

Percentage Change

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 (1 mark)

Write 0.58 as a percentage.

To change a decimal to a percentage, multiply by 100.

$$0.58 \times 100 = 58$$

Answer: 58%

2 (1 mark)

Write $\frac{7}{20}$ as a percentage.

Make the denominator 100.

$20 \times 5 = 100$, so multiply the top and bottom by 5:

$$\frac{7}{20} = \frac{35}{100} = 35\%$$

Answer: 35%

3 (2 marks)

There are 40 students in a class.

14 of the students walk to school.

What percentage of the students walk to school?

Write as a fraction of the class: $\frac{14}{40}$

Change to a percentage: $\frac{14}{40} \times 100 = 35$

Answer: 35%

Marks: 1 mark for $\frac{14}{40}$. 1 mark for 35.

4 (2 marks)

A train fare increased from £32 to £36
Work out the percentage increase.

Percentage increase = $\frac{\text{increase}}{\text{original}} \times 100$

Increase: $36 - 32 = 4$

$\frac{4}{32} \times 100 = 12.5$

Answer: 12.5%

Tip: Divide by the **original** fare (£32), not the new fare (£36).

Marks: 1 mark for $\frac{4}{32}$. 1 mark for 12.5

5 (3 marks)

The value of a car falls from £18 000 to £13 950
Work out the percentage decrease in the value of the car.

Decrease: $18\,000 - 13\,950 = 4050$

Divide by the original value: $\frac{4050}{18\,000}$

$\frac{4050}{18\,000} \times 100 = 22.5$

Answer: 22.5%

Marks: 1 mark for 4050. 1 mark for $\frac{4050}{18\,000}$. 1 mark for 22.5

6 (2 marks)

A football team played 25 matches.

It won 17 of these matches.

The manager's target was for the team to win at least 65% of its matches.

Show that the team met the manager's target.

Percentage of matches won: $\frac{17}{25} \times 100 = 68\%$

68% is more than 65%, so the team met the target.

(Or: 65% of 25 = 16.25, so the team needed to win at least 17 matches. It won 17.)

Answer: 68% is more than 65%, so the team met the target.

Tip: In a "show that" question, finish with a sentence that compares your value with 65%.

Marks: 1 mark for $\frac{17}{25}$ or 65% of 25. 1 mark for 68% (or 16.25) with a conclusion.

7 (3 marks)

A garden centre has 400 plants for sale.

130 of the plants are roses.

90 of the plants are tulips.

The rest of the plants are lilies or daisies.

There are twice as many lilies as daisies.

What percentage of the plants are daisies?

Lilies and daisies together: $400 - 130 - 90 = 180$

There are twice as many lilies as daisies, so split 180 in the ratio 2:1.

$180 \div 3 = 60$ daisies (and 120 lilies)

Daisies as a percentage: $\frac{60}{400} \times 100 = 15$

Answer: 15%

Tip: "Twice as many lilies as daisies" means 3 equal shares: 2 for lilies and 1 for daisies.

Dividing 180 by 2 is a common mistake.

Marks: 1 mark for 180. 1 mark for 60. 1 mark for 15.

8 (2 marks)

A photo is 15 cm long and 10 cm wide.

The photo is enlarged. Its length and its width both increase by 20%.

Work out the percentage increase in the area of the photo.

Area of the original photo: $15 \times 10 = 150 \text{ cm}^2$

New length: $15 \times 1.2 = 18 \text{ cm}$. New width: $10 \times 1.2 = 12 \text{ cm}$

New area: $18 \times 12 = 216 \text{ cm}^2$

Increase: $216 - 150 = 66 \text{ cm}^2$

$$\frac{66}{150} \times 100 = 44\%$$

Answer: 44%

Tip: The answer is not 20% or 40%. Both the length and the width increase, so the area is multiplied by $1.2 \times 1.2 = 1.44$

Marks: 1 mark for the new area 216 (or $1.2 \times 1.2 = 1.44$). 1 mark for 44.

9 (3 marks)

Leo buys 5 boxes of pens.

Each box contains 24 pens and costs £9.60

Leo sells all the pens for 55p each.

Work out Leo's percentage profit.

Cost: $5 \times 9.60 = £48$

Number of pens: $5 \times 24 = 120$

Money from selling: $120 \times 55\text{p} = 6600\text{p} = £66$

Profit: $66 - 48 = £18$

$$\text{Percentage profit} = \frac{\text{profit}}{\text{cost}} \times 100 = \frac{18}{48} \times 100 = 37.5$$

Answer: 37.5%

Tip: Divide the profit by what Leo **paid** (£48), not by what he sold the pens for (£66).

Marks: 1 mark for £48 or £66. 1 mark for $\frac{18}{48} \times 100$. 1 mark for 37.5

10 (4 marks)

A hockey club had 250 members in 2024.
40% of these members were juniors.
In 2025, the club had 280 members.
45% of these members were juniors.

Work out the percentage increase in the number of junior members from 2024 to 2025.

You must show all your working.

Juniors in 2024: 40% of 250 = $0.4 \times 250 = 100$

Juniors in 2025: 45% of 280 = $0.45 \times 280 = 126$

Increase: $126 - 100 = 26$

Percentage increase: $\frac{26}{100} \times 100 = 26\%$

Answer: 26%

Tip: The answer is not $45 - 40 = 5\%$. The percentages are of different totals, so work out the actual numbers of juniors first.

Marks: 1 mark for 100. 1 mark for 126. 1 mark for $\frac{26}{100}$. 1 mark for 26.

11 (5 marks)

A shop buys 60 hoodies for £12.50 each.
It sells 40 of the hoodies for £20 each.
It sells the rest of the hoodies in a sale at 30% off the price of £20

Work out the shop's percentage profit on the hoodies.

Cost of the hoodies: $60 \times 12.50 = £750$

Money from the first 40: $40 \times 20 = \text{£}800$

Sale price: 30% off $\text{£}20 = 20 \times 0.7 = \text{£}14$

Money from the other 20: $20 \times 14 = \text{£}280$

Total money: $800 + 280 = \text{£}1080$

Profit: $1080 - 750 = \text{£}330$

Percentage profit: $\frac{330}{750} \times 100 = 44\%$

Answer: 44%

Tip: There are $60 - 40 = 20$ hoodies sold in the sale. Divide the profit by the **cost** (£750).

Marks: 1 mark for £750. 1 mark for £14. 1 mark for £1080. 1 mark for $\frac{330}{750} \times 100$. 1 mark for 44.
