = -\frac{3}{2}$$

E.g. 1 Calculate the gradient of these lines:

(a)



(b)(c)



Working: (a) $\text{Gradient} = \dfrac{\text{rise}}{\text{run}} = \dfrac{-2}{4} = -\dfrac{1}{2}$

N.B. Horizontal lines have a gradient of zero.

Plotting graphs
We can draw a straight line graph using a table of values.

E.g. 2 Copy and complete the table of values for the line $y = 7 - 3x$.

x	-3	-2	-1	0	1	2	3
y							

Hence draw the graph of $y = 7 - 3x$.

Video: Drawing straight-line graphs using a table of values

Solutions to Starter and E.g.s

Exercise
p44 Ex 14.3 Qu 1-3 (gradients)
p44 Ex 14.3 Qu 4-13 (table of values)

Summary
The gradient of a line is given by: $\text{Gradient} = \dfrac{\text{rise}}{\text{run}}$

Lines with positive gradients go up and lines with negative gradients go down.
Horizontal lines have a gradient of zero.

Textbook answers (only available during a lockdown)