

Fractions of Amounts

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 (2 marks)

Work out

(a) $\frac{1}{6}$ of 72

To find $\frac{1}{6}$, divide by 6.

$$72 \div 6 = 12$$

Answer: 12

(b) $\frac{4}{9}$ of 63

Divide by the bottom number to find $\frac{1}{9}$:

$$63 \div 9 = 7$$

Multiply by the top number to find $\frac{4}{9}$:

$$7 \times 4 = 28$$

Answer: 28

2 (2 marks)

Write 18 as a fraction of 45

Give your answer in its simplest form.

“18 as a fraction of 45” means $\frac{18}{45}$.

The HCF of 18 and 45 is 9.

Divide top and bottom by 9:

$$\frac{18}{45} = \frac{2}{5}$$

Answer: $\frac{2}{5}$

Marks: 1 mark for $\frac{18}{45}$. 1 mark for $\frac{2}{5}$.

3 (2 marks)

Elif is running a 12 km charity race.

She has run $\frac{5}{8}$ of the distance.

How many more kilometres does she have to run?

She has run $\frac{5}{8}$ of the race.

So $1 - \frac{5}{8} = \frac{3}{8}$ of the race is still to run.

$\frac{1}{8}$ of 12: $12 \div 8 = 1.5$

$\frac{3}{8}$ of 12: $1.5 \times 3 = 4.5$

Answer: 4.5 km

Tip: $\frac{5}{8}$ of 12 = 7.5 km is the distance she has **already** run. The question asks how far she still has to go.

Marks: 1 mark for $\frac{3}{8} \times 12$ (or $12 - \frac{5}{8} \times 12$). 1 mark for 4.5.

4 (3 marks)

A plane has 240 seats.

For one flight, 96 of the seats are booked online.

Also, $\frac{1}{4}$ of the seats are booked by phone.

The rest of the seats are empty.

What fraction of the seats are empty?

Give your fraction in its simplest form.

Booked by phone: $\frac{1}{4}$ of 240 = $240 \div 4 = 60$ seats

Booked seats: $96 + 60 = 156$

Empty seats: $240 - 156 = 84$

Fraction empty: $\frac{84}{240}$

Divide top and bottom by 12:

$$\frac{84}{240} = \frac{7}{20}$$

Answer: $\frac{7}{20}$

Tip: Simplify fully. $\frac{42}{120}$ and $\frac{21}{60}$ are correct but not in their simplest form.

Marks: 1 mark for 60 seats booked by phone. 1 mark for $\frac{84}{240}$ (or an equivalent fraction). 1 mark for $\frac{7}{20}$.

5 (2 marks)

Amy says,

‘ $\frac{2}{5}$ of 90 is the same as $\frac{3}{8}$ of 96’

Is Amy correct?

You must show how you get your answer.

$\frac{2}{5}$ of 90: $90 \div 5 = 18$, $18 \times 2 = 36$

$\frac{3}{8}$ of 96: $96 \div 8 = 12$, $12 \times 3 = 36$

Both are 36, so Amy is correct.

Answer: Yes, both are 36

Marks: 1 mark for working out either value. 1 mark for both values being 36 and saying Amy is correct.

6 (3 marks)

Joe has £64

He spends $\frac{3}{8}$ of his money on a game.

He then spends $\frac{1}{4}$ of the money he has left on food.

Work out how much money Joe has left.

Game: $\frac{3}{8}$ of £64

$64 \div 8 = 8$, $8 \times 3 = 24$, so the game costs £24.

Money left: $64 - 24 = 40$, so £40.

Food: $\frac{1}{4}$ of £40 = $40 \div 4 = 10$, so £10.

Money left: $40 - 10 = 30$

Answer: £30

Tip: The $\frac{1}{4}$ is of the money he has **left** (£40), not of the £64 he started with.

Marks: 1 mark for £24. 1 mark for £10. 1 mark for £30.

7 (3 marks)

There are 150 students in a year group.

$\frac{1}{3}$ of the students have a dog as their only pet.

$\frac{2}{5}$ of the students have a cat as their only pet.

All the other students do not have a pet.

How many of the students do not have a pet?

Dog: $\frac{1}{3}$ of 150 = $150 \div 3 = 50$

Cat: $\frac{2}{5}$ of 150: $150 \div 5 = 30$, $30 \times 2 = 60$

No pet: $150 - 50 - 60 = 40$

Answer: 40

Marks: 1 mark for 50. 1 mark for 60. 1 mark for 40.

8 (3 marks)

A concert hall has 2000 seats.

On Friday, $\frac{3}{4}$ of the seats were sold.

On Saturday, $\frac{1}{5}$ more people went than on Friday.

How many people went to the concert on Saturday?

Friday: $\frac{3}{4}$ of 2000

$2000 \div 4 = 500$, $500 \times 3 = 1500$ people.

Saturday had $\frac{1}{5}$ **more** than Friday.

$\frac{1}{5}$ of 1500 = $1500 \div 5 = 300$

Saturday: $1500 + 300 = 1800$ people.

Answer: 1800

Tip: " $\frac{1}{5}$ more" means find $\frac{1}{5}$ of Friday's number and **add** it on. 300 is not the final answer.

Marks: 1 mark for 1500. 1 mark for $\frac{1}{5} \times 1500 = 300$. 1 mark for 1800.

9 (3 marks)

A school fair raised some money.

The cake stall raised $\frac{2}{5}$ of the money.

The raffle raised $\frac{1}{4}$ of the money.

The rest of the money came from the tombola.

The tombola raised £42

Work out the total amount of money the fair raised.

Cake stall and raffle: $\frac{2}{5} + \frac{1}{4} = \frac{8}{20} + \frac{5}{20} = \frac{13}{20}$

Tombola: $1 - \frac{13}{20} = \frac{7}{20}$ of the money.

So $\frac{7}{20}$ of the total is £42.

$\frac{1}{20}$ of the total: $42 \div 7 = 6$

Total: $6 \times 20 = 120$

Answer: £120

Tip: £42 is not a fraction of something here: it is $\frac{7}{20}$ of the total. Divide by 7, then multiply by 20.

Marks: 1 mark for $\frac{7}{20}$ for the tombola. 1 mark for $42 \div 7$ (= £6). 1 mark for £120.

10 (4 marks)

Kofi has 840 g of flour.

He uses $\frac{2}{7}$ of the flour to make bread.

He then uses $\frac{3}{4}$ of the flour he has left to make pizza bases.

Kofi says,

‘I have enough flour left to make a cake that needs 180 g of flour.’

Is Kofi correct?

You must show how you get your answer.

Bread: $\frac{2}{7}$ of 840 g

$840 \div 7 = 120$, $120 \times 2 = 240$ g.

Flour left: $840 - 240 = 600$ g.

Pizza bases: $\frac{3}{4}$ of 600 g

$600 \div 4 = 150$, $150 \times 3 = 450$ g.

Flour left now: $600 - 450 = 150$ g.

The cake needs 180 g, and 150 g is **less** than 180 g.

So Kofi is **not** correct.

Answer: No: he has only 150 g of flour left, which is less than 180 g

Tip: The $\frac{3}{4}$ is of the flour **left** after the bread (600 g), not of the 840 g. Finish with a clear conclusion that compares 150 g with 180 g.

Marks: 1 mark for 240 g for the bread. 1 mark for 450 g for the pizza bases (or $\frac{1}{4} \times 600$). 1 mark for 150 g left. 1 mark for “No” with 150 g compared with 180 g.
