8 ◀ MEASUREMENT

Ramana went to a shop. He asked the shopkeeper to give him 10 cubits of rope. The shopkeeper measured the rope with her hand and gave it to Ramana. Ramana doubted the measurement. He measured with his hand and found the rope to be 8 cubits long. He said, "this is not 10 cubits of rope." The shopkeeper replied, "But, I gave you 10 cubits." They began to argue.

How can you solve their problem?

Let's measure the length of a blackboard-

Measure the length of your classroom blackboard with your hand-span. Ask any 3 of your friends to measure the same with their hand-span. Then ask your teacher to do the same.

Write the measurements in the following boxes.

(A)   Your measurement   [   ] handspans

(B)   1st friend's measurement   [   ] handspans

(C)   2nd friend's measurement   [   ] handspans

(D)   3rd friend's measurement   [   ] handspans

(E)   Your teacher's measurement   [   ] handspans

You will find that all these measurements are not exactly the same.

Standard Instruments

Take a new pencil which is not sharpened. Measure the length of blackboard with the pencil. Ask your friends to also measure the blackboard with the same kind of pencil.
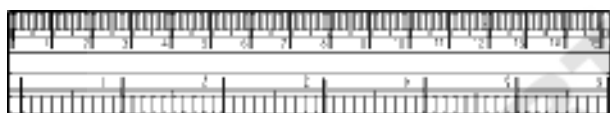
What do you observe?

Did all of you get the same measurement with the pencils?

You must have.

Thus, if all of us use the same instrument to measure length, there will be no difference in the measurements.
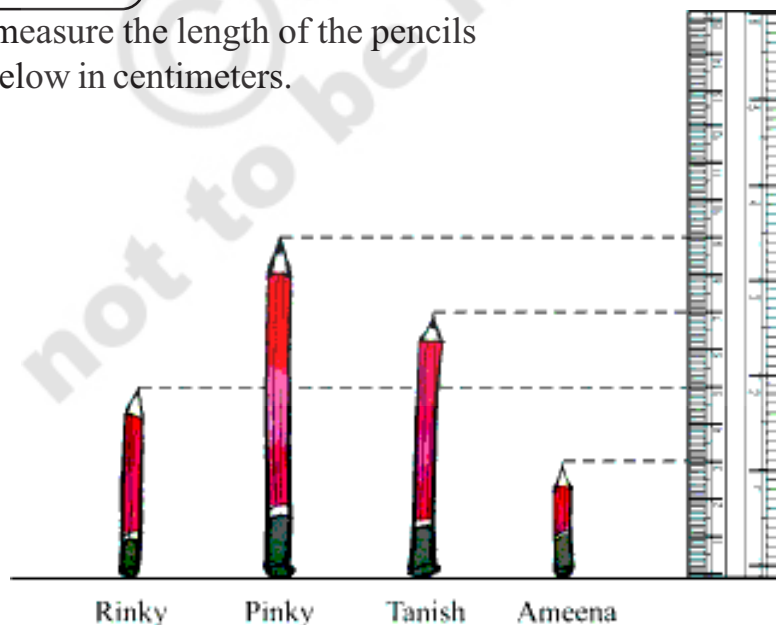
Standard instruments like Scale, Tape etc. are used to measure length.

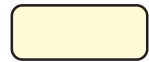A scale is used to measure length in centimeters and inches.

Try These

Let us measure the length of the pencils given below in centimeters.

Rinky   Pinky   Tanish   Ameena

What is length of Rinky's pencil?

What is length of Ameena's pencil?

What is length of Tanish's pencil?

Is Rinky's pencil longer than Ameena's pencil?

By how much?

cm. is the short form of centimeter.

Do This

1.   Measure the objects given in the table using a scale.

S. No.	Name of object	Length
1.	Pen	
2.	Chalk	
3.	Eraser	
4.	Duster	
5.	Pencil	

Activity-1

A visit to the tailors shop

Go to a tailor's shop near your house and observe how the tailor measures the length of cloth.

How much does the bag weigh?

Ramu lifted the first bag very easily. But he found it difficult to lift the second bag. Why?

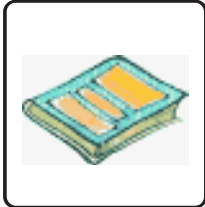**What objects are heavy for you?**
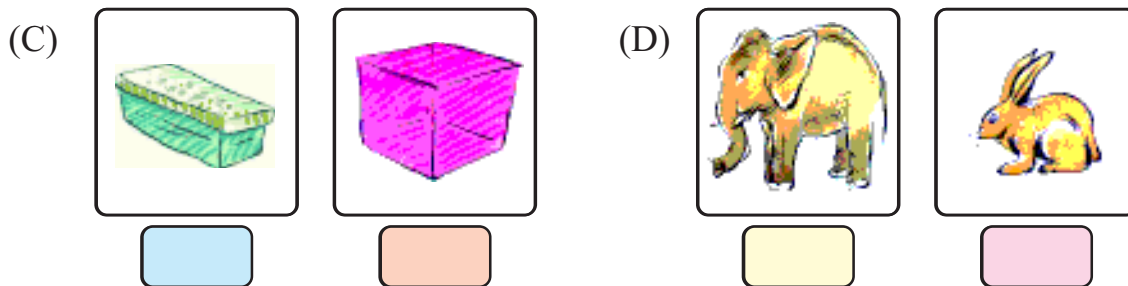
Which of the following objects can you lift?

Can be lifted	Can not be lifted

Which is heavy? Which is light?

1.   Put (✓) mark against the heavier one.

(A)

(B)

(C)   (D)

2. Put (✓) mark against the lighter one.

(A)   (B)

(C)   (D)
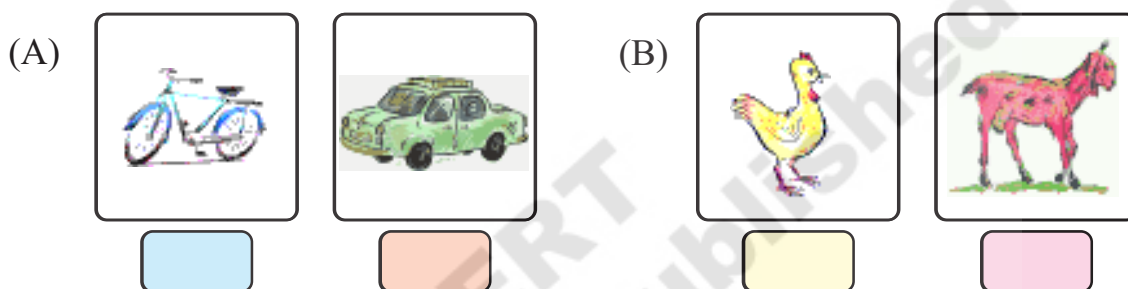
Standard Weights

Have you seen objects like those given below in a grocery shop or with a vegetable vendor?

Such weights help shopkeepers in weighing things, while selling them. Try holding the ones that weigh 1 kg and 2 kgs.

Try These

1. A shopkeeper has only 1 kg, 2 kg, 5 kg and 10 kg weights with him. He will weigh articles with these weights only. Select the combination of these weights to weigh for buying the articles given below-

Articles to buy	Weights used to weigh
2 kgs of tamarind	
1 kg of groundnut	
3 kgs of sugar	
6 kgs of onions	
7 kgs of wheat flour	
13 kgs of rice	

Estimating weights

2. Collect objects given below. Hold them and estimate their weights. Then check by actually weighing them. .

Object	Estimated weight	Actual weight	Difference between estimated and actual weights
A packet of salt			
A cricket bat			
Your friend's school bag			
Maths Text Book			
Telugu Text Book			

How much water can this bucket hold?

Sudha was pouring water into the bucket with a mug. Her younger brother came along and asked her to pour the water back into the mug and give empty bucket. Sudha told him that this was not possible.

Why is it not possible?

Which vessel holds more water?

1.   Put (✓) mark against the vessel that holds more water.

(A)

(B)

(C)

(D)

(E)

(F)

How much water can a vessel hold?

Get a bucket, a pot, a jug, a mug and a glass.

Fill the bucket with water using the jug. How many jugs of water were needed to fill the bucket? Now, fill the bucket with water using a mug and then a glass. Count how many mugs and how many glasses of water were needed to fill the bucket?

Repeat this activity with a pot in place of the bucket.

Fill the table accordingly-

	Number of	Number of	Number of

Look at the table. Answer the following questions-

How many jugs of water can be held by the pot?

How many mugs of water can be held by the bucket?

How many glasses of water can be held by the bucket?

How many glasses of water can be held by the pot?

Which vessel holds more water?   Bucket / pot

The quantity of liquid a vessel can hold is called the capacity of the vessel.

1. Rinky poured 3 glasses of water to fill a vessel. Bunty poured 5 glasses of water to fill another vessel. What is the capacity of the two vessels in terms of glasses?

2. A tank can be filled with 28 pots of water. Kamal poured 19 pots of water. How many pots of water are needed to fill the tank?

3. Tanish poured 15 pots of water in a tank. Pinky then poured 17 pots of water to fill the tank. What is the capacity of the tank?

4. A vessel can hold 32 cups of tea when it is completely filled. Isha has taken out 17 cups of tea from the vessel. How many cups of tea is remaining in the vessel?

5. A glass can be filled with 3 cups of water and a vessel can be filled with 4 glasses of water. What is the capacity of the vessel in terms of cups?

6. A tank can be filled with either 9 pots of water or 72 jugs of water. How many jugs of water are needed to fill a pot?

What is a Litre?

So far we have used glasses, mugs, jugs etc. to measure the capacity of buckets, pots and tanks. However, glasses, mugs, jugs etc. come in different sizes. We need a standard unit to measure liquids.

The standard unit used to measure liquids is Litre.

Activity-2

Visit a nearby grocery shop. See how the shopkeeper measures oil, while selling it.

Do This

When you go to the market observe the packets of these items. Note the capacity written on each packet. Is the capacity expressed in litres?

Different shapes, equal capacity

Mahesh and Anu's mother gives them milk everyday in different shape of glasses. Mahesh thought that his mother gives him less milk.

Anu's glass   Mahesh's glass

Do you think so?

One day Mahesh's teacher showed like this in class.

He took water in a glass.

He poured the water in different shaped glasses. They looked like this-

He explained, "When we pour the same quantity of a liquid in glasses of different shapes (one taller one and a shorter one), it may look like that there is more liquid in one and less in the other. However, this is not true. If the same amount of liquid has been poured into the glasses, their quantity remains the same in both glasses."