YR6 Knowledge Organiser - Measure

Key Concepts

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to 3 decimal places.
- Convert between miles and kilometres.

Key Vocabulary

- metric / imperial
- length / mass / volume / capacity
- mm / cm / m / km
- miles
- inches / foot
- grams / kilograms / tonnes
- ounces / pounds / stone
- litres / millilitres
- gallons / pints
- estimate / approximate
- convert

Metric Measures

We use different metric measures for length, mass and capacity. Remember, volume and capacity are two different things.

"Capacity is the amount an object is able to contain. Volume is the amount we actually have in the object."

We must be able to select the most appropriate unit of measurement to measure different items.

To measure the length of a pencil, we use cm.

To measure the length of a classroom, we use m.

To measure the weight of a pen, we use g.

To measure the weight of a cow, we use kg.

Once we understand how to select the best unit of measurement, we can begin to estimate measures.

"I estimate that the glass holds approximately 250ml of water."

We can also identify measurements that cannot be correct. E.g. the glass does not hold 250 litres.

Convert Metric Measures

We can use our knowledge of multiplying and dividing by 10, 100 and 1,000 to convert between units of length, mass and capacity.

"An elephant at the zoo weighs 5.007 tonnes. If there are 1,000 kilograms in 1 tonne, how much does the elephant weigh in kilograms?"

We can use a place value chart and apply our understanding of using 0 as a place holder.

$5.007t \times 1,000 = 5,007kg$

1,000s	100s	10s	1s	.	0.1s	0.01s	0.001s
			5		0	0	7
5	**0**	**0**	**7**				

In addition to converting from larger units of measure to smaller units, we can also convert from smaller units to larger units.

The length of a swimming pool is 25m

$25m \div 1,000 = 0.025km$

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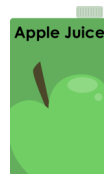
Calculate with Metric Measures

Now that we can convert between metric measures, we can apply our skills to solve measurement problems.

"A carton contains 350ml of juice. How many litres of juice are there in a box of 18 cartons?"

> 350ml × 18 = 6,300ml
>
> 6,300ml ÷ 1,000ml = 6.3 litres

"I used 120g of carrots, ½kg of onion and 0.105kg of celery in a soup recipe. What is the total mass of the vegetables in grams?"

First, we should convert the measurements of the onion and celery to grams.

> ½kg = 500g
>
> 0.105g × 1,000 = 105g

Now, we can add the measurements together.

> 120g + 500g + 105g = 725g
>
> The total mass of the vegetables is 725g.

Miles and Kilometres

The symbol ≈ means 'is approximately equal to'. We use this symbol when comparing miles and kilometres.

> 5 miles ≈ 8 kilometres

We can use this fact to find approximate conversions from miles to km and km to miles.
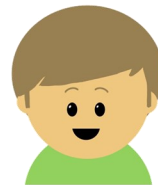
> **How many km are there in 20 miles?**
>
> 20 ÷ 5 = 4
>
> The number of miles is 4 times greater, so we need to make the km 4 times greater.
>
> 8 × 4 = 32
>
> 20 miles ≈ 32 kilometres

We can apply our understanding to solve problems.

"In the UAE, the speed limit in some residential areas is 25 miles per hour. The maximum speed limit on the motorway is 160 km per hour. What is the difference in miles per hour?"

> 25 miles ≈ 40 kilometres
>
> 160 - 40 = 120km per hour.

Imperial Measures

In the UK, we use imperial measures to calculate our weight and height. We also use imperial measures to calculate large distances.

> 2.5cm ≈ 1 inch   1 foot = 12 inches

"I am 3 foot and 9 inches tall. 3 × 12 = 36 and 36 + 9 = 45 so I am 45 inches tall. 2.5 × 45 = 112.5 so I am approximately 112.5cm tall."

> 1 pound (lb) = 16 ounces   1 stone = 14lbs

"I weigh 70lbs. 70 ÷ 14 = 5 so I weigh 5 stone. To work out my weight in ounces, I can multiply 70lbs by 16 which is 1,120 ounces."

We also use imperial measures to calculate large capacities

> 1 gallon = 8 pints

> A soft drinks machine holds 96 pints.
>
> 96 ÷ 8 = 12
>
> The soft drinks machine holds 12 gallons.