

YR3 Knowledge Organiser - Length, Mass and Capacity

Key Concepts

- Measure, compare, add and subtract: lengths (m / cm / mm); mass (kg / g); volume / capacity (l / ml)

Key Vocabulary

- length
- m / cm / mm
- mass
- kg / g
- volume / capacity
- l / ml
- convert
- equivalent



Length

Different equipment can be used to measure lengths. We use rulers, metre sticks, measuring tapes and trundle wheels depending on the length we wish to measure.

We also use different units of measure (millimetres, centimetres and metres) depending on the object we are measuring.

fingernail

millimetres

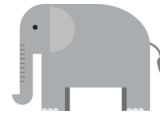
pencil

centimetres

door

metres

There are 100cm in 1m. We can use our knowledge of partitioning to convert cm to m and vice versa.



The elephant is 310cm tall.
 $310\text{cm} = 300\text{cm} + 10\text{cm}$
 $300 \div 100 = 3$
 The elephant is 3m 10cm tall.

The giraffe is 5m 40cm.
 $5 \times 100 = 500$
 $500\text{cm} + 40\text{cm} = 540\text{cm}$
 The giraffe is 540cm.



There are 10mm in 1cm. We can use our knowledge of partitioning to convert cm to m and vice versa.



The beetle is 23mm long.
 $23\text{mm} = 20\text{mm} + 3\text{mm}$
 $20 \div 10 = 2$
 The beetle is 2cm 3mm long.

The mouse is 7cm 9mm.
 $7 \times 10 = 70$
 $70\text{mm} + 9\text{mm} = 79\text{mm}$
 The mouse is 79mm.



We can compare measurements that use different units of measuring using these conversion skills.

6m 8cm

607cm

6m 95mm

First, we need to convert them to the same units of measure, then we can order them from largest to smallest.

6m 90mm
 (609cm)

6m 8cm
 (608cm)

607cm

We can also add and subtract measurements that use different units of measuring using these conversion skills.



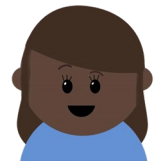
"I am playing a game of mini golf. First, I hit the ball 2m 14cm then on my second try, I hit the ball 205cm."

$205\text{cm} = 2\text{m } 5\text{cm}$

$2\text{m} + 2\text{m} = 4\text{m}$ $14\text{cm} + 5\text{cm} = 19\text{cm}$

Millie hit the ball 4m 19cm in total.

"I am 128cm tall and my little sister is 1m 7cm tall."



$128\text{cm} = 1\text{m } 28\text{cm}$

$1\text{m } 28\text{cm} - 1\text{m } 7\text{cm} = 21\text{cm}$

Anita is 21cm taller than her sister.



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Mass

We can measure mass using scales which show weight in kilograms and grams.



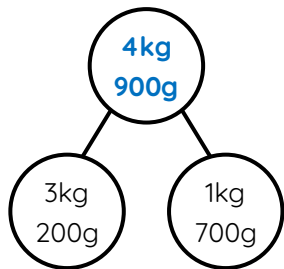
The rice weighs 1kg and 400g.

Once we can read scales, we can compare mass. It is important to note that there are 1,000g in 1kg so kilograms are a larger unit of measure than grams.

$$800g < 8kg$$

$$5kg\ 250g > 5kg\ 200g$$

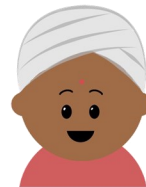
We can use a range of written and mental methods to add and subtract mass. Our knowledge of partitioning can also help with these calculations.



$$3kg + 1kg = 4kg$$

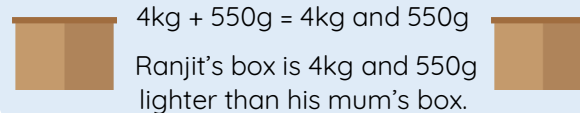
$$200g + 700g = 900g$$

$$4kg + 900g = 4kg\ and\ 900g$$



"I am helping my mum to carry some boxes. My box weighs 3kg 250g and my mum's box weighs 7kg 800g. We can use subtraction to work out the difference in mass."

$$7kg - 3kg = 4kg\ and\ 800g - 250g = 550g$$



$$4kg + 550g = 4kg\ and\ 550g$$

Ranjit's box is 4kg and 550g lighter than his mum's box.

Volume / Capacity

We can measure capacity using scales which show litres and millilitres. We can use our place value skills to help read and interpret scales.



The jug contains 1l and 750ml

Once we can read scales, we can compare capacity. It is important to note that there are 1,000ml in 1l so litres are a larger unit of measure than millilitres.

"If my bottle contains 1l and 500ml of juice and my brother's contains 900ml, my bottle is more full than his."



We can use a range of written and mental methods to add and subtract capacity. Our knowledge of partitioning can also help.

Fruity Mocktail Recipe

(serves 8)

- 1l and 200ml mango juice
- 1l and 350ml pineapple juice
- 1l and 125ml sparkling water

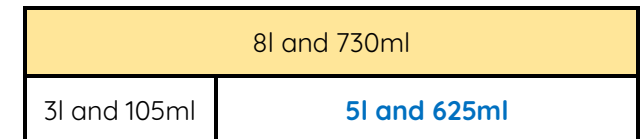


How much liquid is used in the recipe?

$$1l + 1l + 1l = 3l\ and\ 200ml + 350ml + 125ml = 675ml$$

$$3l + 675ml = 3l\ and\ 675ml$$

Bar models can help us to visualise calculations.



$$8l - 3l = 5l\ and\ 730ml - 105ml = 625ml$$

$$5l + 625ml = 5l\ and\ 625ml$$

Other methods, such as column addition / subtraction and the use of concrete resources to represent litres and millilitres can support these calculations further.

