

Measurement

- Non-standard units of measurement in daily life
- Importance of standard units of measurement
- Standard units to measure length, mass and capacity

What Learners Will Achieve

- Relationship between bigger and smaller units of measurement
- Application of length, mass and capacity in real life

Warm-up

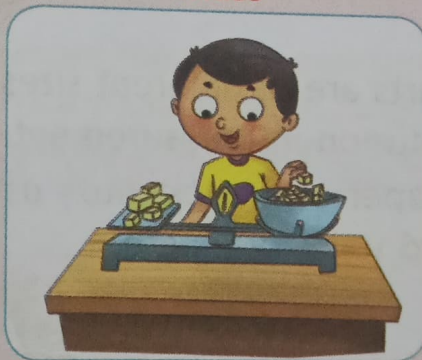
What we already know

- Understanding the terms length, mass and capacity.
- Understanding non-standard and traditional units of measurement.
- Basic arithmetic operations.

Length



Mass



Capacity



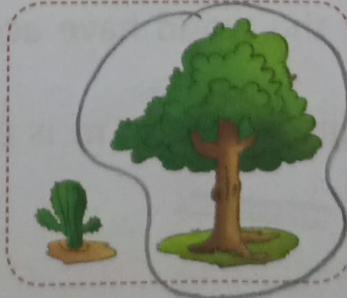
Warm-up Exercise

1. Circle the object that has more length.

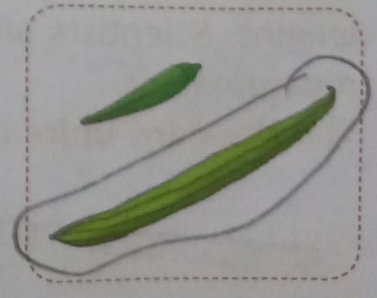
(a)



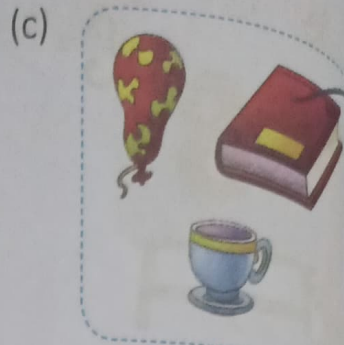
(b)



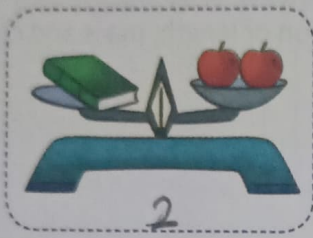
(c)



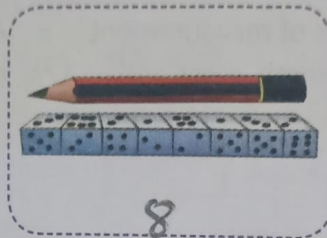
2. Tick (✓) the object that weighs the most.



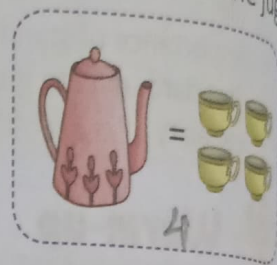
3. (a) How many apples heavy is the book?



(b) How many dice long is the pencil?



(c) How many cupfills the capacity of the jug?



Length

Ishu went with his father to buy flower garland strings for a festival.

The flower seller used his forearm to measure the length of garlands.

Ishu: Everyone's body parts are of different sizes. This can cause confusion in measurement.

Father: Units foot, arm, paper clip, stick, etc., used for measuring length are called **non-standard units** of length.



Span



Cubit



Foot

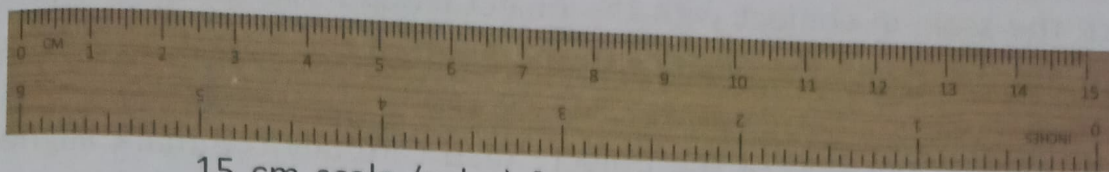
Non-standard units of measurement do not give the same results.

For the sake of uniformity, we need to use some standard units for measuring lengths. Scientists all over the world have accepted a set of **standard units** of measurement.

The **standard units** of length is **metre**. **m** is the short form of **metre**.

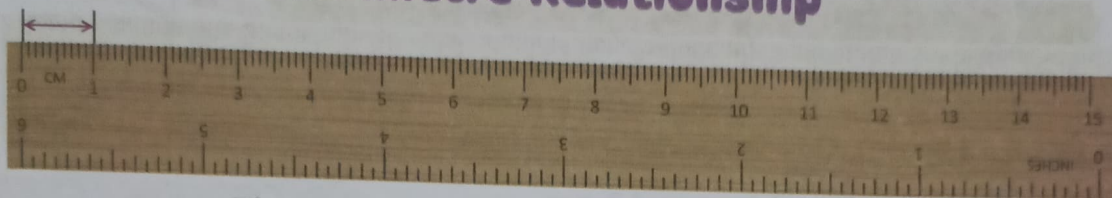


Metre scales are commonly used by cloth merchants, carpenters, tailors, etc. For small measurements, **centimetre** scale is commonly used. **cm** is the short form of **centimetre**.



15 cm scale (ruler) from the geometry box.

Metre and Centimetre Relationship



The arrow length is 1 cm.

... 100 such arrows joined end to end make 1 metre length.
100 times 1 cm makes 1 metre.

100 centimetres equals 1 metre.
or
1 metre equals 100 centimetres.
or
 $1\text{ m} = 100\text{ cm}$



Checkpoint 8A



1. Tick (✓) the things that are more than 1 cm and cross (X) the things that are less than 1 cm or draw a smiley if you think it is about 1 cm. One is done for you.

Things	More than 1 cm	Less than 1 cm	About 1 cm
An ant			😊
An eraser	✓		
A butterfly	✓		
Tail of a cat	✓		
Width of your nail		X	

2. Tick (✓) the things that are more than 1 m long and cross (X) the things that are less than 1 m.

(a) Your Maths book



(b) Your classroom wall



(c) An aeroplane



(d) Your geometry box



Teacher's Support

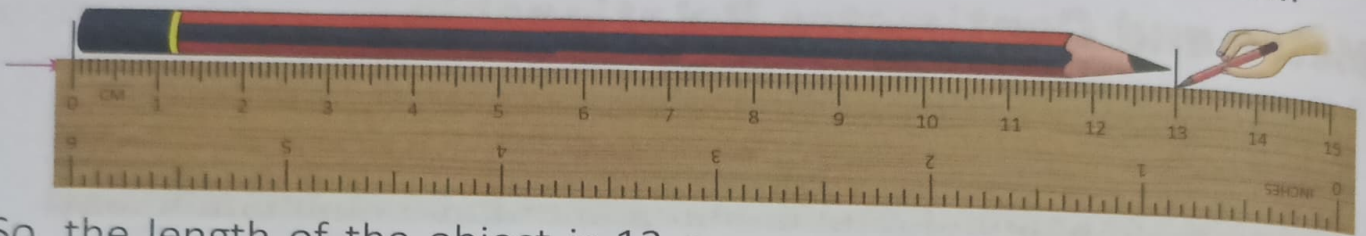


Instead of using the numbers for the m and cm relationship, use the examples of measures of real life objects.

Measuring Length Using a Scale

To measure the length of an object, below are the given steps:

1. Place the scale in contact with the object along its length.
2. Align the 0 mark of the scale with the edge of the object as shown in figure.
3. Look at the other end of the object. Read carefully the mark aligned with the other end of the object. It reads 13 cm in the picture below.

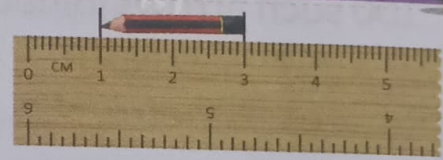


So, the length of the object is 13 cm.

Start measuring from here



Watch Your Step!



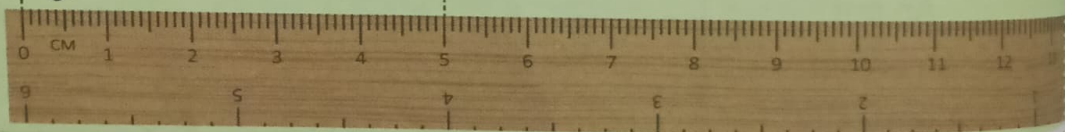
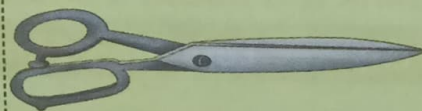
The pencil is 3 cm long. *It is not correct.*

The pencil is 2 cm long. *It is correct.*

Practice



How long is the pair of scissors in the picture?

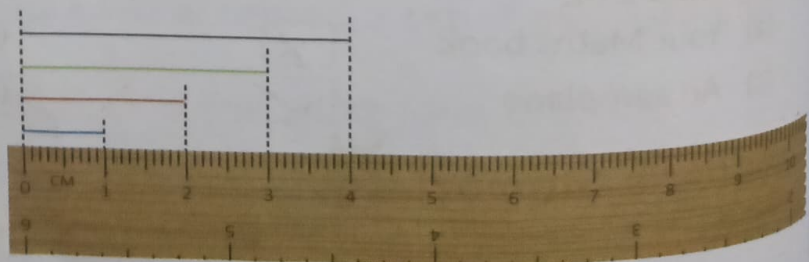


Checkpoint 8B



How long are the line segments in the picture given below?

1. The blue line 1 cm.
2. The green line 3 cm.
3. The red line 2 cm.
4. The black line 4 cm.



Metre and Centimetre Stories

Example 1: Kriti bought a 42 cm long ribbon and Shivanya bought a 37 cm long ribbon. Find the total length of the two ribbons.

Solution: To find the total length of the two ribbons, we add the lengths 42 cm and 37 cm like ordinary numbers and write cm with the sum.

42 cm + 37 cm = 79 cm Or

4	2	cm
+	3	7
	7	9
		cm

Thus, total length of the two ribbons is 79 cm.

Checkpoint 8C

1. Dhruv has 75 cm long rope and his friend Tanishq has 23 cm long rope. What is the total length of their ropes?



7	5	cm
+	2	3
	9	8
		cm

2. Samar rode 140 m on his cycle and Simran rode 250 m on her cycle. Who rode the farthest and by how much?



2	5	0	m
-	1	4	0
	1	1	0
			m

3. Abhishek drew a line segment of 10 cm and his brother drew a line segment of 27 cm. Add the lengths of the two line segments and write the sum.



1	0	cm
+	2	7
	3	7
		cm

4. Ankur's house is 198 m from the school and his friend Anil's house is 135 m from the school. Who stays nearer to the school? (Both are in the same school.)



1	9	8	m
-	1	3	5
	0	6	3
			m

5. Tailor Rashid bought a thread roll of 9 m. He used 8 m of it. How much thread is left on the roll?








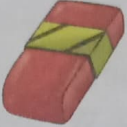




9	m
-	8
	1
	m

Checkpoint 80



Write the unit of weight in which we will measure the following. One is done for you.

1.  kilogram	2.  Gram	3.  Kilogram	4.  Kilogram	5.  Gram
6.  Kilogram	7.  Kilogram	8.  Gram	9.  Gram	10.  Kilogram

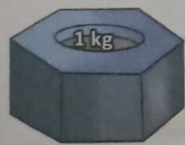
Kilogram and Gram Relationship

1000 g = 1 kg

or

1 kg = 1000 g

In a grocery shop the following weights are commonly seen for weighing different things.



1000 grams equals 1 kilogram.
or
1 kilogram equals 1000 grams.
or
1 kg = 1000 g



Kilogram and Gram Stories

Example 2: Two friends weigh 25 kg and 30 kg respectively. What is their total weight?

Solution: To find the total weight of the two friends, we add 25 kg and 30 kg like ordinary numbers and write the sum (total weight in kg).

25 kg + 30 kg = 55 kg Or

2	5	kg
+	3	0
	5	5
		kg

Thus, total weight of the two friends is 55 kg.

Checkpoint 8E



1. A shopkeeper sold 25 kg sugar and 20 kg rice on a day. Find the total weight of sugar and rice sold by him on that particular day.



$$\begin{array}{r} 25 \text{ kg} \\ + 20 \text{ kg} \\ \hline 45 \text{ kg} \end{array}$$

2. Ganga weighs 23 kg and Amber weighs 29 kg. Who weighs more and by how much?



$$\begin{array}{r} 29 \text{ kg} \\ - 23 \text{ kg} \\ \hline 06 \text{ kg} \end{array}$$

3. Kamakshi bought a gold ring weighing 10 g and Razia bought a gold ring weighing 5 g. Whose gold ring is lighter in weight and by how much?



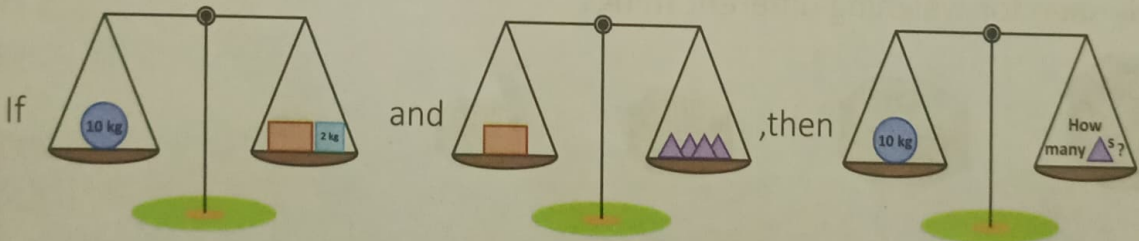
$$\begin{array}{r} 10 \text{ g} \\ - 5 \text{ g} \\ \hline 05 \text{ g} \end{array}$$

4. Rishita has 2 packets of potato wafers weighing 150 g and 250 g. What is the total weight of the 2 packets in g?



$$\begin{array}{r} 150 \text{ g} \\ + 250 \text{ g} \\ \hline 400 \text{ g} \end{array}$$

Mind Grind



Capacity

Many a time in our daily life, we use glass, cup, bowl, bottle, can, spoon, etc., as units of measurement by saying (or using):

glass of water, cup of tea, bowl of soup, bottle of water, can of drink, spoonful of honey, etc.

All such units are **non-standard units** of measuring capacity which give us a guess of measurement.



Checkpoint 8F



1. Guess how many glasses of water are needed to fill the jug?



- (a) 1 ~~(b) 3~~ (c) 50

2. Guess how many glasses of water are needed to fill the big water bottle?



- (a) 1 ~~(b) 25~~ (c) 100

3. About how many glasses of milk do I need in a bowl of cereal flakes?



- ~~(a) 1~~ (b) 25 (c) 100

4. Estimate how many mugs of water are needed to fill the bucket?



- (a) 5 ~~(b) 20~~ (c) 100

5. Guess how many teaspoons of orange juice are needed to fill the glass?



- (a) 5 (b) 50 ~~(c) 100~~

The amount of water remains the same when it is poured into a container of different shape.



Units of Capacity

Sudhir is suffering from cough and cold. He needs to take medicine. He took the cough syrup in accurate amount using measuring spoon. He knows that taking too little or too much syrup will not benefit properly.

To measure the liquids accurately we use the **standard unit** of capacity.

The standard unit of measuring capacity is **litre** and in short it is written as **L**.

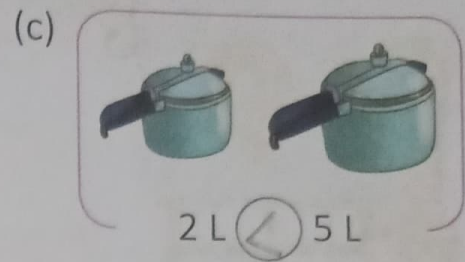
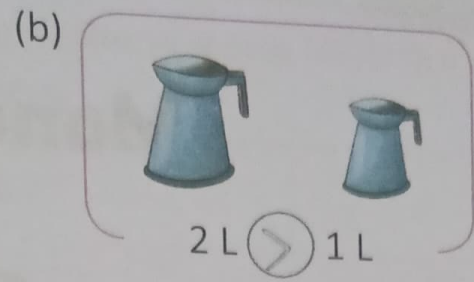
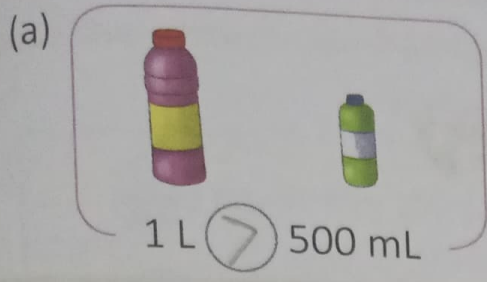
It is used to measure the larger quantities of liquid such as petrol, milk, oil, etc.

Millilitre is the unit for measuring very small quantities of liquid such as medicine, ingredients like honey, lemon juice, etc., and in short it is written as **mL**.

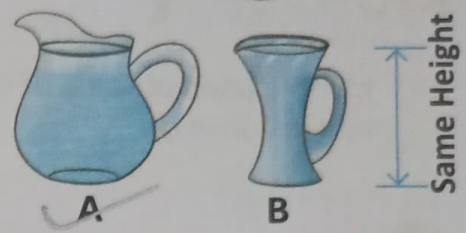
- Millilitre is written as mL.
- Litre is written as L.



2. Compare the capacities of the following kitchen containers using the symbol $<$, $>$ or $=$.

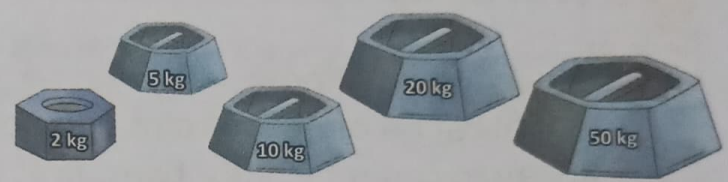


3. Observe the shape and size of two containers A and B. Which holds more water? **(Real Life Connect)**



4. Look at the weights given below and answer the following questions. **(CBQ)**

- (a) How many 5 kg make 10 kg? 2
- (b) How many 10 kg are in 50 kg? 5
- (c) What is the total of all the weights?



87kg

HOTS

21st CS

- 1 Shantanu rides 200 m from his house to the factory for 5 days in a week. But on weekend days he walks down to factory through 100 m shortcut. How much distance does he travel in a week if he follows the same pattern of travelling from factory to house also?
- 2 Maria has to take 10 mL medicine everyday for 15 days. She bought a 100 mL bottle of medicine. Does she need to buy another bottle of medicine?
- 3 Shaina bought 12 bananas. Each banana weighs 100 g. What is the total weight of bananas she bought? Is it more than 1 kg?

Objective Moves 

What number am I? Tick (✓) the correct option.

- 1. I am number of grams in 1 kg. (1000 / 100 / 10)
- 2. I am number of litres in 1000 mL. (1000 / 10 / 1)
- 3. I am number of metres in 100 cm. (1 / 10 / 100)

