



Percentages: Linking concepts **Solutions**



Recap: Multipliers

Write these percentages as equivalent decimals and work out the answers

- (a) 15% of 82kg = $0.15 \times 82 = 12.3\text{kg}$
- (b) 24% of 500g = $0.24 \times 500 = 120\text{g}$
- (c) 3% of 480cm = $0.03 \times 480 = 14.4\text{cm}$
- (d) 0.2% of £7000 = $0.002 \times 7000 = 14$

Percentage change (Increase / Decrease)

Write the appropriate multiplier and use it to solve the problem

- (a) Increase £6 by 12% = $1.12 \times 6 = £6.72$
- (b) Decrease 68kg by 11% = $0.89 \times 68 = 60.52$
- (c) Increase 450mm by 9% = $1.09 \times 450 = 490.5\text{mm}$
- (d) Decrease 90ml by 38% = $0.62 \times 90 = 55.8\text{ml}$

Using multipliers

$$\text{New amount} = \text{Original amount} \times \text{Percentage change multiplier}$$

$$\text{Percentage change multiplier} = \frac{\text{New amount}}{\text{Original amount}}$$

$$\text{Original amount} = \frac{\text{New amount}}{\text{Percentage change multiplier}}$$

Original amount

Reverse the calculation to find the original price.

- (a) Sale price: £67.20, after 20% discount
84
- (b) Value rose by 15% to £749.80
652
- (c) Mass increased by 4% to 949.52g
913
- (d) Runner was 11% slower on the second section, with a time of 72.98 seconds
65.7 (slower implies time increased)
- (e) The crowd attendance of 6955 was 7% better than last week
6500 people
- (f) There was 28% less sugar in the new recipe – it now has 40.32g
56g

Missing percentage

Find the multiplier and interpret it to find the percentage change to the nearest integer.

- (a) 150m increased to 165m
1.1 → 10% inc
- (b) 604 litres decreased to 320 litres
0.53 → 47% dec
- (c) 92p increased to £1.18
1.28 → 28% inc
- (d) 510kg increased to 600kg
1.18 → 18% inc
- (e) 65 minutes decreased to 63.7 minutes
0.98 → 2% dec
- (f) 5.8 million increased to 6.2 million
1.07 → 7% inc
- (g) £35000 depreciated to £31500
0.9 → 10% dec
- (h) \$965 increased to \$1302.75
1.35 → 35% inc