Test answers - Decimals and percentages

Year: Year 7 · Duration: 45 minutes · /20

Answer to Question 1 (4 marks)

a. Write 14.6 as 14.60 so both numbers have two decimal places, then line up the decimal points: $14.60 - 8.75 =$**5.85**. Check by adding back: $5.85 + 8.75 = 14.60$. (1 mark)
b. Ignore the decimal points and work out $34 \times 6 = 204$. The numbers 3.4 and 0.6 have one decimal place each, two in total, so the answer is **2.04**. Estimate: $3 \times 0.6 \approx 2$. (1 mark)
c. Make the divisor a whole number by multiplying both numbers by 100 (1 mark): $7.2 \div 0.09 = 720 \div 9 =$**80** (1 mark).

Check (c): $80 \times 0.09 = 7.2$. Dividing by a number less than 1 gives an answer larger than 7.2, which makes sense.

Answer to Question 2 (4 marks)

a. Make the denominator 100 by multiplying top and bottom by 4: $\frac{7}{25} = \frac{28}{100}$. As a decimal this is **0.28** (1 mark) and as a percentage it is **28%** (1 mark).
b. Build 35% from easy pieces. 10% of £240 is £24, so 30% is $3 \times 24 = £72$. 5% is half of 10%, which is £12. Then $35\% = 72 + 12 =$**£84**. (1 mark)
c. An increase of 15% means we end with 115% of the original, so the multiplier is 1.15. Then $80 \times 1.15 =$**£92**. (1 mark)

Check (c) another way: 15% of £80 is £12, and $80 + 12 = 92$.

Answer to Question 3 (4 marks)

a. A 30% reduction leaves 70% of the price, so use the multiplier 0.7: $90 \times 0.7 =$ **£63**. (1 mark)
b. Increasing by 30% uses the multiplier 1.3: $63 \times 1.3 = 81.90$ (1 mark). The new price of £81.90 is **less than £90**. The 30% increase is calculated on £63, a smaller amount than the £90 used for the reduction, so it adds back only £18.90 instead of the £27 taken off (1 mark).
c. Write £63 as a fraction of £90 and convert: $\frac{63}{90} = 0.7 =$**70%**. (1 mark)

Overall the two changes give the multiplier $0.7 \times 1.3 = 0.91$, a 9% fall from the original price.

Answer to Question 4 (4 marks)

a. Percentages of the whole crowd add to 100%, so teachers and helpers make $100 - 35 - 45 = 20\%$ (1 mark). Then 20% of 480 is $480 \times 0.2 =$**96** people (1 mark).
b. Children: $480 \times 0.35 = 168$, who pay $168 \times £3 = £504$. Adults: $480 \times 0.45 = 216$, who pay $216 \times £5 = £1\,080$ (1 mark for both groups). Teachers and helpers pay nothing, so the ticket money is $504 + 1080 =$**£1 584** (1 mark).

Check the head count: $168 + 216 + 96 = 480$, the total attendance. A quick estimate also agrees: about 170 children at £3 is roughly £500, and about 220 adults at £5 is roughly £1 100.

Answer to Question 5 (4 marks)

a. Sam earns 4% of £500: $500 \times 0.04 =$**£20** per year (1 mark). Eva earns 5% of £400: $400 \times 0.05 =$**£20** per year (1 mark). Although Eva's rate is higher, her starting amount is smaller, so they earn exactly the same.
b. With simple interest the interest is worked out on the original amount only, so it is the same every year. Over 3 years each earns $3 \times 20 = £60$. Sam ends with $500 + 60 =$**£560** (1 mark) and Eva ends with $400 + 60 =$**£460** (1 mark).

Sam still has £100 more than Eva after 3 years, the same difference as at the start, because they add equal amounts of interest each year.