



Measurement

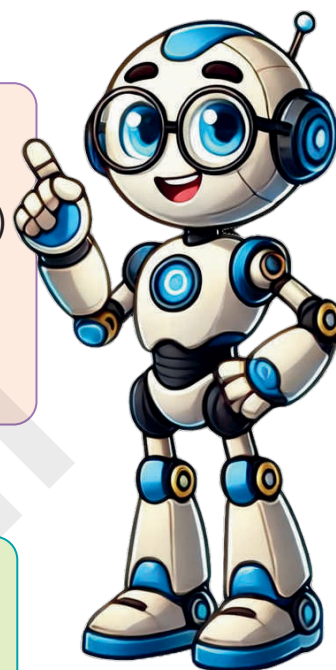
We'll cover the following key points:

- Non-standard Units (Body Parts)
- Standard Unit of Length
- Addition and Subtraction of Length
- Measurement of Weight
- Addition (Kilogram and Gram)
- Measurement of Capacity
- Addition and Subtraction (Litre and Millilitre)

Do you Remember fundamental concept in previous class:

In class 1st we learnt

- Measurement of Length
- Measurement of Weight



Hi, I'm EeeBee



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scanning
the QR code.

Learning Outcomes

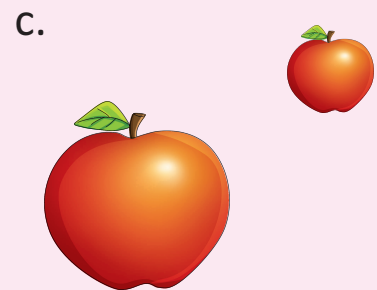
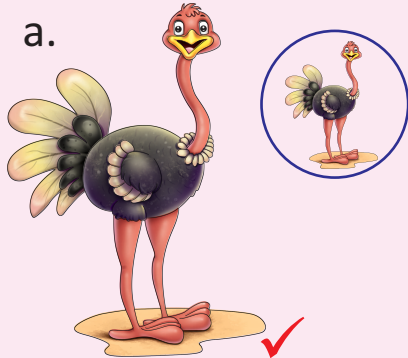
By the end of this chapter, students will be able to:

- Use body parts (like hands, feet, or steps) as non-standard units to measure length.
- Understand and use standard units of length, like centimeters (cm) and meters (m).
- Add and subtract lengths using standard units (e.g., $5\text{ cm} + 3\text{ cm} = 8\text{ cm}$).
- Understand how to measure the weight of objects using kilograms (kg) and grams (g).
- Add and subtract weights in kilograms and grams (e.g., $3\text{ kg} + 200\text{ g} = 3.2\text{ kg}$).
- Learn to measure the capacity of containers using liters (L) and milliliters (mL).
- Add and subtract capacity measurements using liters and milliliters (e.g., $2\text{ L} + 500\text{ mL} = 2.5\text{ L}$).
- Compare the size, weight, and capacity of objects to find which is bigger or smaller.

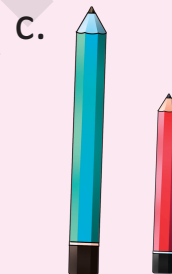
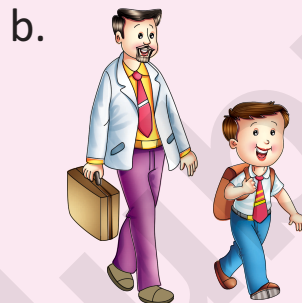


Warm Up

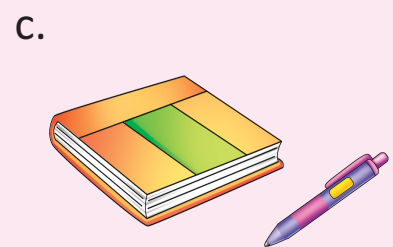
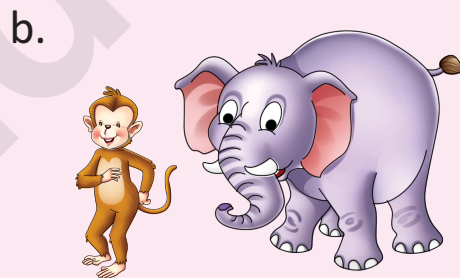
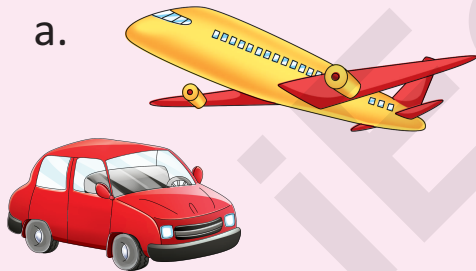
1. Tick (✓) the one that is near. Circle (○) the one that is far away.
One has been done for you.



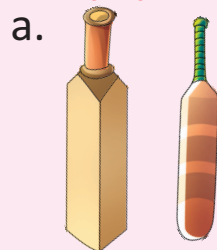
2. Tick (✓) the taller. Circle (○) the shorter.



3. Tick (✓) the heavier. Circle (○) the lighter.



4. Tick (✓) the thicker. Circle (○) the thinner.



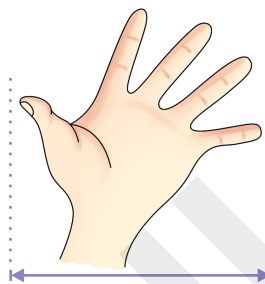
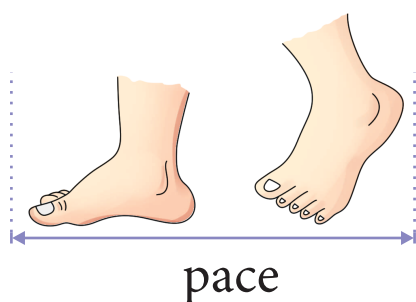
Non-standard units for Measuring Length

Length is the distance from one end of an object to the other end.

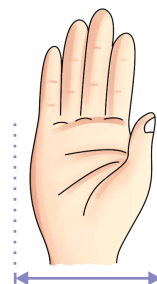
In the olden days, different parts of the human body were used to measure the length. These are non-standard units of length.

Non-standard Units (Body Parts)

Body parts such as fingers, hand span etc. are non-standard units of measuring length, as they differ from person to person.



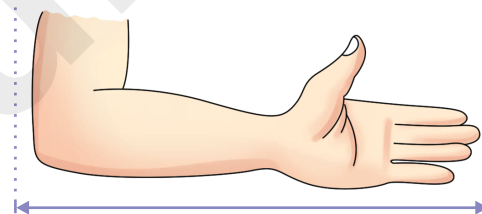
hand span



palm



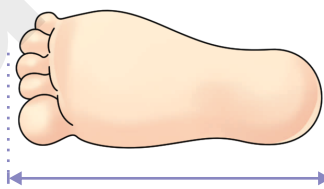
digit



cubit



arm span



foot span

If two persons measure the length of an object using body parts, they get different answers.

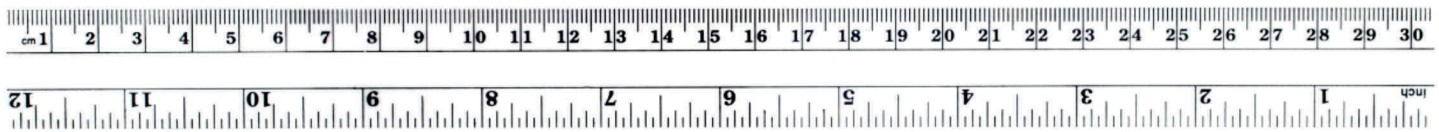
Note :

- The length of the tip of the middle finger to elbow is a **cubit**.
- The length of thumb to the little finger is a **span**.
- The measure of foot from longest toe to the heel is a **footspan**.
- The length of one step while walking is a **pace**.



Standard Unit of Length

We usually measure the length of an object using a metre scale or a metre rod.



Metre scale

Metre is the standard unit of length.

We use this unit to measure the length of an object and the distance between two places.

For shorter/smaller objects, we use smaller unit of length called **centimetre**.

1 metre = 100 centimetres

We denote it as $1\text{ m} = 100\text{ cm}$.

Example



The length of the pencil is 11 cm.

The length of the pen is 9 cm.

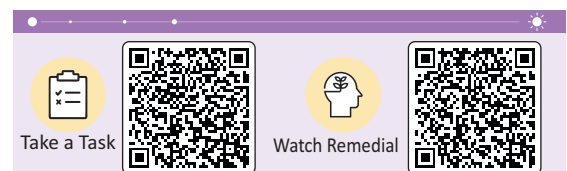
The length of the eraser is 3 cm.

Addition and Subtraction of Length

Just like other numbers we can add and subtract **m** or **cm**.

Addition of Length

To add lengths, arrange them in the correct columns of units and then add separately.



Example : Add 4 m 32 cm and 2 m 11 cm.

Solution :

Step 1 : Add the centimetres column.

$$32 + 11 = 43 \text{ centimetres}$$

Write 43 in the centimetres column.

Step 2 : Add the metres column.

$$4 + 2 = 6 \text{ metres}$$

Write 6 in the metres column.

$$\text{Thus, } 4 \text{ m } 32 \text{ cm} + 2 \text{ m } 11 \text{ cm} = 6 \text{ m } 43 \text{ cm}$$

	m	cm
	4	32
+	2	11
	6	43

Subtraction of Length

To subtract lengths, arrange them in the correct columns of units and then subtract separately.

Example : Subtract 42 m 35 cm from 88 m 96 cm.

Solution :

Step 1 : Subtract the centimetres column.

$$96 - 35 = 61 \text{ centimetres}$$

Write 61 in the centimetres column.

Step 2 : Subtract the metres column.

$$88 - 42 = 46 \text{ metres}$$

Write 46 metres in the metres column.

$$\text{Thus } 88 \text{ m } 96 \text{ cm} - 42 \text{ m } 35 \text{ cm} = 46 \text{ m } 61 \text{ cm}$$

	m	cm
	88	96
-	42	35
	46	61



Exercise 8.1

1. Add. One has been done for you.

(a)	m	cm
	50	32
+	15	45
	65	77

Ans. 65m 77cm

(b)	m	cm
	165	67
+	22	32

Ans. _____

(c)	m	cm
	175	28
+	30	97

Ans. _____

$$\begin{array}{r} \text{(d)} \quad \text{m} \quad \text{cm} \\ 23 \quad 35 \\ + 25 \quad 10 \\ \hline \hline \end{array}$$

Ans. _____

$$\begin{array}{r} \text{(e)} \quad \text{m} \quad \text{cm} \\ 75 \quad 35 \\ + 42 \quad 05 \\ \hline \hline \end{array}$$

Ans. _____

$$\begin{array}{r} \text{(f)} \quad \text{m} \quad \text{cm} \\ 118 \quad 97 \\ + 15 \quad 85 \\ \hline \hline \end{array}$$

Ans. _____

2. Subtraction. One has been done for you.

$$\begin{array}{r} \text{(a)} \quad \text{m} \quad \text{cm} \\ 67 \quad 57 \\ - 23 \quad 12 \\ \hline 44 \quad 45 \end{array}$$

Ans. 44 m 45 cm

$$\begin{array}{r} \text{(b)} \quad \text{m} \quad \text{cm} \\ 199 \quad 65 \\ - 55 \quad 03 \\ \hline \hline \end{array}$$

Ans. _____

$$\begin{array}{r} \text{(c)} \quad \text{m} \quad \text{cm} \\ 192 \quad 75 \\ - 81 \quad 63 \\ \hline \hline \end{array}$$

Ans. _____

$$\begin{array}{r} \text{(d)} \quad \text{m} \quad \text{cm} \\ 85 \quad 92 \\ - 52 \quad 32 \\ \hline \hline \end{array}$$

Ans. _____

$$\begin{array}{r} \text{(e)} \quad \text{m} \quad \text{cm} \\ 83 \quad 75 \\ - 12 \quad 65 \\ \hline \hline \end{array}$$

Ans. _____

$$\begin{array}{r} \text{(f)} \quad \text{m} \quad \text{cm} \\ 95 \quad 99\text{E} \\ - 83 \quad 66 \\ \hline \hline \end{array}$$

Ans. _____

Measurement of Weight

We measure the mass or weight of an object in **Gram**.

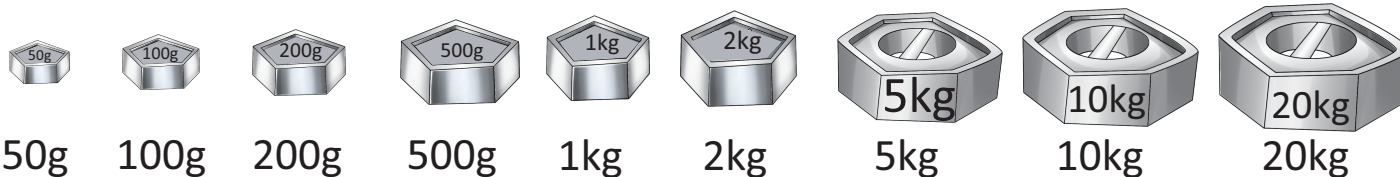
Gram is the smaller unit of weight.

For heavy objects, we use bigger unit called **Kilogram**.

1000 grams = 1 kilogram



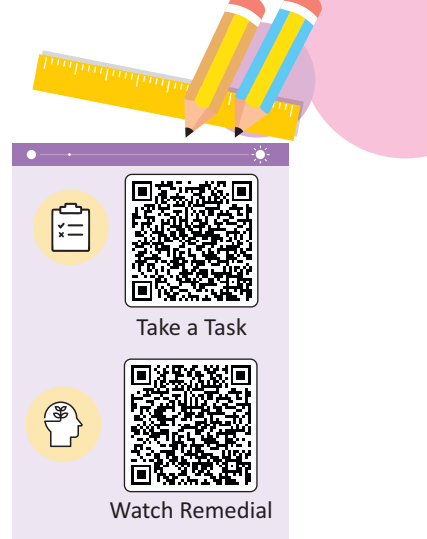
The commonly used weights are given below:



For gram, we write '**g**' in the short form.

For kilogram, we write '**kg**' in the short form.

Addition (Kilogram and Gram)



Addition of weight

To add weights, arrange them in the correct columns of units and then add separately.

Example 1 : Add 23 kg 342 g and 42 kg 235 g

Solution :

Step 1 : Add the grams column.

$$342 + 235 = 577 \text{ grams}$$

Write 577 in the grams column.

Step 2 : Add the kilograms column.

$$23 + 42 = 65 \text{ kilograms}$$

Write 65 in the kilograms column.

$$\text{Thus, } 23 \text{ kg } 342 \text{ g} + 42 \text{ kg } 235 \text{ g} = 65 \text{ kg } 577 \text{ g}$$

kg	g
23	342
+	42
65	577

Subtraction of weight

To subtract weights, arrange them in the correct columns of units and then subtract separately.

Example 2 : Subtract 21 kg 254 g from 88 kg 679 g.

Solution :

Step 1 : Subtract the grams column.

$$679 - 254 = 425 \text{ grams}$$

Write 425 in the grams column.

Step 2 : Subtract the kilograms column.

$$88 - 21 = 67 \text{ kilograms}$$

Write 67 in the kilograms column.

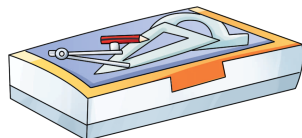
$$\text{Thus, } 88 \text{ kg } 679 \text{ g} - 21 \text{ kg } 254 \text{ g} = 67 \text{ kg } 425 \text{ g}$$

kg	g
88	679
-	21
67	425



Exercise 8.2

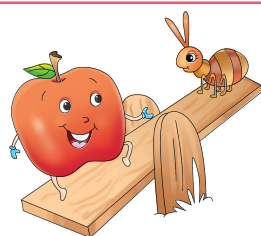
1. Fill in the blanks. One has been done for you.



The **geometry box** is heavier.



The _____ is heavier.



_____ is lighter.



The _____ is heavier.

2. Add the following. One has been done for you.

$$\begin{array}{r} \text{(a)} \quad \overset{1}{4} \ 5 \ 0 \ \text{kg} \\ + \quad 3 \ 2 \ 6 \ \text{kg} \\ + \quad \quad 4 \ 0 \ \text{kg} \\ \hline 8 \ 1 \ 6 \ \text{kg} \end{array}$$

$$\begin{array}{r} \text{(b)} \quad 1 \ 1 \ 7 \ \text{kg} \\ + \quad 2 \ 5 \ 3 \ \text{kg} \\ + \quad \quad 3 \ 5 \ \text{kg} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(c)} \quad 6 \ 7 \ 0 \ \text{g} \\ + \quad \quad 5 \ 0 \ \text{g} \\ + \quad \quad 3 \ 0 \ \text{g} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(d)} \quad 3 \ 2 \ 5 \ \text{kg} \\ + \quad 1 \ 8 \ 5 \ \text{kg} \\ + \quad \quad 9 \ 5 \ \text{kg} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(e)} \quad 4 \ 1 \ 8 \ \text{g} \\ + \quad 3 \ 5 \ 0 \ \text{g} \\ + \quad \quad 7 \ 5 \ \text{g} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(f)} \quad 3 \ 5 \ 0 \ \text{g} \\ + \quad 4 \ 0 \ 0 \ \text{g} \\ + \quad 7 \ 5 \ 0 \ \text{g} \\ \hline \end{array}$$

3. Subtract the following:

$$\begin{array}{r} \text{(a)} \quad 1 \ 9 \ 6 \ \text{kg} \\ - \quad \quad 3 \ 5 \ \text{kg} \\ \hline \end{array}$$

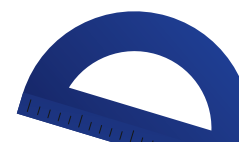
$$\begin{array}{r} \text{(b)} \quad 8 \ 5 \ 0 \ \text{g} \\ - \quad 2 \ 4 \ 0 \ \text{g} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(c)} \quad 5 \ 8 \ 0 \ \text{g} \\ - \quad 2 \ 3 \ 5 \ \text{g} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(d)} \quad 2 \ 8 \ 0 \ \text{g} \\ - \quad 1 \ 5 \ 0 \ \text{g} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(e)} \quad 3 \ 7 \ 5 \ \text{g} \\ - \quad 2 \ 5 \ 0 \ \text{g} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(f)} \quad 3 \ 2 \ 5 \ \text{kg} \\ - \quad 2 \ 5 \ 0 \ \text{kg} \\ \hline \end{array}$$



(g) 8 4 0 kg

– 2 7 5 kg

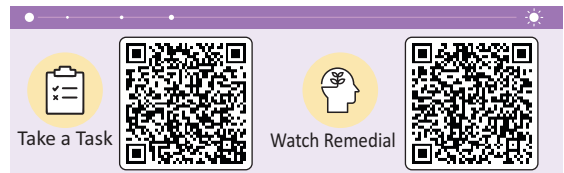
(h) 9 4 5 kg

– 6 7 0 kg

(i) 8 3 5 g

– 6 3 0 g

Measurement of Capacity



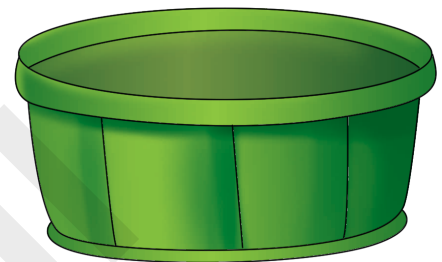
Which container holds more water?

The capacity of a tub is greater than that of a mug.

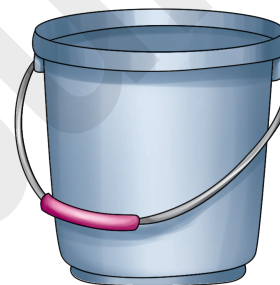
A bucket is used to carry water or any other liquid.

For measuring liquids, we need a unit.

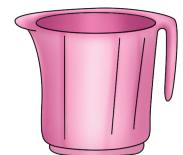
We measure liquids in **litres**. The capacity of any vessel is expressed in litres. The short form of litre is '*l*'.



Tub



Bucket



Mug



10 litres



5 litres



2 litres



1 liter

To measure smaller capacities, we use smaller unit called **millilitre**. The short form of millilitre is '*ml*'.

1 litre = 1000 millilitre



500 millilitres



200 millilitres



100 millilitres



50 millilitres

Addition and Subtraction (Litre and Millilitre)

Addition of capacity

To add the given capacities, arrange them in the correct columns of units and then add separately.

Example 1 : Add 25 L 253 mL and 61 L 342 mL

Solution :

Step 1 : Add the mL column.

$$253 + 342 = 595 \text{ mL}$$

Write 595 in the mL column.

Step 2 : Add the litres column.

$$25 + 61 = 86 \text{ Litres}$$

Write 86 in the Litres column

$$\text{Thus, } 25 \text{ L } 253 \text{ mL} + 61 \text{ L } 342 \text{ mL} = 86 \text{ L } 595 \text{ mL}$$



L	mL
25	253
61	342
86	595

+

Subtraction of capacity

To subtract the given capacities, arrange them in the correct columns of units and then subtract separately.

Example 2 : Subtract 25 L 234 from 65 L 879 mL

Solution :

Step 1 : Subtract the mL column.

$$879 - 234 = 645 \text{ mL}$$

Write 645 in the mL column.

Step 2 : Subtract the litre column.

$$65 - 25 = 40 \text{ litre}$$

Write 40 in the litre column.

$$\text{Thus, } 65 \text{ L } 879 \text{ mL} - 25 \text{ L } 234 \text{ mL} = 40 \text{ L } 645 \text{ mL}$$

L	mL
65	879
25	234
40	645

-



Exercise 8.3

1. Add the following. One has been done for you.

1 1

$$\begin{array}{r} \text{(a)} \quad 236 \text{ l} \\ + \quad 185 \text{ l} \\ \hline 421 \text{ l} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(b)} \quad 635 \text{ l} \\ + \quad 188 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(c)} \quad 450 \text{ ml} \\ + \quad 350 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(d)} \quad 435 \text{ l} \\ + \quad 368 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(e)} \quad 875 \text{ l} \\ + \quad 129 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(f)} \quad 950 \text{ ml} \\ + \quad 250 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(g)} \quad 368 \text{ ml} \\ + \quad 750 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(h)} \quad 225 \text{ ml} \\ + \quad 350 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(i)} \quad 500 \text{ ml} \\ + \quad 250 \text{ ml} \\ \hline \\ \hline \end{array}$$

2. Subtract the following. One has been done for you.

8 14 10

$$\begin{array}{r} \text{(a)} \quad \cancel{9} \cancel{5} \cancel{0} \text{ l} \\ - \quad 286 \text{ l} \\ \hline 664 \text{ l} \\ \hline \end{array}$$

$$\begin{array}{r} \text{(b)} \quad 320 \text{ l} \\ - \quad 185 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(c)} \quad 780 \text{ l} \\ - \quad 390 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(d)} \quad 385 \text{ l} \\ - \quad 270 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(e)} \quad 690 \text{ l} \\ - \quad 520 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(f)} \quad 335 \text{ l} \\ - \quad 196 \text{ l} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(g)} \quad 325 \text{ ml} \\ - \quad 193 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(h)} \quad 555 \text{ ml} \\ - \quad 385 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} \text{(i)} \quad 825 \text{ ml} \\ - \quad 550 \text{ ml} \\ \hline \\ \hline \end{array}$$



1. Tick (✓) the correct answer.

(a) 1 metre = _____ centimeters.

(i) 10

☐

(ii) 100

☐

(iii) 1000

☐

(b) 1 kilogram = _____ grams.

(i) 10

☐

(ii) 100

☐

(iii) 1000

☐

(c) 1 litre = _____ milliliters.

(i) 10

☐

(ii) 100

☐

(iii) 1000

☐

(d) $156 \text{ kg} + 135 \text{ kg}$ _____ kg.

(i) 291

☐

(ii) 191

☐

(iii) 91

☐

2. Fill in the blanks.

(a) $172 \text{ kg} + 522 \text{ kg} =$ _____ kg.

(b) $1000 \text{ l} -$ _____ $\text{l} = 144 \text{ l}.$

(c) $1000 \text{ cm} =$ _____ m.

(d) $990 \text{ cm} - 420 \text{ cm} =$ _____ cm.



3. Match the following:

(a) Capacity



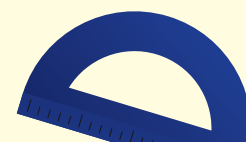
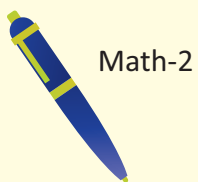
(b) Weight



(c) Length



(d) Non standard unit



Math Puzzle



Solve the puzzle

1. What is standard unit of length?
2. What is standard unit of capacity?
3. What is standard unit of weight?
4. What is smaller unit of weight?

K	P	A	O	K	D	I
I	M	S	G	R	A	M
L	I	T	R	E	C	H
O	B	H	A	A	S	T
G	R	O	N	M	H	U
R	I	P	R	A	I	N
A	L	K	M	A	E	I
M	E	T	R	E	A	T



Maths Lab Activity

You Will Need :

Soap, cake, washing powder, chocolate, a packet of salt or other things with the weight mentioned on the packet.

Steps —

1. The students can work in pairs.
2. Student A holds an object in her/his hand. How much does it weigh? This is the estimated weight.
3. Student B reads the weight of the object on the packet. This is the actual weight.
4. They take turns to guess the weight of different objects.



Collaboration



Critical Thinking

The height of tree A is 6 m. What do you think is the height of:

tree B?	3 m	3 cm
tree C?	20 m	20 cm
plant D?	10 m	10 cm

