

RATIO AND DIRECT PROPORTION

Ratio and Proportion

Key Concepts

To calculate the **value** for a single item we can use the **unitary method**.

When working with best value in monetary terms we use:

$$\text{Price per unit} = \frac{\text{price}}{\text{quantity}}$$

In recipe terms we use:

$$\text{Weight per unit} = \frac{\text{weight}}{\text{quantity}}$$

If 20 apples weigh 600g. How much would 28 apples weigh?

$$600 \div 20 = 30\text{g} \longrightarrow \text{weight of 1 apple}$$

$$30 \times 28 = \mathbf{840\text{g}}$$

Box A has 8 fish fingers costing £1.40.

Box B has 20 fish fingers costing £ 3.40.

Which box is the better value?



$$A = \frac{\pounds 1.40}{8} = \pounds 0.175$$

$$B = \frac{\pounds 3.40}{20} = \pounds 0.17$$

Therefore Box B is better value as each fish finger costs less.

Examples

The recipe shows the ingredients needed to make 10 Flapjacks.
How much of each will be needed to make 25 flapjacks?

Ingredients for 10 Flapjacks

80 g rolled oats

60 g butter

30 ml golden syrup

36 g light brown sugar

Method 1: Unitary

$$80 \div 10 = 8 \qquad 30 \div 10 = 3$$

$$8 \times 25 = \mathbf{200\text{g}} \qquad 3 \times 25 = \mathbf{75\text{g}}$$

$$60 \div 10 = 6 \qquad 36 \div 10 = 3.6$$

$$6 \times 25 = \mathbf{150\text{g}} \qquad 3.6 \times 25 = \mathbf{90\text{g}}$$

Method 2: 5 flapjacks

$$80 \div 2 = 40 \qquad 30 \div 2 = 15$$

$$40 \times 5 = \mathbf{200\text{g}} \qquad 15 \times 5 = \mathbf{75\text{g}}$$

$$60 \div 2 = 30 \qquad 36 \div 2 = 18$$

$$30 \times 5 = \mathbf{150\text{g}} \qquad 18 \times 5 = \mathbf{90\text{g}}$$

Key Words

Unitary
Best Value
Proportion
Quantity

Ingredients to make 16 gingerbread men

180 g flour
40 g ginger
110 g butter
30 g sugar

1) How much will we need to make 24 gingerbread men?

2) Packet A has 10 toilet rolls costing £3.50. Packet B has 12 toilet rolls costing £3.60. Which is better value for money?

3) If 15 oranges weigh 300g. What will 25 oranges weigh?