LESSON - 8

MEASUREMENTS (LENGTH)

74EPHP

Let us do it :

Cut few pieces each of length 10 cm. from a strip of thick paper sheet as shown in the adjoining figure. Now arrange the pieces on a desk one after another. Then measure 1 meter from the pieces with a scale or a ribbon keeping away the remaining pieces and answer the following questions–

(a) How many pieces of paper strips of length 10 cm. each are needed to make 1 meter of length?

(b) How many centimeters did you get in 1 meter?

Surely, you got

$$1 \text{ meter} = 10 \times 10 \text{ cm.} = 100 \text{ cm.}$$

Now can you say, what part, of 1 meter will be equal to one of these pieces?

Certainly it is $\frac{1}{10}$ part of 1 meter. Isn't it?

Similary, what part of 1 meter be equal to 1 cm.? Is it not $\frac{1}{100}$ part? We can express it as $1 \text{ cm.} = \frac{1}{100}$ meter.

❖ Write down the total number of centimeters on your scale.

Let us recall–

There are 10 small divisions in 1 centimeter of your scale. Each of these divisions is equal to 1 milimeter.

So, 1 cm. = 10 mm.

or, 1 mm. = $\frac{1}{10}$ cm.

Let us move to the school play ground–

The annual sports events are going on in Pallavi's school. Chayanika became first is 100 meter race. On the concluding day she became first in 1000 meter marathon race also.

Now, you tell–

How many times of 1 meter had Chayanika run in 100 meter race? Prajna answered– 100 times of 1 meter. In marathon race she ran 1000 times of 1 meter.

This distance of 1000 meters is called 1 kilometer. In other words, Chayanika ran 1000 meters or 1 kilometer in the marathon race.

Now you tell-what part of 1 kilometer will be equal to 1 meter?

i.e. 1 meter = $\frac{1}{1000}$ kilometer, isn't it?

Measure the lengths of the segments below in centimeter and milimeter (with the help of scale) :

a

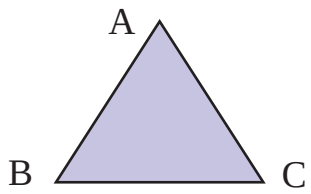
Length = 5 cm.
= 50 mm.

b

Length = _____ cm.
= _____ mm.

c

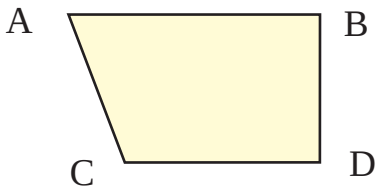
Length = _____ cm.
= _____ mm.



AB = _____ cm. _____ mm.

BC = _____ cm. _____ mm.

AC = _____ cm. _____ mm.



AB = _____ cm. _____ mm.

BC = _____ cm. _____ mm.

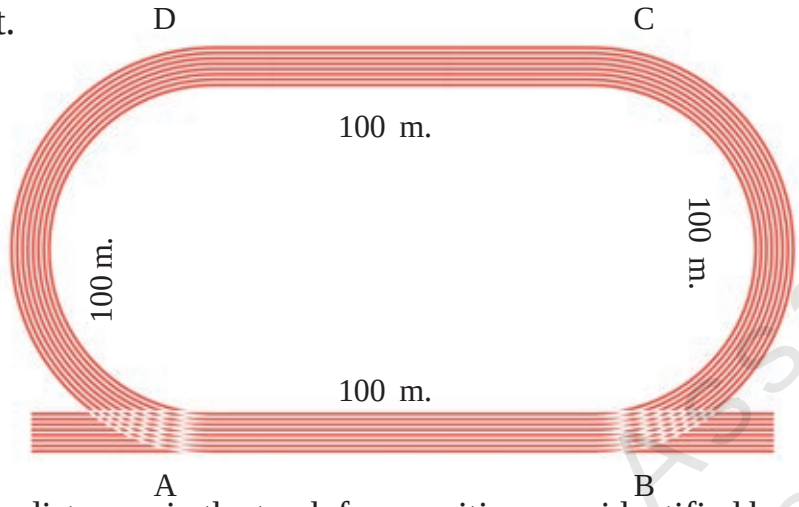
CD = _____ cm. _____ mm.

AD = _____ cm. _____ mm.

❖ Have you ever participated in race competition of the annual sports events of your school? Do you know how many meters' race competions are held there? Is it 25 meters, 50 meters, 100 meters or even more than that? In nationally and internationally organised race competitions, the runners try to bring awards to their states or countries by participating in race competions of various lengths. Generally in these race competitions, the racers compete in races of 100 meters, 200 meters, 400 meters, 4×400 meters (Relay), 800 meters, 1500 meters, 3,000 meters and 10,000 meters. Such a great racer of our state is Sri Bhogeswer Barua. He received gold medal in 800 meter race in Asian Games held in Bankok of Thiland in 1966. His birthday, 3rd september is observed in the state as the '**Abhiruchi Sports Day**' in order to arouse interest for sports among the youngsters. You might have also participated there.

Another great woman racer of our country is P.T. Usha. She was able to snatch gold medal in as many as four events of race competitions in Seul Asian Games held in 1986. You can also try to be a good racer by acquiring more information about them.

Looking at the picture of the racing track let us find the various tracking distances in it.



To indicate distances in the track four positions are identified by points A, B, C and D and approximate distances between the points are given.

Now you tell–

- What is the distance from A to C
- If a racer runs 800 meters then how many rounds has he made in the track?
- If he starts running from A and runs through a distance of 1000 meters then how many rounds will he make and where will he complete the round?

☞ **Now , let us find–**

How many kilometers will be in 400 meters?

$$400 \text{ meters} = \frac{400}{1000} \text{ kilometer} = 0.4 \text{ kilometer.}$$

Also find–

200 meters = _____ kilometer = _____ kilometer

800 meters = _____ kilometer = _____ kilometer

1000 meters = _____ kilometer = _____ kilometer

3000 meters = _____ kilometer = _____ kilometer

Conversion of larger units into smaller units :
Let us convert meters into centimeters–

Example :

(a) 3 meter

3 meter =3 × 100 cm.

= 300 cm.

(b) 2 m. 70 cm.

2 m. = 2 × 100 cm. = 200 cm.

Therefore, 2 m. 70 cm.

= (200 + 70) cm.

= 270 cm.

Let us try together–

(c) 5 m.

= ____ cm.

(d) 12 m. 45 cm.

= ____ cm.

(e) 20 m. 82 cm.

= ____ cm.

(f) 25 m. 7 cm.

= ____ cm.

Recall : 1 centimeter = 10 milimeter, 1 meter = 1000 milimeter

Let us convert meter into milimeter

a) 2 meters

2 meters = 2 × 1000 milimeters = 2000 milimeters or mm

b) 70 meters 26 centimeters

70 meters = 70 × 1000 milimeters

= 70000 milimeters

and 26 centimeters = 26 × 10 milimeters

= 260 milimeters

Hence, 70 meters 26 centimeters

= 70000 m.m + 260 m.m

= (70000 + 260) m.m

= 70260 m.m

c) 7 meters = ☐ m.m

d) 17 m. 15 c.m = ☐ m.m

e) 12 m. 5 c.m 45 m.m = ☐ m.m

f) 23 m. 7 c.m = ☐ m.m

Let us convert kilometer into meter–

a) 6 kilometers into meter

1 k.m = 1000 m.

6 k.m = (6 × 1000) m.

= 6000 m.

b) 8 kilometers 19 meters into meter

8 k.m = 8000 m.

Hence, 8 k.m 19 m. = (8 × 1000 + 19) m.

= (8000 + 19) m.

= 8019 m.

c) 13 k.m = ☐ m.

d) 4 k.m 10 m. = ☐ m.

e) 5 k.m 8 m. = ☐ m.

f) 42 k.m 85 m. = ☐ m.

Solve problems related to measurements of length :

(i) First assamese swimmer Elvis Ali Hazarika crossed the English Channel on 2nd June, 2018 swimming 29 kilometers for 10 hours 15 minutes. How many meters did he swim in English Channel?

(ii) Reena always goes to her school on foot. Her residence is 500 meters away from the school. How many kilometers does she walk from her residence to the school? How many kilometers does she walk during her journey from residence to school and then back to residence again?

(iii) A tailor needs 1.2 meter piece of cloth to make a pant. How many centimeters are there in the piece of cloth?

(iv) How many milimeters are there in a ribbon of length 15 cm.?

Conversion of smaller units to larger units.–

Let us express centimeters in meters–

(a) 560 cm.

= 500 cm. + 60 cm.

= 5 m. + 60 cm.

= 5 m. + $\frac{60}{100}$ m.

= 5 m. + 0.6 m. = 5.6 m.

1 m. = 100 cm.

Therefore, 1 cm. = $\frac{1}{100}$ m.

(b) 695 cm.

= 600 cm. + 95 cm.

= 6 m. + $\frac{95}{100}$ m.

= 6 m. + 0.95 m. = 6.95 m.

(c) 1840 cm.

= 1800 cm. + 40 cm.

= 18 m. + $\frac{40}{100}$ m.

= 18 m. + 0.40 m.= 18.40 m.

(d) 2783 cm.

= ☐ cm. + ☐ cm.

= ☐ m. + ☐ m.

= ☐ m. + ☐ m. = ☐ m.

e) 36 cm.

= ☐ m. = ☐ m.

Do yourself :

a. 5 cm. = ... m.

b. 695 cm. = ... m.

c. 2783 cm. = ... m.

d. 1840 cm. = ... m.

e. 36 cm. = ... m.

f. 200 cm. = ... m.

g. 1000 cm. = ... m.

h. 500 cm. = ... m.

Activity (Teamwise) : Find the heights of yourself and your friends. Form 5 member teams from your class. Measure the heights of your team members and record them.

Members	heights in meters	hights in centimeters
Member - 1		
Member - 2		
Member - 3		
Member - 4		
Member - 5		

❖ Height of the tallest member of your team is ____ m ____ cm.

❖ Height of the shortest member of your team is ____ m ____ cm.

❖ The tallest member of the team is taller than the shortest member by ____cm.

Let us prepare a project

Complete the following table by writing approximate distances from your residence to the places in the table and also answer the following questions –

(Ask others if necessary)

Serial No.	Description of places	Distance (m/km) from school
01	Headmaster's/Headmistress's residence	
02	Nearby High Scool	
03	Nearby Post office	
04	Nearby Public Health Centre	
05	Nearby Police Station/Out Post	

- Which place is nearest to your residence?
- Which place is farthest from your residence?
- Express the distances in kilometer if it is in meter, and in meter if it is in kilometer.

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