Percentages and percentage change

Worked solutions

KS3 Maths topic practice

This topic online

1 Write down 50% of £86 (1 mark)

50% is one half

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

£43

2 Work out

a. 25% of £64

b. 35% of 340 kg (3 marks)

a) 25% is a quarter

64 ÷ 4 = 16

£16

b) build up from 10%

10% of 340 = 34

30% of 340 = 102

5% of 340 = 17

35% of 340 = 102 + 17

35% of 340 = 119

119 kg

3 Work out 30% of 60% of £250 (2 marks)

60% of 250 = 0.6 × 250 = 150

30% of 150 = 0.3 × 150 = 45, so the answer is 45 pounds

£45

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

4 Write down the decimal multiplier you would use to

a. increase an amount by 15%

b. decrease an amount by 8%

c. increase an amount by 3.5%

(3 marks)

a)

100% + 15% = 115%

1.15

b)

100% - 8% = 92%

0.92

c)

100% + 3.5% = 103.5%

1.035

5 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%

6 a. A games console costs £280. The price goes up by 12%. Use a multiplier to work out the new price.

b. A winter coat costs £75. In a sale the price is reduced by 30%. Use a multiplier to work out the sale price.

(3 marks)

a) 100% + 12% = 112%

280 × 1.12 = 313.60

£313.60

b) 100% - 30% = 70%

75 × 0.7 = 52.50

£52.50

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

7 Amira puts £1200 into a savings account. The account pays 3.5% simple interest per year.
Work out how much money is in the account after 5 years. (3 marks)

interest for 1 year

1% of 1200 = 12

3.5% of 1200 = 42

5 years

5 × 42 = 210

1200 + 210 = 1410

£1410

8 Ben's monthly electricity bill was £96. It went up by 15%.
Ben's monthly broadband bill was £30. It went up by 40%.
Ben says, "My broadband bill went up by more money than my electricity bill."
Is Ben correct? You must show your working. (4 marks)

Electricity increase = 15% of £96 = 0.15 × 96 = £14.40

Broadband increase = 40% of £30 = 0.4 × 30 = £12

£14.40 > £12, so Ben is not correct

9 Ben buys a car for £16 000.
The value of the car depreciates by 15% each year.
Work out the value of the car at the end of 2 years. (2 marks)

End of year 1

16 000 × 0.85 = £13 600

End of year 2

13 600 × 0.85 = £11 560

Check

16 000 × 0.85^2 = £11 560

£11560

10 A house is worth £240 000. Its value increases by 4% each year.
Work out the value of the house after 3 years. Give your answer to the nearest pound. (3 marks)

multiplier for +4% is 1.04

3 years, so multiply 3 times

240000 × 1.04^3 = 269967.36

£269 967

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

11 Freya buys a motorbike for £7200.

Its value depreciates by 12% each year.

Show that the value of the motorbike at the end of 3 years is less than £5000. (3 marks)

Multiplier for a 12% decrease is 0.88

Value $= 7200 \times 0.88^3 = 7200 \times 0.681472 = £4906.5984$

£4906.60 is less than £5000

12 Leo has £5000 to save for 3 years.

Bank A pays 4% simple interest per year.

Bank B pays 3.8% compound interest per year.

Which bank gives Leo more money at the end of 3 years? You must show your working. (4 marks)

Bank A: simple interest

4% of 5000 = 200

3 × 200 = 600

5000 + 600 = 5600

Bank B: compound, multiplier 1.038

$5000 \times 1.038^3 = 5591.93$

5600 − 5591.93 = 8.07

Bank A, by £8.07

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.