

Multiplicative Change

Key Vocabulary

Direct Proportion — **Di/rect Pro/por/tion** - Two values that increase in the same ratio each time. You can scale up the quantities by multiplying.

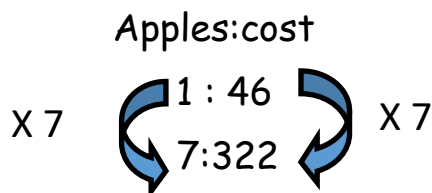
Similar Shapes — **Sim/i/lar Sh/apes**—They are enlargements where every length by been scaled up by the same amount.

Scale Factor — **Sc/ale F/ac/tor** What you multiply every side by to enlarge it.

Map Scale — **M/ap Sc/ale** The ratio between a distance on a map and the real life distance.

Direct Proportion

1 apple costs 46p, how much do 7 apples cost?



So 7 apples cost £3.22

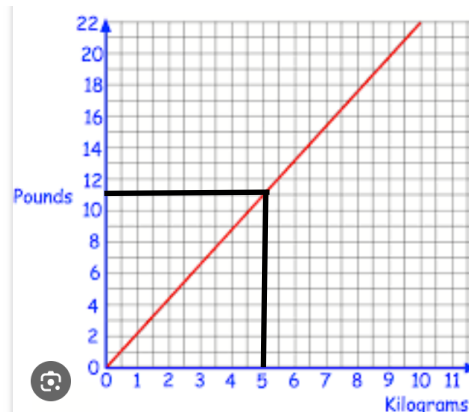
Direct Proportion

6 pens cost £1.38, how much do 4 pens cost?

$$1 \text{ pen} = £1.38 \div 6 = £0.23$$

$$4 \text{ pens} = £0.23 \times 4 = £0.92$$

Conversion Graphs



Direct proportion graphs always go through the origin (0,0)

To convert between units, trace up from one unit until you reach the line, then trace back to the other axis.

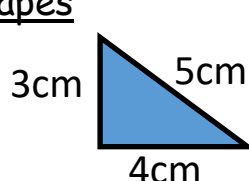
Currency Conversions

$$\begin{matrix} \curvearrowright & 1 \text{ Euro} = £0.86 \\ \times 15 & 15 \text{ Euros} = £12.90 \end{matrix}$$

$$\begin{matrix} \curvearrowright & £5 = \$6.35 \\ \div 5 & £1 = \$1.27 \end{matrix}$$

$$\begin{matrix} \curvearrowright & £4 = £5.08 \\ \times 4 & \end{matrix}$$

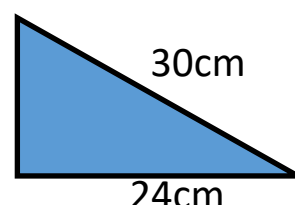
Similar Shapes



$\times 6$



18cm



Scale factor

6