Percentages of amounts

Worked solutions

KS3 Maths topic practice

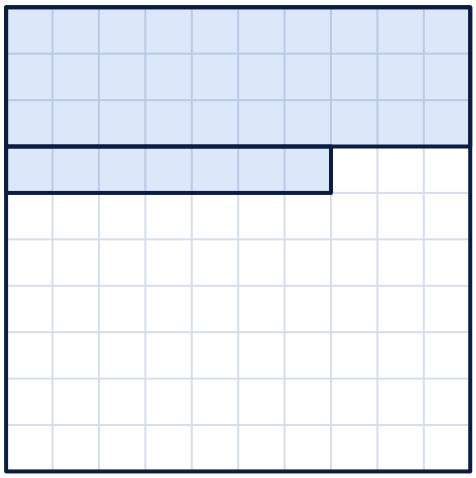
This topic online

1 The grid is made of 100 equal squares. Some of the squares are shaded.

a. What percentage of the grid is shaded?

b. What percentage of the grid is not shaded?

c. Write the shaded part of the grid as a decimal.



(3 marks)

a) count the shaded squares

$3 \times 10 + 7 = 37$

per cent means out of 100

37%

b)

$100 - 37 = 63$

63%

c)

$37\% = \frac{37}{100}$

$= 0.37$

0.37

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2 Write down 50% of £86 (1 mark)

50% is one half

Half of 86 is 43, so the answer is 43 pounds

£43

3 Do not use a calculator.

a. Copy and complete for £240.

50% of £240 =
25% of £240 =
10% of £240 =
5% of £240 =
1% of £240 =

b. Use your answers to work out 36% of £240 (4 marks)

a)

50% = 240 ÷ 2 = 120

25% = 120 ÷ 2 = 60

10% = 240 ÷ 10 = 24

5% = 24 ÷ 2 = 12

1% = 240 ÷ 100 = 2.40

£120, £60, £24, £12, £2.40

b) 36% = 25% + 10% + 1%

60 + 24 + 2.40 = 86.40

£86.40

4 Work out 15% of £60 (2 marks)

10% of 60 is 6

5% is half of 10%, so 5% of 60 is 3

15% = 10% + 5% = 6 + 3 = 9 pounds

£9

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5 Write down the single decimal number you multiply by to

a. find 30% of an amount

b. increase an amount by 20%

c. decrease an amount by 15%

d. The price of a bus pass is multiplied by 1.04. Describe the percentage change in the price. (4 marks)

a)

$$30\% = \frac{30}{100}$$

$$= 0.3$$

0.3

b) you end with 120%

$$100\% + 20\% = 120\%$$

$$120\% = 1.2$$

1.2

c) you end with 85%

$$100\% - 15\% = 85\%$$

$$85\% = 0.85$$

0.85

d)

$$1.04 = 104\%$$

$$104\% - 100\% = 4\%$$

increase of 4%

6 The value of a van is multiplied by 0.88 each year.

Write down the percentage decrease in the value of the van each year. (1 mark)

A multiplier of 0.88 means the van keeps 88% of its value

$100\% - 88\% = 12\%$ decrease each year

12%

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7 A bottle contains 850 ml of juice.

34% of the juice is orange juice.

Work out how many millilitres of orange juice are in the bottle. (2 marks)

Percent means "out of 100", so 34% = 34/100 = 0.34. Multiplying by 0.34 finds 34 hundredths of the whole amount

34% as a decimal is 0.34

0.34 × 850 = 289, so there are 289 ml of orange juice

289 ml

8 Do not use a calculator.

a. A football club season ticket costs £180. Next season the price will increase by 5%. Work out the new price.

b. A pair of trainers costs £64. In a sale the price is reduced by 25%. Work out the sale price. (4 marks)

a)

10% of 180 = 18

5% of 180 = 9

180 + 9 = 189

£189

b) 25% is a quarter

64 ÷ 4 = 16

64 - 16 = 48

£48

9 Ben's rent is £240 each week.

His rent is increased by 35%.

Work out Ben's new weekly rent. (3 marks)

10% of 240 is 24, so 30% is 3 × 24 = 72

5% is half of 10%, so 5% of 240 is 12

The increase is 72 + 12 = 84 pounds, so the new rent is 240 + 84 = 324 pounds

£324

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10 You may use a calculator.

a. A normal bag of popcorn holds 150 g. A special offer bag holds 12% extra. How many grams does the special offer bag hold?

b. A tablet costs £385. In a sale the price is reduced by 17%. Work out the sale price.

(4 marks)

a) 100% + 12% = 112%

150 × 1.12 = 168

168 g

b) 100% - 17% = 83%

385 × 0.83 = 319.55

£319.55

11 A computer game costs £40 in two shops.

- Shop A: 15% off
- Shop B: £5 off, then a further 5% off the new price

In which shop is the game cheaper, and by how much?

You must show your working. Do not use a calculator.

(4 marks)

Shop A

10% of 40 = 4

5% of 40 = 2

15% of 40 = 6

40 - 6 = 34

Shop B

40 - 5 = 35

10% of 35 = 3.50

5% of 35 = 1.75

35 - 1.75 = 33.25

difference

34 - 33.25 = 0.75

Shop B, by 75p

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