1.
A class of 19 students took a maths test.
The scatter graph below shows the marks they scored in the test and the number of hours they spent revising.

(a) How many students scored less than 40 in the test?

5

(1)

(b) Describe the correlation of the graph.

positive

(1)

(b) Use the graph to estimate the score of a student who spent 10 hours revising.

54

(1)

(c) Explain why it might not be appropriate to use the graph to estimate the score of a student who spent 20 hours revising.

Because there is no data for students who spent more than 17 hours revising

OR this would predict a score above 80, which is impossible.

(1)

2.
Frank is running a raffle.
He has 100 tickets, numbered 1 to 100, which he sells for £1.20 each.
Players win £5 if they pick a multiple of 11, and £10 if they pick a multiple of 21.
Frank sold 58 losing tickets and all of the winning tickets.

Work out the profit that Frank made from the raffle.

Multiples of 11 = 11, 22, 33, 44, 55, 66, 77, 88, 99 = 9 tickets
Multiples of 21 = 21, 42, 63, 84 = 4 tickets
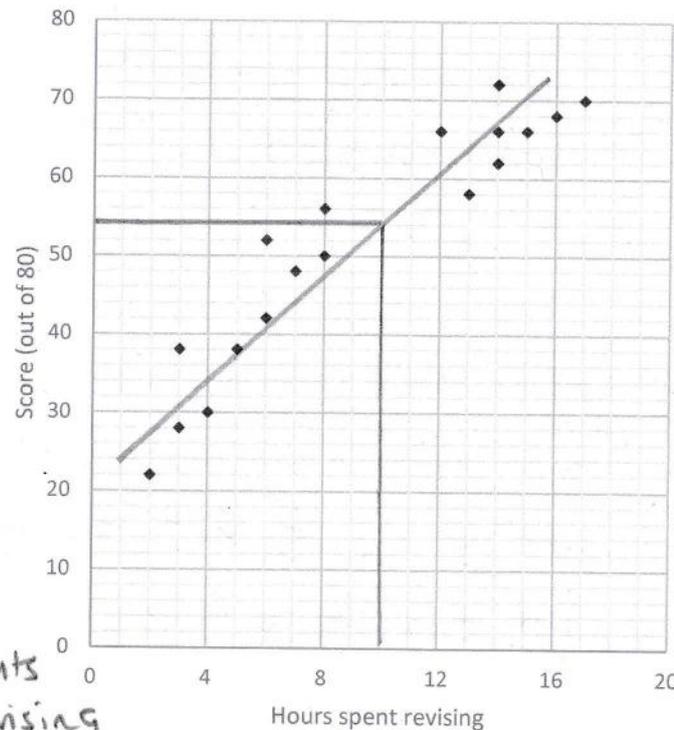
Tickets sold = 58 + 9 + 4 = 71
71 × £1.20 = £85.20 raised.

9 × £5 = £45
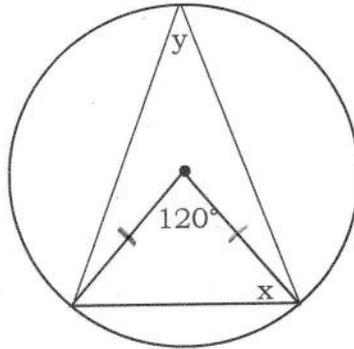4 × £10 = £40   = £85 paid out

Profit = 85.20 - 85 = 20p profit

(5)

3.
Find x and y.

$$y = 120 \div 2 = 60°$$
$$180 - 120 = 60$$
$$60 \div 2 = 30°$$

$$y = 60°$$
$$x = 30°$$

(3)

4.
A piece of card is 12 cm long to the nearest centimetre and 7.7 cm wide to 1 decimal place.
Find the upper and lower bounds of the area of the piece of card, to 1 decimal place.

$$UB = 12.5 \times 7.75 = 96.875 \, cm^2 = \underline{96.9 \, cm^2}$$
$$LB = 11.5 \times 7.65 = 87.975 \quad = \quad \underline{88.0 \, cm^2}$$

(4)

5.
Find the equation of the line that is perpendicular to the line $y = 4x - 5$ and passes through the point (12, 7).

$$gradient = -\tfrac{1}{4}$$

$$y = -\tfrac{1}{4}x + c$$

$(12, 7):$ $\quad 7 = -\tfrac{1}{4} \times 12 + c$

$$7 = -3 + c$$
$+3 \qquad\qquad\qquad +3$

$$10 = c$$

$$y = -\tfrac{1}{4}x + 10$$

(4)