

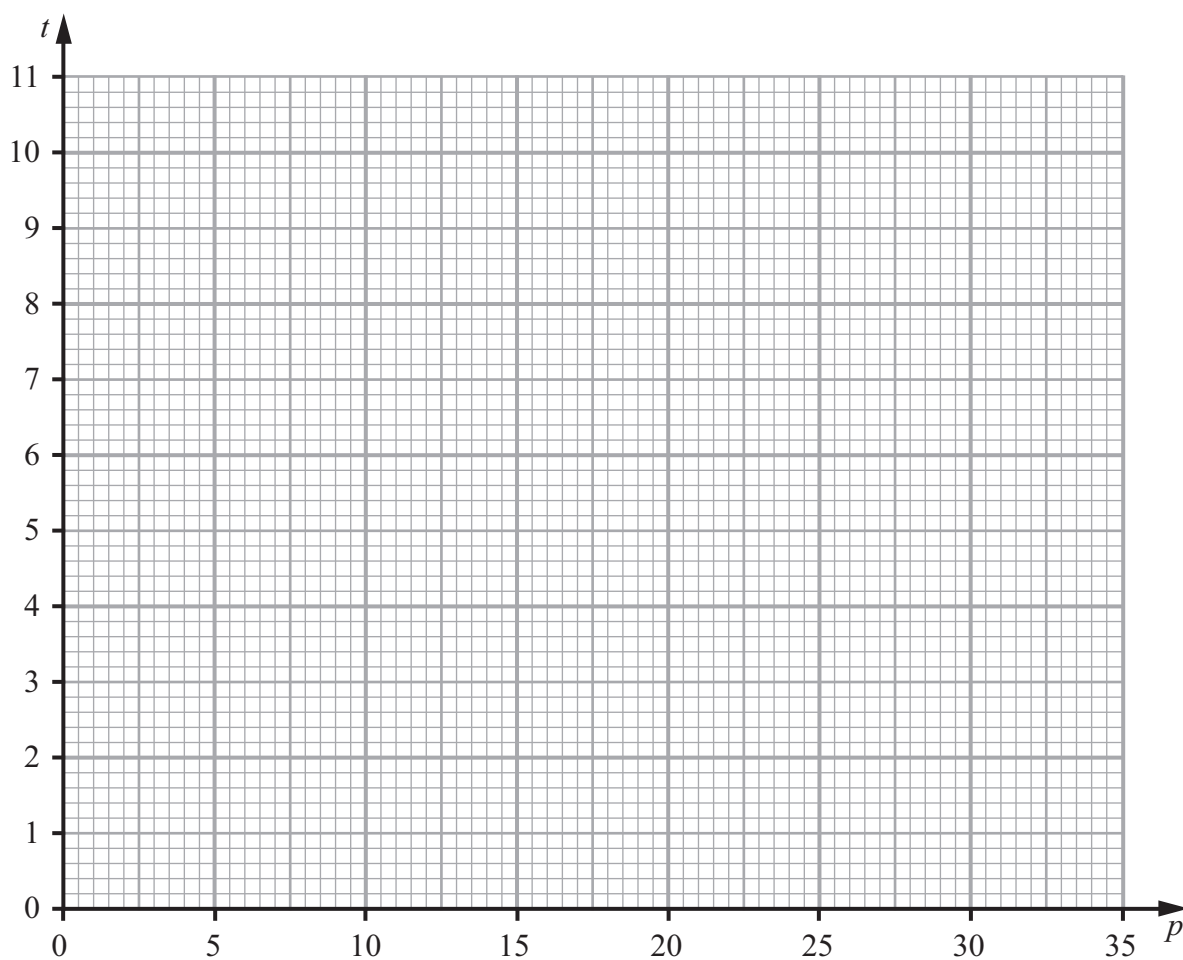


(a) Calculate the value of the product moment correlation coefficient for x and y . (3)

(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)**

Question 3 continued



4.

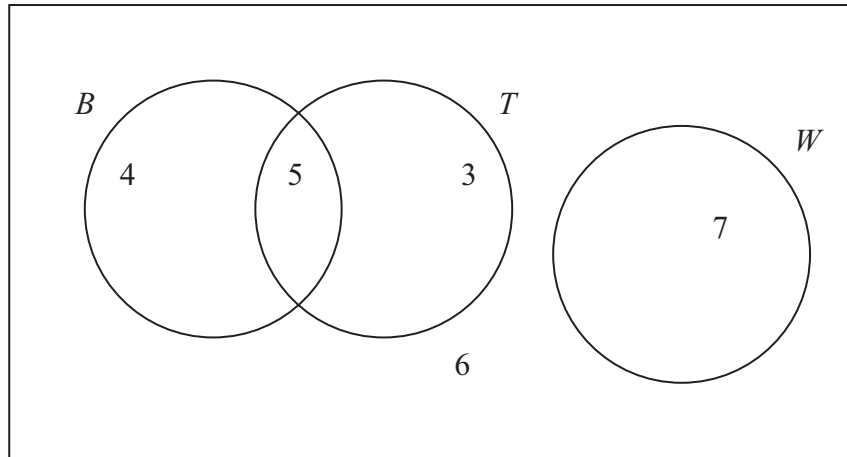


Figure 1

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.

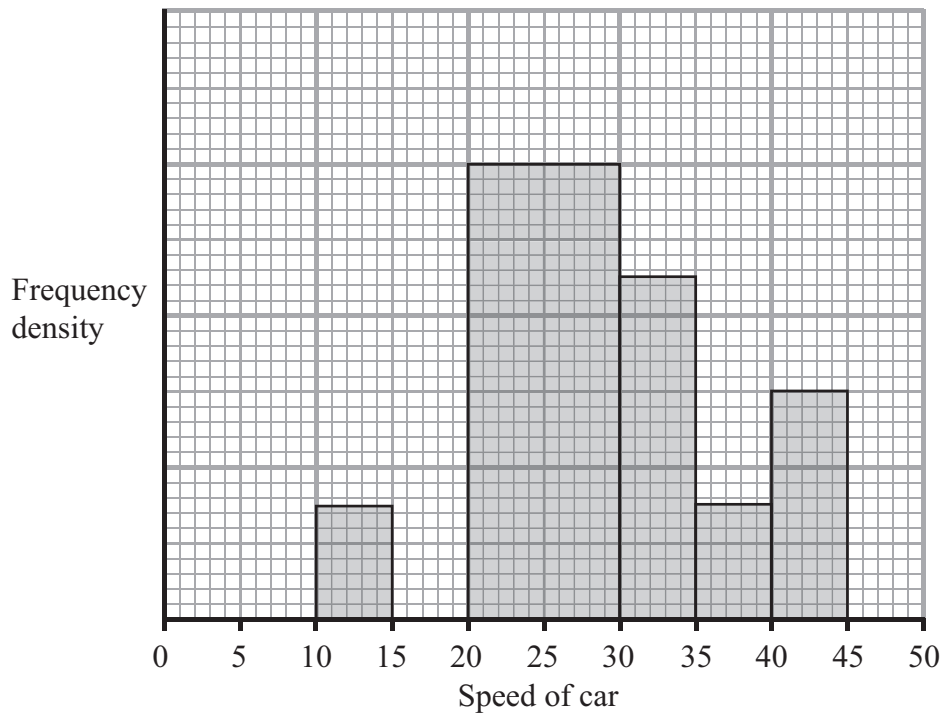


Figure 2

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)



- Sarah is a young girl. She visits her doctor and is told that she is at the 60th percentile for height.

- The heights of an adult male population are normally distributed with standard deviation 9.0 cm.

Given that 90% of adult males are taller than the mean height of adult females,

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

The manufacturer also finds that soft toys can become faded with probability 0.05 and that this defect is independent of poor stitching or splitting open. A soft toy is chosen at random.

- (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)

Question 7 continued

(Total 12 marks)

Q7

TOTAL FOR PAPER: 75 MARKS

END

