

GCSE
MATHEMATICS (8300)
FOUNDATION
Probability and Statistics





Total number of marks: 30 per optional item

Q10

A group of students were asked to name their favourite burger.


The pictogram shows the results.

The key is missing.

Chicken	
Beef	
Turkey	
Veggie	

$$40 \div 5 = 8$$

↓

 = 8 students

40 students said Veggie.

How many students said Chicken?

$$8 + 8 + 8 + 4 = 28 \text{ students}$$

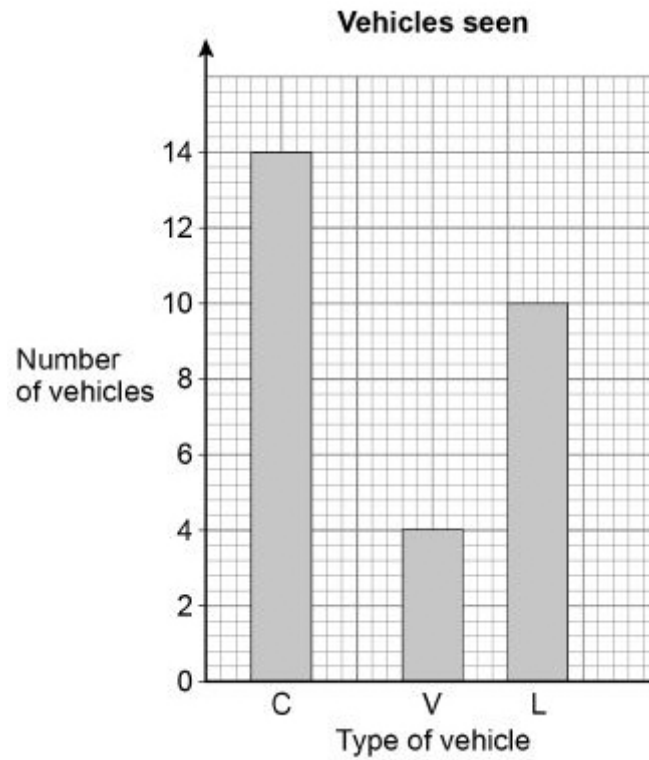
(Total 3 marks)

Q11

On a journey, Laura sees 30 vehicles.

Each vehicle is a car, a van or a lorry.

She draws this bar chart.



Make **two** criticisms of her bar chart.

(Total 2 marks)

- the gaps between the bars are not equal in size
- the total no. of vehicles on her bar chart is 28, so 2 are missing

Q11a

In a raffle, 200 tickets are sold.

The tickets are either red or blue.

The winning ticket is picked at random.

- (a) What is the probability that the winning ticket is green?

0

(Total 1 mark)

Q11b

- (b) 79 children and 90 women buy one ticket each.

Men buy the rest of the tickets.

Work out the probability that a man buys the winning ticket.

(Total 2 marks)

$$200 - 79 - 90 = 31 \text{ men buy the rest}$$

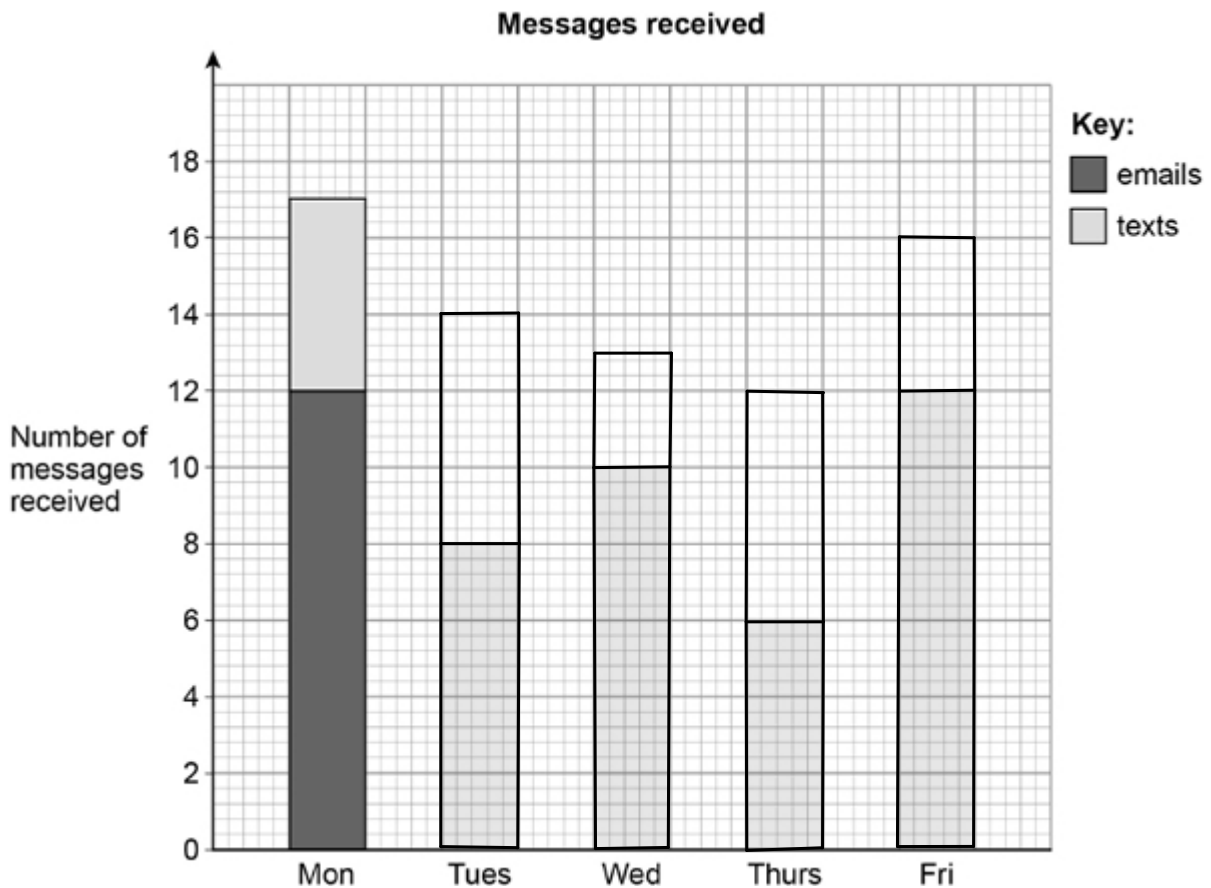
$$\frac{31}{200} = 0.155$$

Q9a

The table shows the number of messages Sam received each day for five days.

	Messages	
	Number of emails	Number of texts
Monday	12	5
Tuesday	8	6
Wednesday	10	3
Thursday	6	6
Friday	12	4

- (a) Sam draws a composite bar chart to represent the data.
He has drawn the bar for Monday.



Complete the chart.

(Total 2 marks)

Q9b

The table shows the number of messages Sam received each day for five days.

	Messages	
	Number of emails	Number of texts
Monday	12	5
Tuesday	8	6
Wednesday	10	3
Thursday	6	6
Friday	12	4

(b) In total, what fraction of the messages were emails?

Give your answer in its simplest form.

(Total 3 marks)

$$\frac{12 + 8 + 10 + 6 + 12}{72} = \frac{2}{3}$$

Q7

Here is a list of numbers.

21 17 23 21 29 32 21 25 36

Work out the median.

position of median = $\frac{n+1}{2} = \frac{9+1}{2} = 5^{\text{th}} \text{ number}$ (Total 2 marks)

↙ to make it even

17, 21, 21, 21, (23), 25, 29, 32, 36

median is 23.

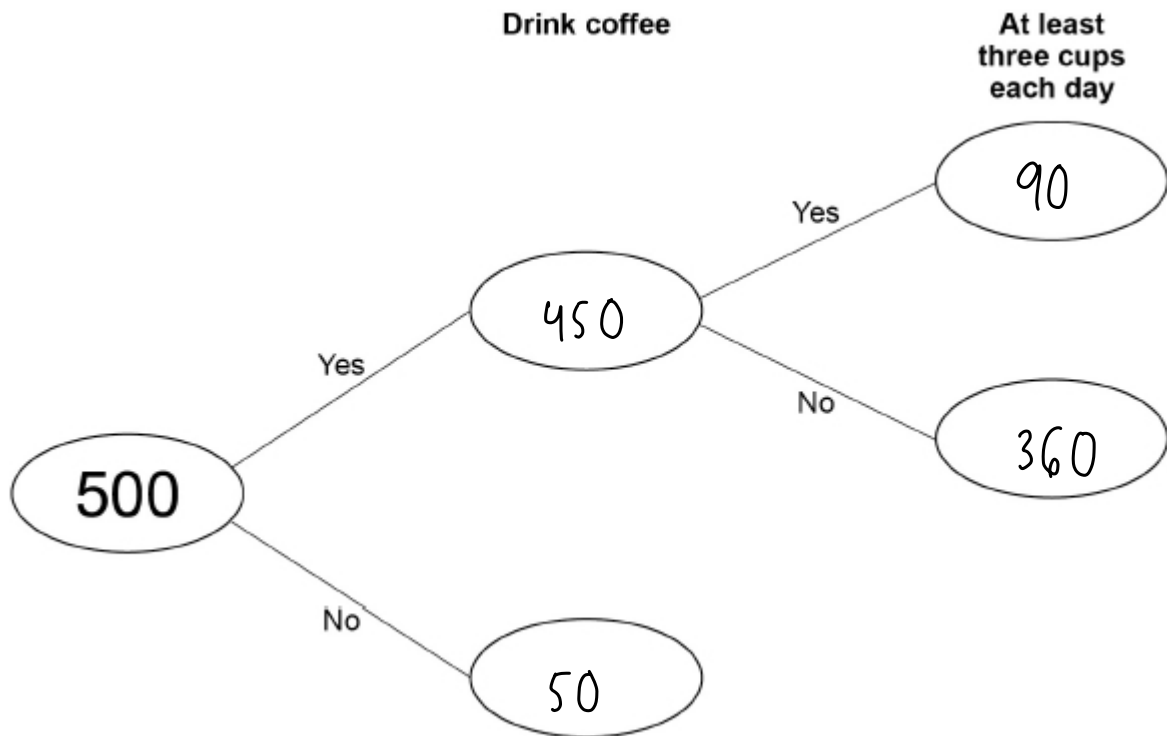
Q6a

500 people are asked if they drink coffee.

$\frac{9}{10}$ say Yes.

20% of the people who say Yes drink at least three cups each day.

(a) Complete the frequency tree.



(Total 4 marks)

Q6b

500 people are asked if they drink coffee.

$\frac{9}{10}$ say Yes.

20% of the people who say Yes drink at least three cups each day.

- (b) What fraction of the 500 people drink at least three cups of coffee each day?

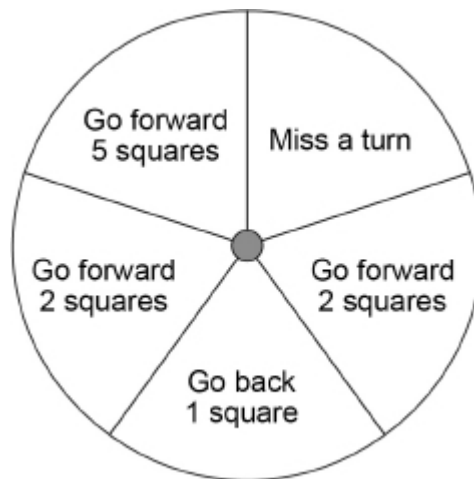
Give your answer in its simplest form.

(Total 2 marks)

$$\frac{9}{10} \times \frac{1}{5} = \frac{9}{50}$$

Q10a

In a game, a fair spinner has five equal sections as shown.



- (a) Chloe spins the spinner.

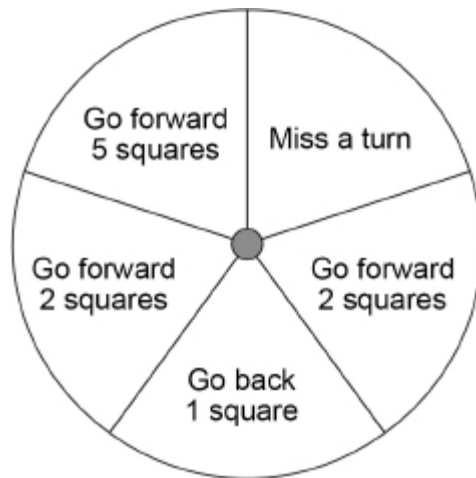
Write down the probability that she gets 'Miss a turn'.

(Total 1 mark)

$$\frac{1}{5}$$

Q10b

In a game, a fair spinner has five equal sections as shown.



- (b) The spinner lands on 'Go back 1 square' three times in a row. Jamal is next to spin.

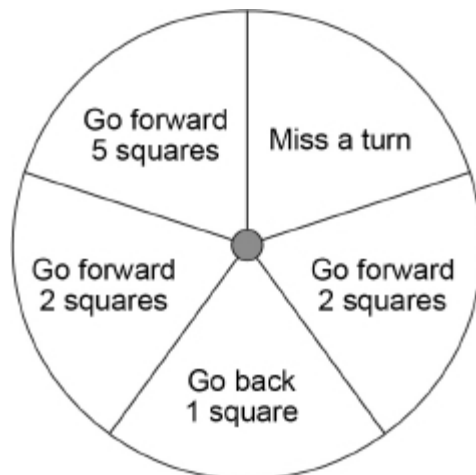
Write down the probability that he gets 'Go back 1 square'.

(Total 1 mark)

$$\frac{1}{5}$$

Q10c

In a game, a fair spinner has five equal sections as shown.



- (c) In one game there are 85 spins.

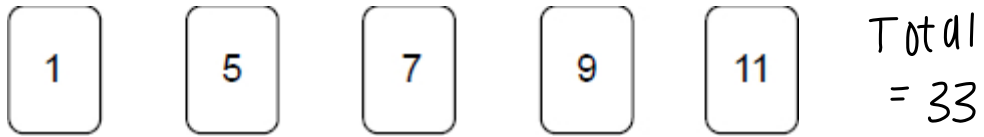
How many of these spins are expected to be 'Go forward 2 squares'?

(Total 2 marks)

$$\frac{2}{5} \times 85 = 34 \text{ spins}$$

Q18

Here are five cards.



One of the cards is removed.

The mean of the numbers on the remaining four cards is 6

Which card was removed?

You **must** show your working.

(Total 3 marks)

$$\text{mean} = \frac{\text{total}}{n}$$

$$6 = \frac{\text{total}}{4} \Rightarrow \text{total} = 24 \text{ of the 4 cards}$$

$33 - 24 = 9$ hence the '9' card was removed.

Q2

In a pie chart, one sector represents $\frac{1}{4}$ of the data.

What is the angle of that sector?

Circle your answer.

4°

25°

45°

90°

$$360 \div 4 = 90^\circ$$

(Total 1 mark)

Q23

Which **one** of the following is discrete data?

Circle your answer.

Mass of a television

Time taken to deliver a television

Height of a television mast

Number of televisions sold

(Total 1 mark)