

Frequency Tables

Solutions

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Each question is shown in grey, followed by the working, one step per line. The final answer is in a box. *Marks* shows how the marks are usually given in the exam, and **Tip** points out a common mistake.

1 (3 marks)

A shop sold 24 pairs of school shoes on Saturday.
Here are the shoe sizes.

6 5 7 6 8 4 6 7 5 6 7 6
5 8 6 7 4 6 5 7 6 8 5 7

(a) Complete the frequency table.

Go through the list in order and put a tally mark for each pair of shoes.

The frequency is the number of tally marks.

Shoe size	Tally	Frequency
4		2
5		5
6		8
7		6
8		3

Check: $2 + 5 + 8 + 6 + 3 = 24$ pairs ✓

Answer: 2, 5, 8, 6, 3

Tip: Cross off each value as you tally it, so you do not miss one or count it twice. Check the frequencies add up to 24.

Marks: 2 marks for a fully correct table. 1 mark for the tallies or frequencies correct for three sizes.

- (b) Write down the shoe size that is the mode.

The mode is the size with the highest frequency.

Size 6 has the highest frequency (8).

Answer: 6

Tip: The question asks for the **shoe size**. Write 6, not the frequency 8.

2 (2 marks)

Jamal asked some students how many pets they have.
He made this table.

Number of pets	Tally	Frequency
0		8
1		11
2		6
3		3
Total		30

- (a) Write down one thing that is wrong with the table.

Add up the frequencies: $8 + 11 + 6 + 3 = 28$

But the total says 30.

The total is wrong: it should be 28.

Answer: The frequencies add up to 28, not 30

- (b) How many of the students have at least 2 pets?

“At least 2” means 2 or more.

$$6 + 3 = 9$$

Answer: 9

Tip: “At least 2” includes 2. Do not just use the row for 3 pets.

3 (4 marks)

Some people were asked to name their favourite pet.
The tally chart shows the results.

Pet	Tally	Frequency
Dog	I	
Cat		
Fish	II	
Rabbit		

- (a) Complete the frequency column in the table.

Count the tally marks in each row.

Each 5-bar gate is 5.

Dog 6, Cat 9, Fish 12, Rabbit 3

Answer: 6, 9, 12, 3

- (b) How many people were asked?

Add the frequencies:

$$6 + 9 + 12 + 3 = 30$$

Answer: 30

- (c) What fraction of the people chose cats?
Give your answer in its simplest form.

9 out of 30 people chose cats.

$$\text{Fraction} = \frac{9}{30}$$

Divide top and bottom by 3: $\frac{9}{30} = \frac{3}{10}$

Answer: $\frac{3}{10}$

Tip: "Simplest form" means you must cancel down. $\frac{9}{30}$ on its own only gets 1 mark.

Marks: 1 mark for $\frac{9}{30}$. 1 mark for $\frac{3}{10}$.

4 (4 marks)

Here are the heights, in cm, of 16 students.

152	168	143	160	174	155	149	161
166	150	171	159	164	148	169	157

- (a) Complete the grouped frequency table for the heights.

$140 \leq h < 150$: 143, 148, 149 so 3

$150 \leq h < 160$: 150, 152, 155, 157, 159 so 5

$160 \leq h < 170$: 160, 161, 164, 166, 168, 169 so 6

$170 \leq h < 180$: 171, 174 so 2

Check: $3 + 5 + 6 + 2 = 16$ students ✓

Answer: 3, 5, 6, 2

Tip: 150 goes in $150 \leq h < 160$, not $140 \leq h < 150$, because $h < 150$ does not include 150.

Marks: 2 marks for all four frequencies correct. 1 mark for two or three correct.

- (b) Write down the modal class.

The modal class is the class with the highest frequency.

The highest frequency is 6.

Answer: $160 \leq h < 170$

- (c) How many of the students are at least 160 cm tall?

“At least 160” means 160 or more.

That is the classes $160 \leq h < 170$ and $170 \leq h < 180$.

$$6 + 2 = 8$$

Answer: 8

5 (4 marks)

The table gives information about the times, in minutes, that 40 customers spent in a café.

Time (t minutes)	Frequency
$0 < t \leq 10$	6
$10 < t \leq 20$	13
$20 < t \leq 30$	15
$30 < t \leq 40$	6

- (a) Write down the modal class.

The modal class has the highest frequency.

The highest frequency is 15.

Answer: $20 < t \leq 30$

- (b) Find the class interval that contains the median.

There are 40 customers.

The median is halfway between the 20th and 21st times.

The first two classes hold $6 + 13 = 19$ times.

So the 20th and 21st times are in the third class.

Answer: $20 < t \leq 30$

Tip: Count through the frequencies to find where the 20th and 21st values are. Don't just pick the middle row of the table.

- (c) What fraction of the customers spent more than 20 minutes in the café?
Give your answer in its simplest form.

More than 20 minutes means the last two classes.

$15 + 6 = 21$ customers

There are 40 customers altogether.

$$\text{Fraction} = \frac{21}{40}$$

21 and 40 have no common factor, so this is in its simplest form.

Answer: $\frac{21}{40}$

Marks: 1 mark for 21 or $\frac{21}{40}$. 1 mark for $\frac{21}{40}$.

6 (4 marks)

The table gives information about the number of books read last month by 40 students.

Number of books	0	1	2	3	4
Frequency	7	12	x	6	4

- (a) Work out the value of x .

There are 40 students in total.

Add the known frequencies: $7 + 12 + 6 + 4 = 29$

$$x = 40 - 29 = 11$$

Answer: 11

Marks: 1 mark for $40 - 29$. 1 mark for 11.

- (b) Work out the total number of books read by the 40 students.

For each row, multiply the number of books by the frequency.

$$0 \times 7 = 0$$

$$1 \times 12 = 12$$

$$2 \times 11 = 22$$

$$3 \times 6 = 18$$

$$4 \times 4 = 16$$

Add them: $0 + 12 + 22 + 18 + 16 = 68$

Answer: 68

Tip: $0 \times 7 = 0$, not 7. Students who read no books add nothing to the total.

Marks: 1 mark for multiplying books by frequency and adding. 1 mark for 68 (follow-through from your value of x).
