Year 8 Maths Home Learning – Straight-line Graphs Unit 9

9.2 Plotting Straight-line Graphs from Tables

Let's start by reviewing how to plot a straight line graph from a table. You will have done some work on this in year 7.

Plotting Straight-line Graphs from a table

If you are given a table showing data for two variables you can **plot the values on a graph** by choosing which variable to show on the x-axis and which to show on the y-axis.

Before you can plot the line graphs, you need to **fill in the table**. Use either the equation for the line OR the information given in the question to figure this out.

Remember from last week: If the variables are in direct proportion, the graph will be a straight line. This is also called a linear graph.

Let's practice!

Q1) Car A travels at a constant speed of 90km/h. Complete this table for distance travelled.

Time (hours)	0	1	2
Distance (km)	0		

Remember km/h means kilometres per hour. So a car travelling at 90km/h means it covers 90km every hour.

Step One: Look at the information given in the question. It tells us that each hour the car travels 90 km. We use this to fill in the table.

Time (hours)	0	1	2
Distance (km)	0	90	180

↓ (1 lot of 90km covered) ↓ (2 lots of 90km covered)

Reminder on Substitution

In order to fill in the tables and plot line graphs, we need to remember a bit of algebra – how to substitute into equations. We learned about this earlier in the year.

You might have the equation **y = 3x**
If x = 1, then 3 x 1 = 3, so y = 3
If x = 2, then 3 x 2 = 6, so y = 6
If x = 3, then 3 x 3 = 9, so y = 9 and so on….

What about the equation **y = 2x – 4**
If x = 1, then (2 x 1) – 4 = -2, so y = -2
If x = 2, then (2 x 2) – 4 = 0, so y = 0
If x = 3, then (2 x 3) – 4 = 2, so y = 2

Remember what we now about BIDMAS for this one!

Let's try a couple more, as it's really important that you feel confident plotting straight line graphs from tables.

Q2) Complete this table of values for the equation $y = 2x + 2$ and then plot the graph.

Substitute the values for *x* to find *y*

x	1	2	3	4	5
y					

Step One: Substitute each x-value into the equation to find the y-value. Remember BIDMAS, we always do the multiplying BEFORE the adding/subtracting.

For x = 1 $y = (2 \times 1) + 2$ y = 4
For x = 2 $y = (2 \times 2) + 2$ y = 6
For x = 3 $y = (2 \times 3) + 2$ y = 8
For x = 4 $y = (2 \times 4) + 2$ y = 10
For x = 5 $y = (2 \times 5) + 2$ y = 12

x	1	2	3	4	5
y	4	6	8	10	12

Now we're going to plot a graph to show this data.

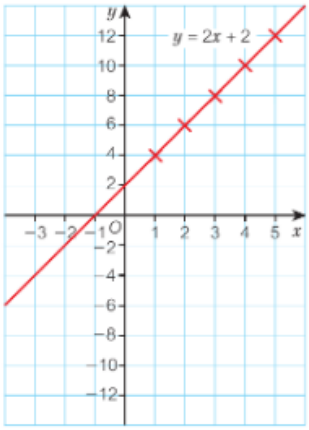
Step One: Draw a coordinate grid from -3 to 5 on the x-axis and -12 to 12 on the y-axis.

Step Two: Now plot the coordinates. Take your time, it's important to be accurate.

Step Three: Now, draw a straight line linking the points - Use a ruler!! And make sure your line goes through ALL the points.

Step Four: Extend your line to the edges of the grid.

Step Five: Finally, label the graph with the equation, $y = 2x + 2$. And you're done!



Q3) There are a few parts to this one.

a Copy and complete the table of values for the equation $y = 3x$.

b Draw a grid from −2 to 2 on the x-axis and −10 to 10 on the y-axis. Plot the graph of $y = 3x$. Label the graph with its equation.

c Copy and complete the table in part **a** for $y = 4x$. On the same grid, plot the graph and label it.

d Copy and complete the table in part **a** for $y = 5x$. On the same grid, plot the graph and label it.

e Which graph is steepest, $y = 3x$, $y = 4x$ or $y = 5x$?

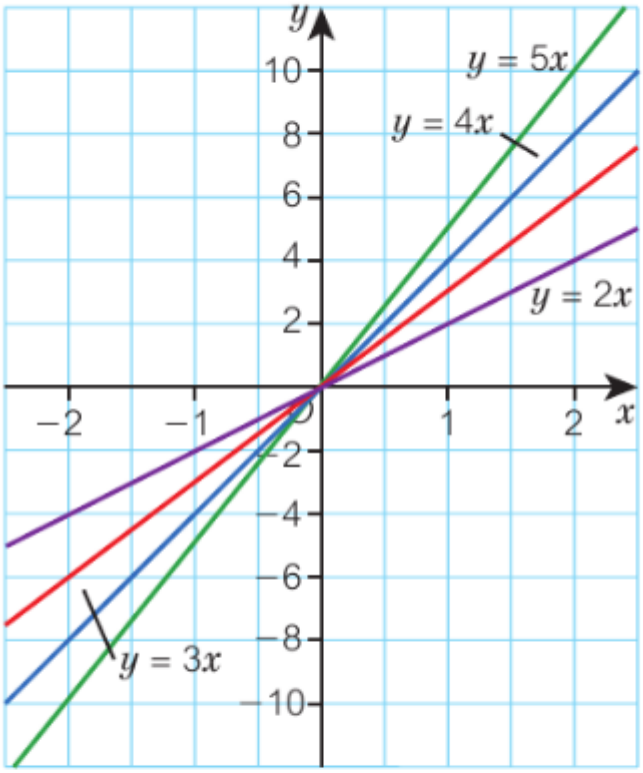
x	−2	0	2
y			

Now, for the answers:

a

x	−2	0	2
y	−6	0	6

b, c, d, g



c

x	−2	0	2
y	−8	0	8

d

x	−2	0	2
y	−10	0	10

e $y = 5x$