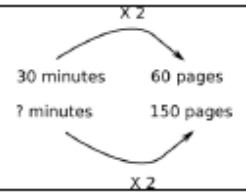
Maths *Knowledge Organiser*

Scaling

Proportion	Proportion compares the size of **one part** to the size of the **whole**. Usually written as a fraction.	In a class with 13 boys and 9 girls, the proportion of boys is $\frac{13}{22}$ and the proportion of girls is $\frac{9}{22}$
Proportional Reasoning	Comparing two things using **multiplicative reasoning** and applying this to a new situation. Identify one multiplicative link and use this to find missing quantities.	
Unitary Method	Finding the **value of a single unit** and then finding the necessary value by **multiplying** the single unit value.	3 cakes require 450g of sugar to make. Find how much sugar is needed to make 5 cakes. 3 cakes = 450g So 1 cake = 150g (÷ by 3) So 5 cakes = 750 g (x by 5)
Best Buys (using Unitary Method)	Find the **unit cost** by **dividing the price by the quantity**. The **lowest** number is the best value.	8 cakes for £1.28 → 16p each (÷by 8) 13 cakes for £2.05 → 15.8p each (÷by 13) Pack of 13 cakes is best value.
Best Buys (using HCF or LCM)	Find the cost of the HCF of both to determine which is best value. Find the cost of the LCM of both to determine which is best value.	***6 pints** of milk for £1.80* ***4 pints** of milk for £1.10* **HCF of 6 and 4 is 2**, so find the cost of 2 pints in each deal. *6 pints: £1.80 ÷ 3 → 2 pints is worth £0.60* *4 pints: £1.10 ÷ 2 → 2 pints is worth £0.55* **LCM of 6 and 4 is 12**, so find the cost of 12 pints in each deal. *6 pints: £1.80 × 2 → 12 pints is worth £3.60* *4 pints: £1.10 × 3 → 12 pints is worth £3.30* So the 4 pints bottle is best value in either situation.
Exchange Rates	We use exchange rates to turn pounds in to a foreign currency.	Turning Pounds in to a Foreign Currency: $number\ of\ £ \times exchange\ rate = foreign\ currency$ Turning Foreign Currency back in to Pounds $foreign\ currency \div exchange\ rate = number\ of\ £$

Measures

Metric System	A system of measures based on: - the metre for length - the kilogram for mass - the second for time **Length: mm, cm, m, km** **Mass: mg, g, kg** **Volume: ml, cl, l**	$1 kilometres = 1000\ metres$ $1\ metre = 100\ centimetres$ $1\ centimetre = 10\ millimetres$ $1\ kilogram = 1000\ grams$ $1\ gram = 1000\ millilires$ $1\ litre = 1000\ millilitres$ $1\ litre = 100\ centilitres$ $1\ centilitre = 10\ millilitres$
Imperial System	A system of weights and measures originally developed in England, usually based on human quantities **Length: inch, foot, yard, miles** **Mass: lb, ounce, stone** **Volume: pint, gallon**	$1lb = 16\ ounces$ $1\ foot = 12\ inches$ $1\ gallon = 8\ pints$
Metric and Imperial Units	Use the **unitary method** to convert between metric and imperial units.	$5\ miles \approx 8\ kilometres$ $1\ gallon \approx 4.5\ litres$ $2.2\ pounds \approx 1\ kilogram$ $1\ inch = 2.5\ centimetres$
Speed, Distance, Time	**Speed = Distance ÷ Time** **Distance = Speed x Time** **Time = Distance ÷ Speed**  Remember the correct units.	Speed = 4mph Time = 2 hours Find the Distance. $D = S \times T = 4 \times 2 = 8\ miles$