fs4u

Graphs & Conversions

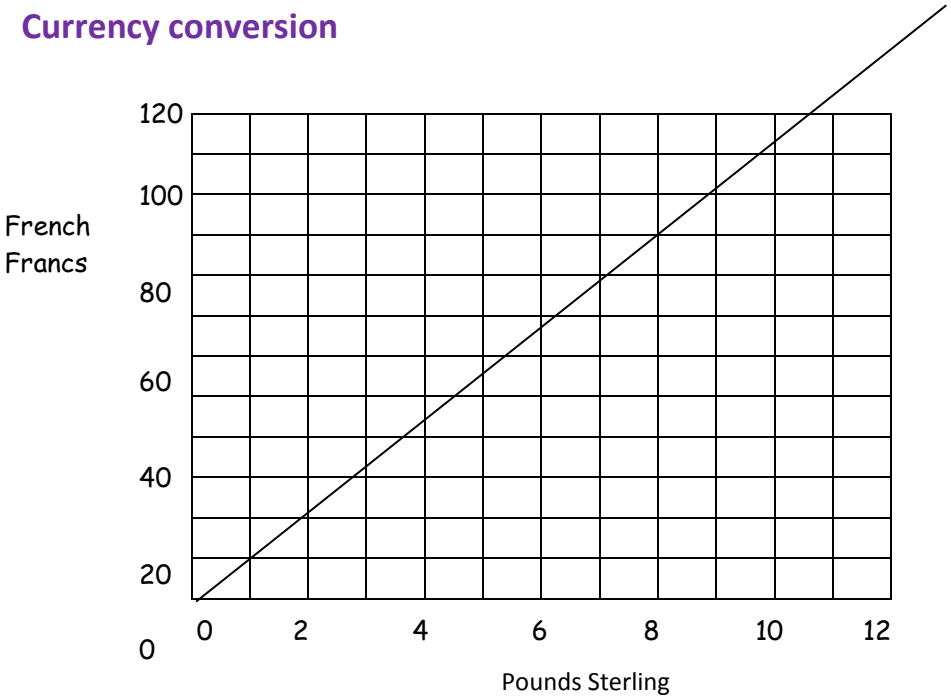
‘How To’ Booklet 38

Graphs & Conversions

A straight line graph is the simplest kind of line graph and shows a constant relationship between two sets of values. Conversion graphs are often straight line graphs.

Example 1

Currency conversion



The graph in example 1 converts pounds to francs. To construct it as it is a straight line, you would need only two points spaced as far apart as possible. It is worth remembering that most conversion graphs go through the point 0.0, and this could be used as one of the points. An exchange rate of £1 to 10.2 ff has been used for this graph. As this would give a point very close to the origin 0.0 both amounts have been increased ten times to give £10 to 012 ff. This is then marked onto the graph and a straight line drawn through it and the origin.

Points to note

1 A conversion graph is a straight line often going through the origin 0.0.

2 Either variable, in this case pounds or francs, can be measured along the vertical or horizontal axis.

Activity

1	**Conversion of degrees Celsius to degrees Fahrenheit.** 0°C = 32°F and 40°C = 104°F. Now use this information to draw a graph of F against C for values of C from 0° up to 40°						
Use your graph to answer the following:-							
a	The temperature of a school hall should be between 19.5°C and 23°C. Would a temperature of 64°F meet these needs?						
b	Most of us would begin to suffer if our body temperature was to fall below 95°F. Convert this to °C.						
c	The temperature on a hot sunny day reached 43°C, what would this be in °F?						
2	Five miles is roughly equal to eight kilometres. Draw a graph to give an approximate conversion between the two. (Use the fact that 400 miles = 640 kilometres and a scale of 0 – 400 on the miles axis).						
	Use this to convert the following distances from kilometres to miles.						
a	106	b	245	c	350	d	560

Scatter Diagrams

A scatter diagram is a graph that shows how much correlation there is between two variables that you suspect may be linked.

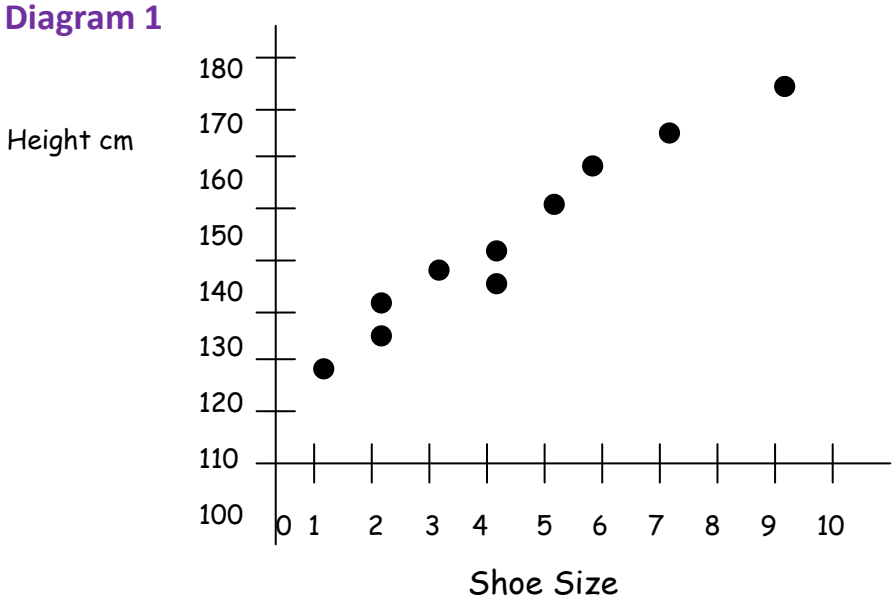
Example 1

The table below gives the heights and shoe sizes of 10 children in a class.

Register No	1	2	3	4	5	6	7	8	9	10
Height (cm)	131	134	136	156	151	162	119	171	139	126
Shoe Size	2	4	3	6	5	7	1	9	4	2

The heights and shoe sizes are shown plotted in diagram 1:

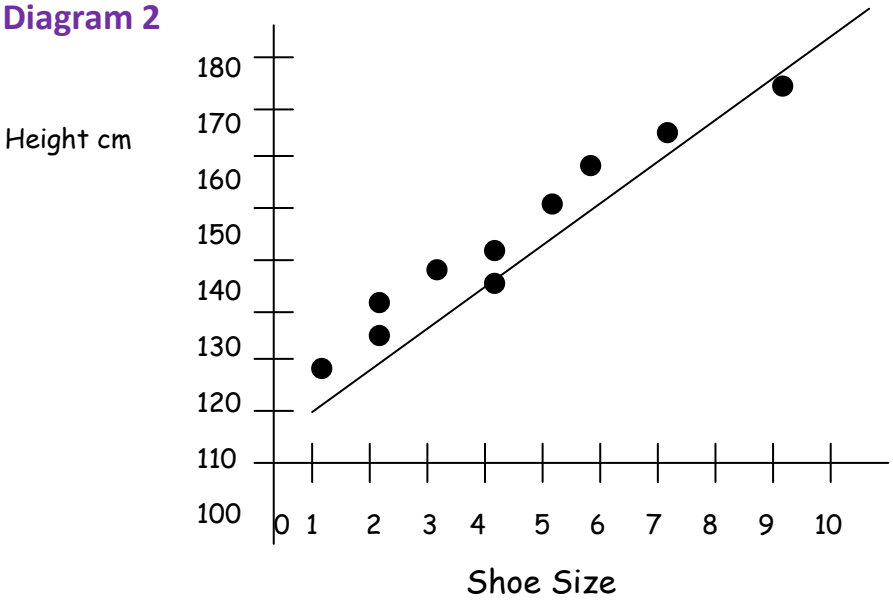
Diagram 1



Look at Diagram 1 – we can see that the points are not evenly scattered. They do though seem to lie on a line.

This shows there is a link between height and shoe size. This can be shown more clearly if we draw the line of best fit – see diagram 2.

Diagram 2



The line that has been drawn is called the LINE OF BEST FIT and shows there is some positive correlation between the two variables.

Activity

1 The marks of ten pupils studying Physics and Chemistry are shown below:-

Physics	36	24	37	42	39	30	32	28	31	41
Chemistry	30	17	35	39	38	24	28	25	29	40

Use this information to draw a scatter diagram and use it to answer:-

A pupil missed the chemistry exam but obtains 36 marks in the physics exam. What would his expected chemistry mark be?