GCSE Maths: Percentage problems: choosing the method and comparing (Foundation): answers

GCSE Maths - Percentages - Foundation - Lesson 5.9

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at **websink.site/gcse/maths/ch05-percentages/foundation/percentage-problems-choosing-the-method-and-comparing/**

Exercise 5O Mixed percentage problems (non-calculator) Non-calculator

1 **Say which method you would use for each problem (you do not need to work out the answer): percentage of an amount, increase or decrease with a multiplier, percentage change, or reverse percentage.**

(a) A bike costs £250. It is reduced by 12%. Find the sale price.

Answer: Increase or decrease: multiplier 0.88

(b) A rent rises from £40 to £46. Find the percentage rise.

Answer: Percentage change: 6 ÷ 40 × 100

(c) After a 20% rise the rent is £600. Find the old rent.

Answer: Reverse percentage: 600 ÷ 1.2

(d) There are 120 pupils. 35% of them play football. How many play?

Answer: Percentage of an amount: 35% of 120

2 **A price is changed twice. Work out the final price in each case.**

(a) £200: up 10%, then down 10%

Answer: £198

(b) £500: down 20%, then up 20%

Answer: £480

(c) £80: up 50%, then down 50%

Answer: £60

(d) £1,000: up 10%, then up 10%

Answer: £1,210

3 **Laptop Shop A takes 12% off a £600 laptop. Shop B takes £70 off the same laptop. Which shop is cheaper, and by how much? Do not use a calculator.**

Answer: Shop A, by £2

4 **A jacket costs £120. Shop A has 25% off. Shop B has one third off. Which shop gives the bigger discount? By how much? Do not use a calculator.**

Answer: Shop B, by £10

5 **A tank holds 600 litres. It is $\frac{2}{5}$ full. Then 30% of the water in the tank is used. How many litres of water are left in the tank?**

Answer: 168

6 In a class of 30 students, 40% are boys. Of the boys, 25% wear glasses.

(a) How many boys wear glasses?

Answer: 3

(b) What percentage of the whole class is this?

Answer: 10%

7 Dan has a £20 shirt. It is reduced by 10%. Then the sale price is reduced by a further 10%. Dan says, "So altogether the shirt is 20% off, and costs £16." Is he right? Show how you know.

Answer: No. It costs £16.20

8 A pair of shoes costs £90. The price is reduced by 20% in a sale. Jess then uses a voucher that takes a further 10% off the sale price. How much does Jess pay?

Answer: £64.80

9 Anna earns £30,000 a year and gets a 4% pay rise. Ben earns £28,000 a year and gets an 8% pay rise. Who earns more after the rises, and by how much? Do not use a calculator.

Answer: Anna, by £960

10 A test has 40 questions. 30% of the questions are on algebra and 25% are on geometry. The rest are on number. How many questions are on number?

Answer: 18

11 Show that an increase of 20% followed by a decrease of 20% is equivalent to an overall decrease of 4%.

Answer: 4% decrease

12 A is 20% more than B. B is 20% less than C. Is A more than C, less than C, or equal to C? Explain.

Answer: A is 4% less than C

Exercise 5P Mixed percentage problems (calculator) Calculator allowed

1 A holiday for a family costs £1,250. The family pays a 15% deposit, then pays the rest in 5 equal payments.

(a) Work out the deposit.

Answer: £187.50

(b) Work out the amount of each of the 5 payments.

Answer: £212.50

2 A boiler costs £480 before VAT. VAT at 20% is added. Gabi then gets a 5% discount on the price including VAT for paying early. How much does Gabi pay?

Answer: £547.20

3 Ravi invests £4,000 in Account A, which pays 3% simple interest per year for 5 years. Sam invests £4,000 in Account B, which pays 2.5% compound interest per year for 5 years. Who has more money at the end, and how much more?

Answer: Ravi, by £74.37

4 360 people are asked how they travel to work. 35% walk, $\frac{3}{8}$ drive, and the rest cycle. How many people cycle?

> **Answer:** 99

5 A shop buys a lamp for £25. It wants to make a profit of 36% on the cost price. Work out the selling price of the lamp.

> **Answer:** £34

6 A coat is reduced by 15% in a sale. The sale price is £51. What would the sale price have been if the coat had been reduced by 25% instead?

> **Answer:** £45

7 In a country, income tax is 20% on the first £37,700 of taxable income and 40% on all taxable income above £37,700. Work out the tax on a taxable income of £50,000.

> **Answer:** £12,460

8 A share price rises by 12% one week and falls by 12% the next week. Hannah says, "It is back to where it started." Is she right? Work out the overall percentage change.

> **Answer:** No. 1.44% decrease

9 A paint mix is 40% blue paint and the rest is yellow paint. There are 12 litres of blue paint in the mix.

(a) How many litres of paint are in the mix altogether?

> **Answer:** 30 litres

(b) How many litres of yellow paint are there?

> **Answer:** 18 litres

10 The price of a games console is increased by 25%. The shop wants to bring the price back to the original price. Show that it needs a decrease of 20%.

> **Answer:** 20% decrease

© Websink Prep UK. Free for classroom and home use; please do not resell. websink.site