

Foundation GCSE: Percentages Problems

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. In a class of 20 students, 4 are left-handed. What percentage of the class is left-handed?
2. A jacket priced at £50 is reduced by 20% in a sale. What is the sale price?
3. Tom earns £200 a week. He gets a 5% pay rise. How much does he earn per week now?
4. A shopkeeper buys a bicycle for £120 and sells it for a 30% profit. What is the selling price?
5. In a test scored out of 80, Sarah scores 60. What is her percentage score?
6. A phone battery drops from 100% to 15%. What percentage of the battery has been used?
7. A restaurant bill is £80 and you add a 12.5% tip. What is the total cost?
8. A town's population increases from 25,000 to 27,500. Calculate the percentage increase in population.
9. A sweater is on sale for £34 after a 15% discount. What was the original price of the sweater?
10. VAT is charged at 20%. If a laptop costs £480 excluding VAT, what is the total cost including VAT?
11. A bag contains red and blue counters. 40% of the counters are red. If there are 36 blue counters, how many counters are there in total?
12. A shoe shop holds a sale where all items are reduced by 25%. If a pair of boots costs £45 in the sale, what was their original price?
13. An item includes 20% VAT. If the total price paid is £180, what was the price before VAT?
14. In an election, Candidate *A* wins 55% of the votes, and Candidate *B* gets the rest. If Candidate *A* wins by a majority of 400 votes, how many total votes were cast?
15. A metal bar expands in length by 2% when heated. If its new length is 102 cm, what was its original length?
16. A shop sells an item for £120, making a 20% profit on the cost price. What was the shopkeeper's cost price?
17. A solution contains salt and water. If 150g of salt is mixed with 350g of water, what is the percentage concentration of salt in the solution?
18. John spends 30% of his monthly salary on rent, 25% on food, and saves the remaining £900. What is his total monthly salary?
19. Two successive discounts of 10% and 20% are applied to a £200 television. What is the final price of the television?
20. A store marks up an item by 40% above its cost price. During a sale, it is discounted by 20% off the retail price, yielding a profit of £24. Find the original cost price of the item.

Answers & Worked Solutions

1. 20%
 $\frac{4}{20} \times 100 = 20\%$.
2. £40
 $20\% \text{ of } 50 = 10, 50 - 10 = 40$.
3. £210
 $5\% \text{ of } 200 = 10, 200 + 10 = 210$.
4. £156
 $120 \times 1.30 = 156$.
5. 75%
 $\frac{60}{80} \times 100 = 75\%$.
6. 85%
 $100 - 15 = 85\%$.
7. £90
 $12.5\% \text{ of } 80 = 10, 80 + 10 = 90$.
8. 10%
Increase of 2,500 on 25,000 is $\frac{2500}{25000} = 10\%$.
9. £40
 $34 \div 0.85 = 40$.
10. £576
 $480 \times 1.20 = 576$.
11. 60 counters
Blue counters represent 60%. $60\% = 36 \implies 1\% = 0.6 \implies 100\% = 60$.
12. £60
 $45 \div 0.75 = 60$.
13. £150
 $180 \div 1.20 = 150$.
14. 4,000 votes
Candidate A has 55%, B has 45%. Difference is $10\% = 400 \implies 100\% = 4000$.
15. 100 cm
 $102 \div 1.02 = 100$.
16. £100
 $120 \div 1.20 = 100$.
17. 30%
Total mass = $150 + 350 = 500$. $\frac{150}{500} \times 100 = 30\%$.
18. £2,000
Spent 55%, saved 45%. $45\% = 900 \implies 1\% = 20 \implies 100\% = 2000$.
19. £144
 $200 \times 0.90 \times 0.80 = 144$.
20. £200
Retail = $1.40C$. Sale price = $1.40C \times 0.80 = 1.12C$. Profit = $0.12C = 24 \implies C = 200$.