Test answers - Fractions, decimals and percentages

Year: Year 10 · Duration: 45 minutes · /20

Answer to Question 1 (4 marks)

a. $\frac{15}{24} + \frac{14}{24} = \frac{29}{24}$ or $1\frac{5}{24}$ (1 for common denominator, 1 for the answer) The lowest common denominator of 8 and 12 is 24. The answer is $\frac{29}{24} = 1\frac{5}{24}$.

b. $\frac{10}{3} \div \frac{5}{3} = \frac{10}{3} \times \frac{3}{5} =$ **2** (1 for turning into improper fractions and inverting, 1 for the answer) Change the mixed numbers into improper fractions, then multiply by the reciprocal of $\frac{5}{3}$. The answer is 2.

Check (b) by multiplying back: $2 \times 1\frac{2}{3} = 3\frac{1}{3}$, the number we started with.

Answer to Question 2 (4 marks)

a. $85 \times 1.12 =$ **£95.20** (1 for the multiplier, 1 for the answer) A 12% increase gives the multiplier 1.12. The new amount is £95.20.

b. Decrease $= 63$ (1). $\frac{63}{840} =$ **7.5%** (1) The decrease is $840 - 777 = 63$, and we divide by the original roll, 840. The percentage decrease is 7.5%.

A common error in (b) is to divide 63 by 777, the new roll, which gives about 8.1% and scores only the first mark. Check (a): 12% of £85 is £10.20.

Answer to Question 3 (4 marks)

a. $6500 \times 0.82 \times 0.88 =$ **£4690.40** (1 for the multipliers, 1 for the answer) An 18% fall gives the multiplier 0.82 and a 12% fall gives 0.88. The motorbike is worth £4690.40 after two years.

b. $0.82 \times 0.88 = 0.7216$ (1), so the decrease is **27.8%** (1) The bike keeps 72.16% of its value, so the overall decrease is $100 - 72.16 = 27.84$, which is 27.8% to 1 d.p.

Do not add the percentages: 30% is wrong.

Answer to Question 4 (4 marks)

a. $456 \div 1.2 =$ **£380** (1 for 120%, 1 for the answer) The price including VAT is 120% of the price before VAT, so we divide by 1.2. The price before VAT is £380.

b. $59.50 \div 0.7 =$ **£85** (1 for 70%, 1 for the answer) The sale price is 70% of the

original price, so we divide by 0.7. The original price was £85.

Taking 20% off £456 gives £364.80, which is wrong.

Answer to Question 5 (4 marks)

a. $100x = 36.3636\ldots$, $x = 0.3636\ldots$, subtract: $99x = 36$ (1), $x = \frac{36}{99} = \frac{4}{11}$ (1) Two digits repeat, so we multiply by 100 and subtract to remove the recurring part. Then divide 36 and 99 by 9.

b. $25\,000 \times 1.04^6 = 31\,633$, so **31 600** (1) 4% growth gives the multiplier 1.04, used 6 times. The population is about 31 600.

c. $1.04^{12} = 1.601$ gives $40\,026$; $1.04^{11} = 1.539$ gives $38\,490$. So **12 years** (1) Try powers of 1.04 until $25\,000 \times 1.04^n$ first passes 40 000. It takes 12 years.