



(a) Calculate the value of the product moment correlation coefficient for x and y . (3)

(b) Write down the product moment correlation coefficient for u and h . (1)

(c) State, with a reason, whether or not the bank's claim is supported by these data. **(2)**

p	3	8	30	25	15	12
t	1	3	9	10	5	6

(a) Draw a scatter diagram on the axes on page 7 to represent these data. (2)

(b) Explain why a linear regression model may be appropriate to describe the relationship between p and t . (1)

(c) Calculate the value of S_{pt} and the value of S_{pp} . (4)

(d) Find the equation of the regression line of t on p , giving your answer in the form $t = a + bp$. (4)

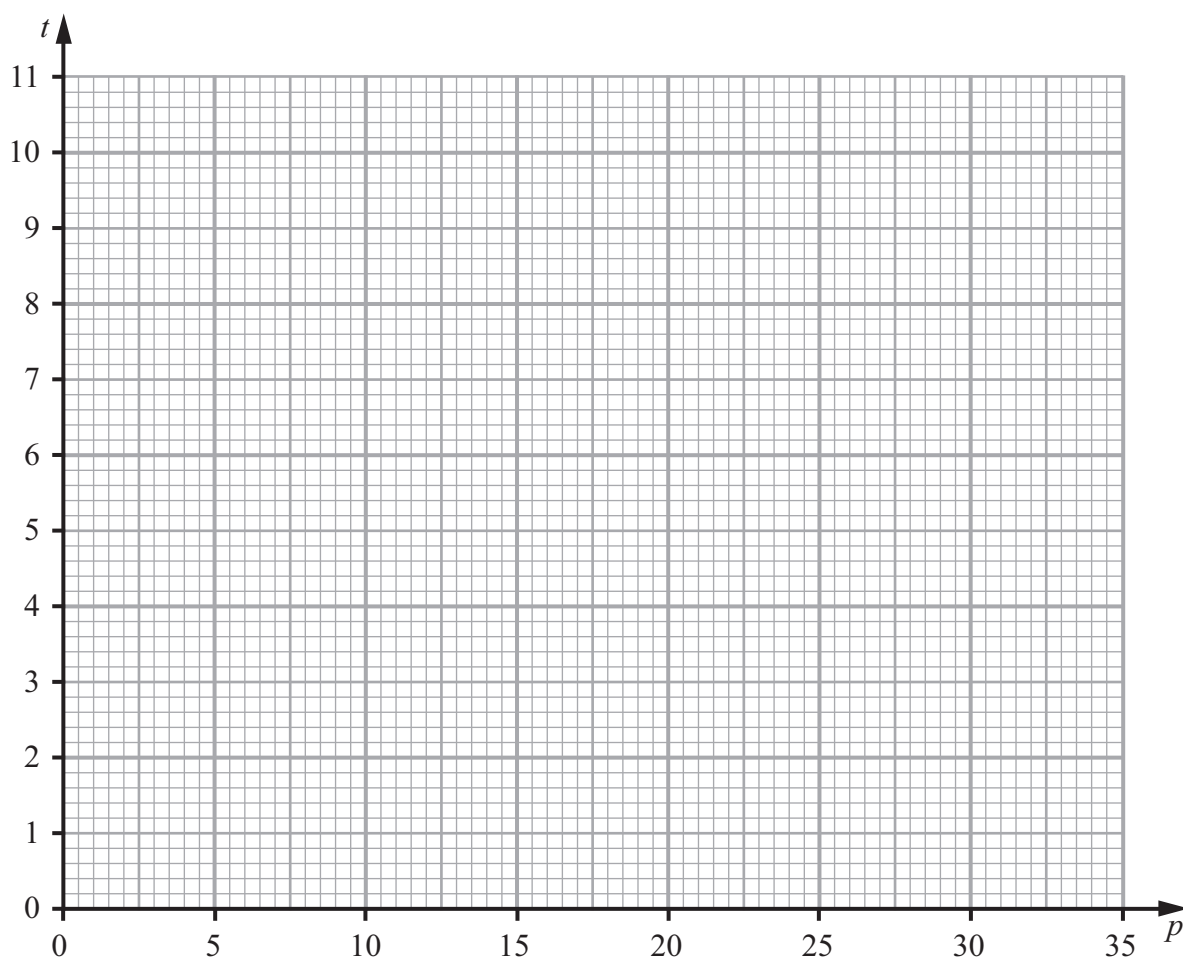
(e) Plot the point $(\bar{p}, \bar{t})$ and draw the regression line on your scatter diagram. (2)

The scientist reviews similar studies and finds that pollutant levels above 16 are likely to result in the death of a chick soon after hatching.

(f) Estimate the minimum thinning of the shell that is likely to result in the death of a chick. **(2)**



Question 3 continued



4.

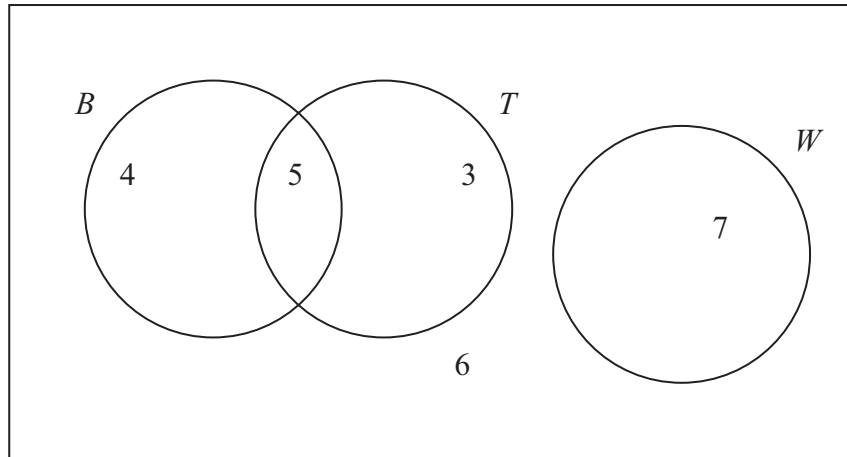


Figure 1

Figure 1 shows how 25 people travelled to work.

Their travel to work is represented by the events

B bicycle

T train

W walk

(a) Write down 2 of these events that are mutually exclusive. Give a reason for your answer. **(2)**

(b) Determine whether or not B and T are independent events. **(3)**

One person is chosen at random.

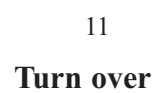
Find the probability that this person

(c) walks to work, **(1)**

(d) travels to work by bicycle and train. **(1)**

(e) Given that this person travels to work by bicycle, find the probability that they will also take the train. **(2)**





5.

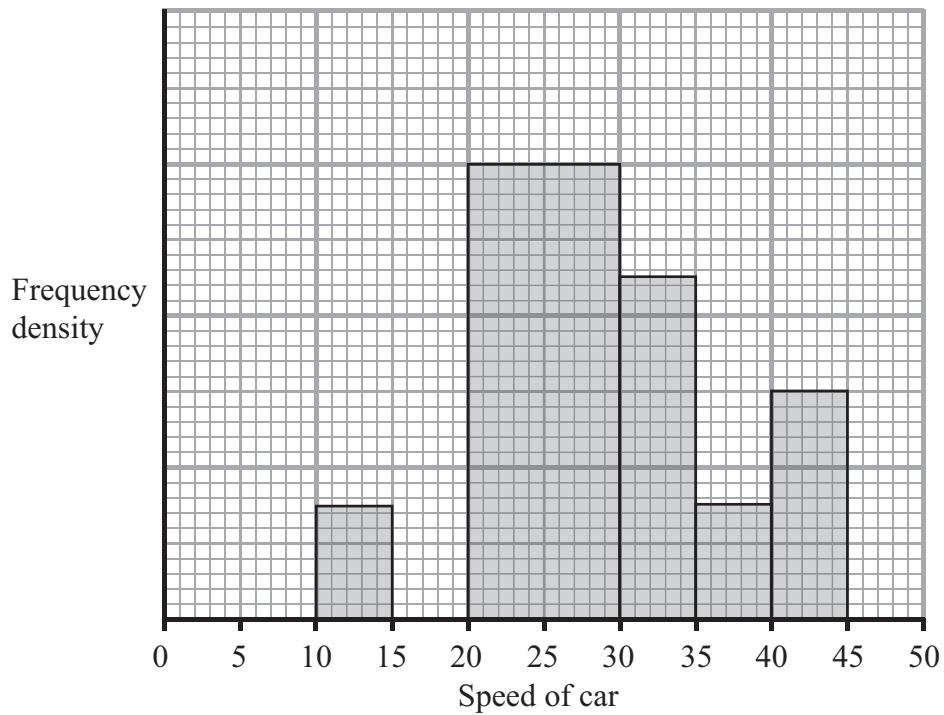
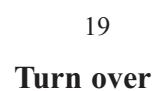


Figure 2

A policeman records the speed of the traffic on a busy road with a 30 mph speed limit. He records the speeds of a sample of 450 cars. The histogram in Figure 2 represents the results.

- Calculate the number of cars that were exceeding the speed limit by at least 5 mph in the sample. (4)
- Estimate the value of the mean speed of the cars in the sample. (3)
- Estimate, to 1 decimal place, the value of the median speed of the cars in the sample. (2)
- Comment on the shape of the distribution. Give a reason for your answer. (2)
- State, with a reason, whether the estimate of the mean or the median is a better representation of the average speed of the traffic on the road. (2)





- (b) Find the probability that a randomly chosen soft toy has exactly one of the two defects, poor stitching or splitting open. (3)

(c) Find the probability that the soft toy has none of these 3 defects. (2)

- (d) Find the probability that the soft toy has exactly one of these 3 defects. (4)

