

GCSE & High School Topic Questions

Two Way Tables

Example 1

A teacher surveys 64 students on how they travelled to school.

20 of the students were in year 7. (1)

The teacher surveyed 30% more students in year 9 than in year 7. (2)

The rest of the students surveyed were in year 11. (3)

75% of the students in year 7 walked to school. (4)

8 more students in year 9 walked to school than did not walk. (5)

Out of the students surveyed, more year 11 students walked to school than year 9 students. (6)

One of these students is picked at random.

(a) Create a two-way table for this information.

(b) Work out the probability that the student chosen will walk to school.

Solution:

$$\begin{aligned} (2): 10\% \text{ of } 20 &= 2 \\ 30\% \text{ of } 20 &= 6 \\ \text{year 7} + \text{year 9} \\ 20 + 6 &= 26 \end{aligned}$$

$$\begin{aligned} (3): 20 + 26 &= 46 \\ 64 - 46 &= 18 \end{aligned}$$

$$(4): 75\% \text{ of } 20 = 15$$

(a):

	Year 7	Year 9	Year 11	Total
Walk	15	17	18	50
Other	5	9	0	14
Total	20	26	18	64

(b): $\frac{50}{64}$ or $\frac{25}{32}$

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Example 2

80 students visited the library over three days.
Here is some information about the students.

	Mon	Tues	Wed	Total
Year 7			13	38
Year 8	14			
Total		33	26	80

(a) Complete the two-way table for this information.

	Mon	Tues	Wed	Total
Year 7	7	18	13	38
Year 8	14	15	13	42
Total	21	33	26	80

One of these students is picked at random to win a prize.

(b) Write down the probability that the student is in year 7.

$$P(\text{student is in Year 7}) = \frac{38}{80} \text{ or } \frac{19}{40}$$

(c) Write down the probability that the student visited the library on Tuesday..

$$P(\text{student visited library on Tuesday}) = \frac{33}{80}$$

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Question 1:

James has a deck of 50 cards, each with a shape on it.
The shapes are either red or black.

	Square	Rectangle	Kite
Red	15	8	2
Black	6	7	12

James picks a card at random.

- (a) What is the probability that the card has a black kite on it?
- (b) What is the probability that the card has a red shape on it?
- (c) What is the probability that the card has a square on it?
- (d) What is the probability that the card has a shape with at least 2 lines of symmetry?

(4 marks)

Question 2:

70 people went to a park one morning.

36 out of 47 people who drink tea were adults.

There were 14 children in the park who does not drink tea.

- (a) Create a two-way table for this information.
- (b) How many adults does not drink tea?
- (c) What fraction of the children drinks tea?

(3 marks)

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Question 3:

There are 70 students, each choose to study Drama or Music.

34 of the students choose Drama.

17 boys choose Music.

18 girls choose Drama.

(a) Create a two-way table for this information.

(b) A student is picked at random.

Work out the probability that the student is a boy who choose Drama.

(c) A Music student is picked at random.

Work out the probability that the student is a girl.

(3 marks)

Question 4:

100 tourists booked a holiday in June or in July, at a travel agent.

Some of the tourists booked to go to France.

Some booked to go to Spain.

The rest of the tourists booked to go to Italy.

30 tourists booked to go to Italy.

20 tourists booked to go to Spain in July.

15 of the 35 tourists going to France booked to go in June.

59 tourists booked to go on holiday in July.

(a) Complete a two-way table for this information.

(b) How many tourists booked to go to Italy in June?

(2 marks)

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Question 5:

160 students choose to study History or Geography.

85 of the students choose History.

34 of the boys choose Geography.

41 of the girls choose History.

(a) Complete a two-way table for this information.

(b) A student is chosen at random.

Work out the probability that the student is a boy who studies History.

(2 marks)

Question 6:

On Monday, 98 people visit a leisure club.

Some are going to the gym.

Some are going to play tennis.

Some are going to play badminton.

The rest are going swimming.

51 of the people are adults.

21 out of the 40 going to the gym are adults.

19 adults and 7 children are going swimming.

7 out of the 20 people playing badminton are adults.

Twice as many children play tennis than adults.

(a) Complete a two-way table for this information.

(b) How many children play badminton?

(2 marks)

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Question 7:

There are 170 students in year 6 at a school.

All of these students either walk to school, get the bus to school or cycle to school.

81 of the students are boys.

33 of the students get the bus to school.

18 out of the 41 students that walk to school are boys.

56 girls cycle to school.

(a) Create a two-way table for this information.

(b) How many boys get the bus to school?

(c) How many students walk to school? **(3 marks)**

Question 8:

Steve has some plastic shapes in a tub.

Here is some onformation about the shape and colour of the shapes.

	Rhombus	Star	Total
Red		7	
Yellow	6		
Total	11		40

(a) Complete the two-way table for this information.

(b) Work out the ratio of red shapes to yellow shapes.

(c) What fraction of the yellow shapes are Rhombus?

Note: Give your answer in its simplest form.

(3 marks)

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Question 9:

A teacher surveys 66 students on how they travelled to school.

20 of the students were in year 7.

The teacher surveyed 40% more students in year 9 than in year 7.

The rest of the students surveyed were in year 11.

75% of the students in year 7 walked to school.

8 more students in year 9 walked to school than did not walk.

Out of the students surveyed, more year 11 students walked to school than year 9 students.

One of these students is picked at random.

- (a) Create a two-way table for this information.
- (b) Work out the probability that the student chosen did not walk to school.

(5 marks)

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Question 10:

100 students attended a revision lesson at the weekend.

Each student went to Maths or English or Science.

65 of these students attended on saturday.

Over the weekend a total of 50 students went to Maths.

13 of the 27 students that went to Science went on Sunday.

12 students went to English on Saturday.

- (a) Complete a two-way table for this information.
- (b) How many students went to the Maths revision lesson on Saturday?
- (c) What fraction of the students went to the Science revision lesson on weekend?

(3 marks)

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answers

Question 1:

(a): $\frac{12}{50} = \frac{6}{25}$

(b): $\frac{25}{50} = \frac{1}{2}$

(c): $\frac{21}{50}$

(d): $\frac{36}{50} = \frac{18}{25}$

Question 2:

(a):

	Adult	Child	Total
Tea	36	11	47
No Tea	9	14	23
Total	45	25	70

(b): 9

(c): $\frac{11}{25}$

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answers

Question 3:

(a):

	Drama	Music	Total
Boys	16	17	33
Girls	18	19	37
Total	34	36	70

(b): $\frac{16}{70}$

(c): $\frac{19}{36}$

Question 4:

(a):

	France	Spain	Italy	Total
June	15	15	11	41
July	20	20	19	59
Total	35	35	30	100

(b): 11 tourists

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Question 5:

answers

(a):

	History	Geography	Total
Boys	44	34	78
Girls	41	41	82
Total	85	75	160

(b): $\frac{44}{160}$

Question 6:

(a):

	Adults	Children	Total
Gym	21	19	40
Tennis	4	8	12
Badminton	7	13	20
Swimming	19	7	26
Total	51	47	98

(b): 13

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answers

Question 7:

(a):

	Walk	Bus	Cycle	Total
Boys	18	23	40	81
Girls	23	10	56	89
Total	41	33	96	170

(b): 23 boys

(c): 41 students

Question 8:

(b):

	Rhombus	Star	Total
Red	5	7	12
Yellow	6	22	28
Total	11	29	40

(b): Red : Yellow
12 : 28
3 : 7

(c): $\frac{6}{28} = \frac{3}{14}$

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answers

Question 9:

(a):

	Year 7	Year 9	Year 11	Total
Walk	15	18	18	51
Other	5	10	0	15
Total	20	28	18	66

(b): $\frac{15}{66}$ or $\frac{5}{22}$ 10% of 20=2 75% of 20=15
 40% of 20=8
 year7+year9
 20+8=28
 20+28=48
 66-48=18

Question 10:

(a):

	Maths	Eng	Sci	Total
Sat	39	12	14	65
Sun	11	11	13	35
Total	50	23	27	100

(b): 39 students

(c): $\frac{27}{100}$