

STRAIGHT LINES

MTH 4-13b

I have discussed ways to describe the slope of a line, can interpret the definition of gradient and can use it to make relevant calculations, interpreting my answer for the context of the problem.

MTH 4-13c

Having investigated the pattern of the coordinate points lying on a horizontal or vertical line, I can describe the pattern using a simple equation.

MTH 4-13d

I can use a given formula to generate points lying on a straight line, plot them to create a graphical representation then use this to answer related questions.

Pupils should be able to:

- Plot points from a table of values for points where $x = a$, $y = b$, $y = x$, $y = -x$
- Recognise equations of lines of the above forms.
- Find the gradient of a given straight line using $(\text{change in } y) \div (\text{change in } x)$
- Plot points from a table and observe the connection between the gradient of a straight line and the equation of the line, for lines of the form $y = mx$.
- Repeat for tables of values of formulae like $y = 3x + 2$ using a variety of contexts and working with positive gradients only. Some contexts will only work with positive co-ordinates, others will extend into other quadrants.
- Find the equation of a line from a graph or table of values - link this with finding a formula from a pattern
- Investigate graphs of the form $y = mx + c$, including negative values of m .
(*establish that c gives the y -intercept and m gives the gradient.*)

PUPILS SHOULD COMPLETE THE FOLLOWING EXERCISE AND ASSESS THEIR PROGRESS BY TICKING ONE OF THE OPTIONS FOR EACH TOPIC IN THE TABLE BELOW

	DEVELOPING	CONSOLIDATING	SECURE
Gradients and y -intercepts (Questions 1-3)			
Straight line equation (Questions 4-5)			
Sketching straight line graphs (Questions 6-7)			

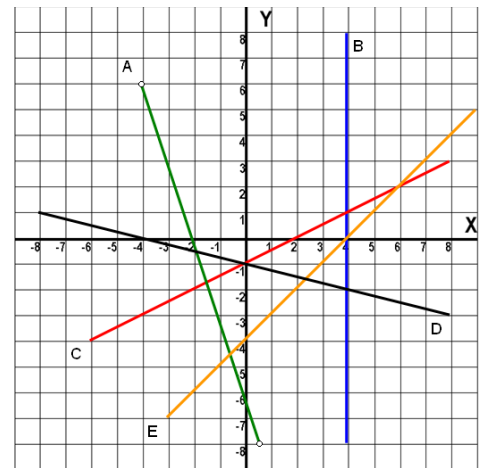
SELF EVALUATION EXERCISE

DATE DUE _____

- The equation of a straight line is in the form $y=mx+c$. Explain what the m and the c represent.
- Explain the gradients of the following straight lines;
 - $y = 3$
 - $x = 4$
 - $y = x$
 - $y = -x$
- State the gradient and y -intercept of each of the following straight lines;

a) $y = 2x + 3$ b) $y = -2x + 4$ c) $y = 7 - 4x$

- For each of the straight lines shown in the diagram, find the equation by first finding the gradient and y -intercept.



- Write down the equations of three different lines which have a gradient of 4.
 - What word is used to describe lines that have the same gradient?

- Copy and complete the table below to show points that lie on the line $y = 2x + 3$.

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

Make a neat sketch of the graph.

- Mr Casey is a chef and has written down how long it would take to cook various sizes of a joint of roast beef.

Joint of beef	Time to roast
3kg	60 mins
5kg	90 mins
9kg	150 mins

- Draw a pair of axes and plot the three points (time being on the y -axis and mass of beef (kg) on x -axis).
- Draw a straight line through the plotted points.
- Find the equation of the straight line'