

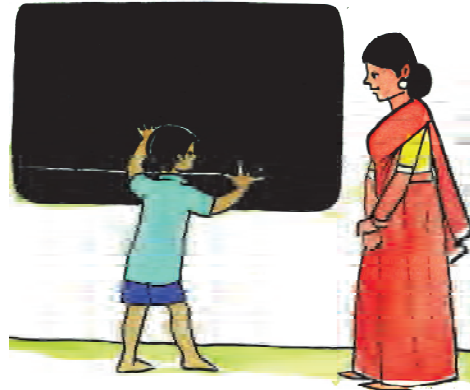
LESSON 8

Measurement

Length

How long is the blackboard?

Measure the blackboard of your class using your handspan. Tell your friends also to measure the length of the blackboard. Then fill in the table below :



Length of the blackboard

I measured	First friend's measurement	Second friend's measurement	Third friend's measurement	Fourth friend's measurement
_____ handspans	_____ handspans	_____ handspans	_____ handspans	_____ handspans

Have all your friends got the same measurement of the length? _____

Why so? _____

What is the length of your class?

Find the length of your class in terms of your steps. Tell your friends to do the same. Fill in the table given below:

Length of the classroom

I measured	First friend's measurement	Second friend's measurement	Third friend's measurement
____ steps	____ steps	____ steps	____ steps

Are the measurements taken by all friends the same? _____

Now make a group of four friends. Take a piece of wood which is straight. Use this piece to find the length of the class and fill in the table.

Length of class

I measured	First friend's measurement	Second friend's measurement	Third friend's measurement	Fourth friend's measurement
_____	_____	_____	_____	_____

Are the measurement taken by all friends the same? —————

Why did that happen? —————

Compare the table that you have filled with the tables filled by other groups.

Are the tables of all the groups same? —————

Why so? —————

Think and write

Suppose, you need to buy a rope for drying clothes in your home. How long a rope would you buy for doing this? What will you tell the shopkeeper ?

When you go to buy cloth, what is used by the shopkeeper to measure the cloth ? —————

The instrument used by the shopkeeper is a metal scale. It is called a '**meter scale**'.

All shopkeepers generally use this **meter scale** to measure cloth.

Take the **meter scale** from your teacher and see it yourself. Show it to your friends as well.

There are lines on the meter scale and numbers are written on it starting from 0 to 100. What are these?

These numbers indicate centimeters.

Does the scale in your compass box also have such lines and numbers written on it?

How many centimeters are there on your scale? —————

Take another scale, which is bigger than your scale. How many centimeters are there on this bigger scale? —————

Are the number of centimeters the same on both the scales?

How many centimeters are there on a meter scale?



1 meter	=	100 centimeter
100 centimeter	=	1 meter

Look at the scale and answer

How many lines are there from 1 to 2?

How many lines are there from 7 to 8?

Is the number of lines in both the cases above same?

These lines show millimeters.

Look at the scale and fill this:

1 to 2 is _____ millimeters

3 to 4 is _____ millimeters

6 to 7 is _____ millimeters

10 millimeters	=	1	centimeter
1 centimeter	=	10	millimeters

Now find the length of the blackboard of your class in centimeters using your small scale. Tell your friends to do the same.

Are the answers of all your friends the same?

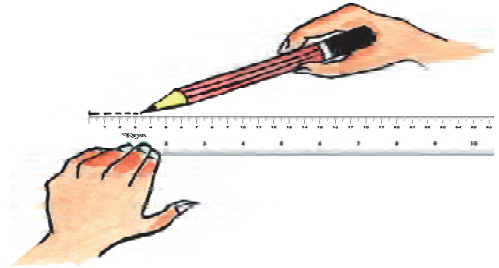
1. Can the length of the classroom be also measured with this small scale? Will the answers of all your friends be the same?
2. Using a meter scale, find the measurement of the length of your class, length of the rug (dari), and the length of the playground. Compare your answers with the answers of your friends.

Do this yourself

Take your scale and a pencil and draw a line of 1 c.m. length. Now put 3 cm point of your scale at the beginning of the line and see -

1. Which line on the scale touches the end of the line you drew? Which number does that line indicate on that scale?
2. Now, do the same by putting the starting point of the line you have drawn on 4 c.m., 6 c.m., 8 c.m. marks of the scale.

Now do the same by keeping 4 cm, 6 cm and 8 cm at the starting point and see what you get at the end point.



Now answer these:

When you go to a tailor to get your clothes stitched, how does she take your measurements?

1. Is the tailor's measuring tape similar to the meter scale?
2. What is similar between the meter scale and the tailor's measuring tape?
3. What are the differences between the meter scale and the measuring tape of a tailor?
4. Have you seen such a tape anywhere else?
5. Can you measure the length of your class using this tape?
6. What else can you measure using this tape?

Make a Meter Scale

Take the tailor's measuring tape and cut out one meter part of it. Stitch it on a piece of card board. You can even nail it if you want. You have a meter scale ready. In case of any problem, ask your teacher.

Do this yourself and Say:

Measure the classrooms of your school using a meter scale and write this:

Length of class 1	Length of class 2	Length of class 3	Length of class 4	Length of class 5

1. Which class is the longest?
2. Which class is the shortest?
3. Which is longer, class 1 or class 2?
4. Which is shorter, class 4 or class 5?
5. Which of the classes are of equal length?

You can similarly find the length of different rooms in your house. Which room is the shortest? Which is the longest?

What is the largest?

1. Together with your friends, make groups of 5 friends each and find the height of all the children. Now answer:



Who is the tallest?

Who is the shortest?

Who all are of the same height?

- Find the measure of length and breadth of the Kabbadi field and write it. Also find and write the measure of length breadth of the kho-kho field in your school. Now answer:

Length of which field is more?

Which field is wider?

The kabbadi field has a bigger length or breadth?

Which of the two measures is bigger the length of the Kabbadi field or the breadth of the Kabbadi field?

Do this yourself:

Use your scale or meter scale to find the length of the following and write it in the table:

Item	Length
Pencil	
Slate	
Mathematics text book	
Hindi text book	
Enviornmental Sc. text book	
Blackboard	
Window of the class	
Door of the class	

Could you measure lengths of all the items completely?

Statement Sums:

- Ritu bought 11 meters of cotton cloth, 16 meters of linen cloth and 18 meters of tericott cloth. How much cloth did she buy in all?
- Nisha had 17 meters of rope and Priya had 12 meters of rope. Compared to Priya, how many more (or less) meters of rope did Nisha have?
- If we divide a 50 meter measuring tape in two equal parts, What would be the length of each of the two parts?
- Harish made a 5-meter flag, Manoj made a 6-meter flag and Ashok made a 8-meter flag. How many meter long flag did they make together?

5. One class needs a 16 meter long carpet. So, what length of carpet, would three classes together need?

Weight

Together with your friends, Make a toy balance. Collect some big and small stones and use them as weights. Using this toy-balance and weights, find the weights of pencils, rubbers, scales, duster, books etc. and write them in a table.

Item	Weight
Pencil	_____
Rubber	_____
_____	_____
_____	_____

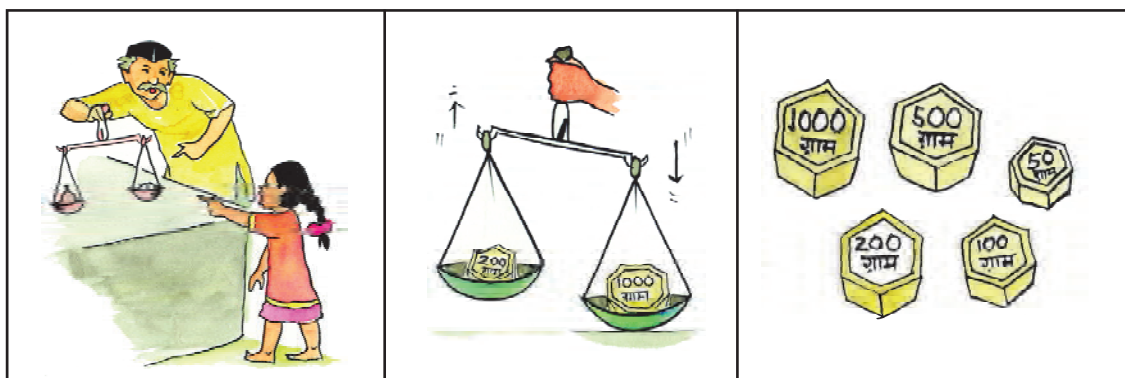
Compare your table with the table prepared by other groups.

Are all the tables same? _____

Why are they different?

Talk about it with your friends and teachers.

Now look at these pictures.



Write names of the things you can see in the pictures?

Where have you seen these?

Who makes use of these things?

What are they used for?

Just as length is measured in **meters** and **centimeters**, weight is measured using **kilograms** and **grams**.

Tell your teacher to show you a **balance** and **weights**.

What is written on the weights?

On first weight _____

On second weight _____

On third weight _____

On fourth weight _____

On fifth weight _____

Which is the biggest weight among these?

Which is the smallest weight among these?

Put-up the weighing balance in an open space in your school and put the weight of 1 kilogram in one pan of the balance and that of 200 gram in the other pan.

Which way will the balance tilt? Which pan is lowerd?

Which weight is heavier?

Now add one more weight of 200 gram in the pan, that is raised.

Keep adding weights of 200 gms until both the pans are balanced at equal heights.

A weight of 1 Kilogram equals how many weights of 200 grams?

Now keep 1 kilogram weight in one pan and in the other pan, keep putting weights of 100 grams each (see the box below).

A weight of 1 kilogram equals how many weights of 100 grams?

Do the same with weights of 500 gms.



How to make your own weights

If you need more weights of 100 grams and you don't have that many then make some weights of your own. Keep a weight of 100 gms. on one pan of the balance. Take a cloth or a plastic bag and keep it on the other pan of the balance. Keep on putting sand into this bag until both pans of the balance are at balanced at equal height. check the weight until it balances with a 100 gram weight. You can now tie this bag so that the sand does not spill. Now you can use it as a 100 gram weight.

You can similarly make as many weights as you wish for

200 grams, 500 gram etc.

Now answer:

When a shopkeeper gives half a kilogram of sugar, what weight does he put on the balance?

To measure a quarter of vegetables, how many weights would be used by a shopkeeper? Which are these weights?

Suggest different ways of using more than one weight for weighing half a kilogram of sugar?

Fill the table

1 kilogram = _____ gram

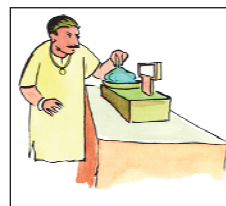
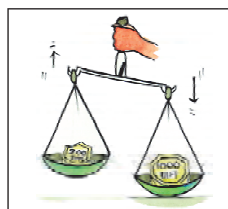
Half a kilogram = _____ gram

Quarter of a kilogram = _____ gram

Find this:

In a hospital how does a nurse find your weight?

Have you seen some other way of finding weight? Which other ways of weighing have you seen?



Let us do :

1. Deepa bought 500 grams of sugar and 250 grams of tea. What was the total weight of the grocery she bought?
2. Amita bought 2 kilograms of rice and 1 kilogram of pulses. What was the total weight of the items she bought?
3. There are 50 kilograms of rice in the big sack and 25 kilograms of wheat in the smaller sack. How much more does the rice weigh compared to wheat?
4. A packet of salt weighs one kilogram. How much would 7 such packets weigh together?
5. If 25 kilograms of grapes are distributed equally among 5 boxes, how many kilograms would be kept in each box?

Capacity**Do this**

Fill a bucket with water with a small cup. To fill the bucket in this way how many cups of water did you pour into the bucket.

Now use a glass to fill the bucket. How many glasses of water were needed to fill it?

Do this again using a jug. Fill the table given below:

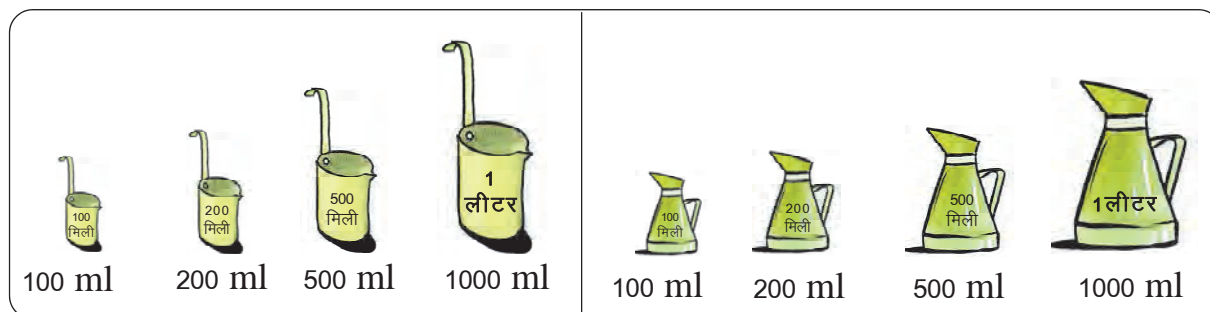
Amount of water in the bucket	_____ cups	_____ glasses	_____ jugs
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Was the number of needed to fill the bucket the same as the number of cups needed? Was the number of glasses jugs needed to fill the bucket the same as the number of glasses needed?

If not, why? _____

If a bucket gets completely filled by 20 cups of water then we will say that capacity of the bucket is 20 cups of water. Similarly, if 5 jugs of water filled the bucket. Completely, we would say that capacity of the bucket is 5 jugs of water.

Can you say how milk, oil or petrol are measured?



The containers shown in the picture are used to measure capacity.

Who makes use of these containers?

1. _____ 2. _____ 3. _____ 4. _____
- _____
- _____
- _____

Capacity is measured in litres and millilitres.

1 litre = 1000 millilitres

1000 millilitres = 1 litre

Find this:

Go to a provision store and see how he measures oil.

Do this:

Take containers of 1 litre, 500 millilitres and 200 millilitres from your teacher.

Fill the 500 millilitre container and pour it in the 1 litre container.

How many times do you have to pour the 500 millilitre container so that the 1 litre container gets completely filled?

In how many times does it get filled?

Similarly, now take a 200 millilitre container and use it to fill the 1 litre container. How many of times did you have to use it to fill the 1 litre container completely?

Do this again with a 100 millilitre container. You have seen two types of containers of 1 litre capacity in the drawing given earlier. When both these types of containers.

Fill a 1 litre container with water. Now pour the water in another container of 1 litre.

Is the second container filled completely? _____

Is there some water left in the first container? _____

Is the capacity of both containers the same? _____

Do a similar exercise with two containers of 500 millilitres capacity.

Similarly, check the capacity of containers of 100 millilitre and 200 millilitres .

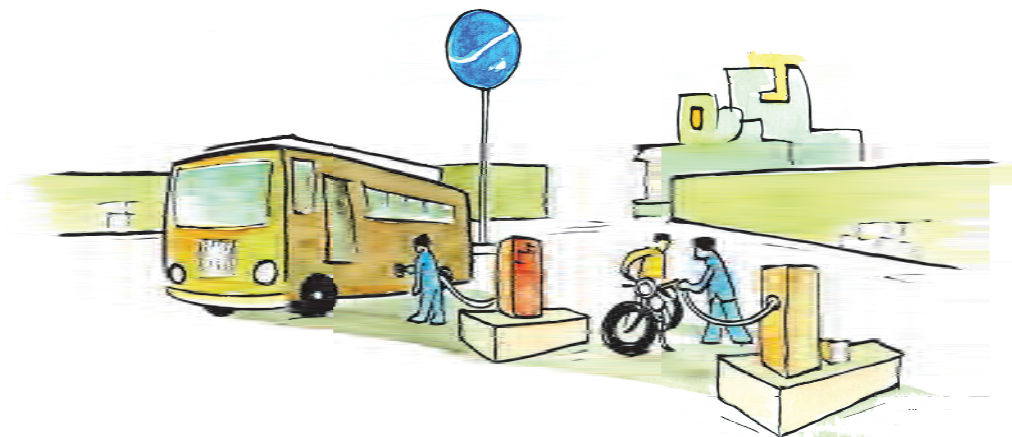
Do these:

1. One container has 500 millilitres of milk. If 250 millilitres of milk is added, how much milk will be there in the container?
2. The capacity of a bottle is 500 millilitres. How many times would a container of 50 millilitres have to be used to fill the bottle completely?
3. Meeta took 750 millilitres of water to school in her bottle. After returning from school there was 200 millilitre of water left in the bottle. How much water did Meeta drink at school?
4. You get oil in packets of 2 litres in market. How many such packets would have to be bought to have a total of 10 litres of oil?
5. Itwari Ram sold 2 litres milk to Ankur and 4 litres to Shailu. So how much milk did Ankur and Shailu buy together?

For convenience we write **1 litre** as **ltr.**

For **1 millilitre**, we write it as **1 ml.**

Look at the given picture and say what you see.



Do and Learn:

Collect some small items. Now make a small group with five of your friends. Members of one group will give items to the other group and ask them to estimate the lengths of these items. Write the answer in the list below. Then measure the actual length of the items by using a scale or a meter scale.

The group whose answers are close to the actual measurement is the winner.

Item	Length estimated	Length (actual measure)
Pencil	_____ cm	
Book	_____	
Pen	_____	
Duster	_____	
Table	_____ m.	
Pieces of ropes	_____ m. _____ cm	
_____	_____	
_____	_____	
_____	_____	

Make a similar group game to estimate weight and capacity.

Know this too :

1 meter	=	100 centimeter
or 1 m	=	100 cm
1 kilogram	=	1000 gram
or 1 kg	=	1000 gms
1 litre	=	1000 mililitre
or 1 ltr.	=	1000 ml

