

## Using Straight Line Graphs

1) I want to get some invitations for a party printed. Firm A's price is as follows:  
 £1.70 basic charge for making the printing block plus 60p for every 10 invitations

(a) Copy and complete the following table:

No of invitations (x)	0	50	100	200
Cost in pence (y)	170			

(b) Draw a graph to illustrate the above data. Use a scale of 1cm to 20 invitations on the x-axis, and 1cm to 100 pence on the y-axis.

(c) From your graph, read off the cost of (i) 80 invitations (ii) 160 invitations

(d) What is the gradient of the graph? Write down the meaning of this gradient.

(e) The cost of invitations can be written as a formula,  $y = mx + c$ , where m and c are certain numbers. Write down this formula.

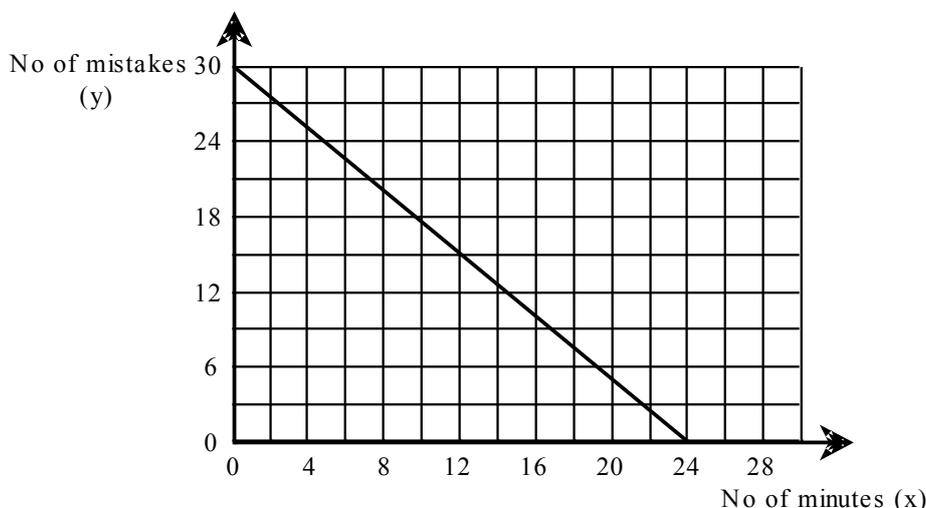
(f) Use your formula to find how many invitations I can get printed if I have £20 to spend.

(g) Firm B charge £3.50 for making the printing block, and 45p for every 10 invitations. Repeat parts (a), (b), (d) and (e) for this firm, drawing your line on the same graph.

(h) Which firm is the best to use if I require 150 invitations?

(i) For what number of invitations does the cost work out the same with either firm? Use your formulae to make an equation and solve it. Check by reading off your answer from the graph.

2) A researcher conducts an experiment by giving a group of pupils a list of 30 French words which they have not met before. Each pupil was given a different amount of time to learn the words, and then the group was tested. The graph below shows the approximate relationship between the amount of time the pupil had, and the number of mistakes they made in the test.



(a) If a pupil had 15 minutes to learn the words, approximately how many mistakes would you expect her to make?

(b) How long should a pupil need to be able to achieve a score of 24 out of 30 in the test?

(c) Find the gradient of the graph. Explain the meaning of this gradient.

(d) Explain the significance of the point where the graph crosses the x-axis.

(e) Explain the significance of the point where the line crosses the y-axis.

(f) Write down the equation of the graph in the form  $y = mx + c$ .

3) The price of electricity is 6p per unit, plus a standing charge of £8.00 per quarter.

(a) Copy and complete the following table:

No of units used (x)	0	100	200	500
Cost in pence (y)	800			

(b) Draw a graph to illustrate the above data.

(c) From your graph, read off the bill I will receive if I use (i) 80 units (ii) 250 units

(d) What is the gradient of the graph?

(e) The cost of electricity can be written as a formula,  $y = mx + c$ , where m and c are certain numbers. Write down this formula.

(f) Check your answers to (c) using your formula.

(g) An alternative way to pay for electricity is 'Economy 99'. Under this system the standing charge is £12, but the cost of a unit is 4p. Draw a line on your graph to illustrate this payment method.

(h) Under what circumstances is it better to use Economy 99? Use your formulae to make an equation and solve it. Check by reading off your answer from the graph.