Vision Empower & XRCVC

Teacher Instruction KIT

Measurement - Length

Syllabus: Karnataka State Board
Subject: Mathematics
Grade: 4
Textbook Name: Mathematics II Text cum Workbook
Chapter Number & Name: 11, Measurement- Length

1. OVERVIEW

1.1 OBJECTIVE & PREREQUISITES

Objective

Students will be able to

- know the unit of length
- know the relation between metre and centimetre
- convert meter into centimeter and centimetre into metre
- do the addition of measurement of length
- understand the method of finding the difference of lengths
- estimate the length of an object and distance between two locations

Prerequisite Concept

- Measure different lengths and distances.
- Know units of length

TIK_MATH_G2_CH9_Length

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*Kindly Note: Activities marked with * are mandatory*

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2. LEARN

2.1 KEY POINTS

- Length: Length is a measure of how long an object is or the distance between two points.
- The units to measure length are millimeter, centimeter, meter, kilometer.

2.2 LEARN MORE

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

Guessing length of the objects

Activity 1: Guessing length of the objects.

Materials Required: Nails, matchbox, straws and Tactile ruler.

Prerequisites: Estimating the length of objects.

Activity Flow

1. *Ask the students to guess the length of the nail in centimeters. Then ask them to measure the actual length of the object using the tactile ruler.*
2. *Discuss the best estimations.*

3. *Repeat the first 2 steps with different objects.*
4. *Now ask the child to give names of objects which are less than a centimeter.*
5. *Ask the child to give names of objects which are more than a centimeter.*

3.2 CONCEPT INTRODUCTION ACTIVITIES

The relationship between meter and centimeter

Activity 2: Length and the relationship between meter and centimeter

Materials Required: Tactile ruler, straw, beads and thread, tactile ruler.

Prerequisites: Measure the length

Activity Flow

- *Ask the students to answer the following questions.*
    1. *What is the length of your slate and Taylor frame?*
    2. *What is the length of your desk?*
    3. *What is the length of your friend's arm?*
- *After measuring they might say the length without mentioning its unit. Then tell them to observe their tactile ruler and ask them to count the number of lines having equal distance between them in the ruler. Then there would be 15 lines. So, it is a ruler of 15 centimetres in length.*
- *The measurement from one line to the next line is one centimetre.*
- *Thus, when they measure the length of objects, they can also get values between 2 and 3 centimeters, not sure if it's 2 centimeters or 3 centimeters.*
- *Then explain, say, 1 centimeter = 10 millimeter. And so,* $1 \text{ millimeter} = 1/10 \text{ centimeter}$*. They can see the dot between two lines on the measuring bar to mark it as half a centimeter or 5 millimeters.*
- *To show them that the distance between every centimetre has 10 millimetres, prepare a ganit mala using pieces of straw, beads and thread.*

How to make:

Cut one straw pipe into 9 small pieces and take a thread and insert the straw pieces and put beads as the tenth one. Again put 9 straw pieces and the 20th will be the bead. Similarly, continue to get the mala with 100 pieces. But for every multiple of 10, there will be a bead.

- *Now use this to show them that including the starting point to the first bead represents one centimetre. Hence there will be 9 straw pieces which represents the millimetre and including the* 10^{th} *bead, it is 1 centimetre. Similarly, till the 20th bead, it represents 2 centimetres and so on.*

- *Ask them, whether they have heard of somebody asking for so many metres of cloth material in the shop. A metre is also a unit of measuring the length of the cloth required and that length varies from person to person.*
  Here 1 metre = 100 centimetre. A centimetre is denoted by cm and metre is denoted by m.
- *Ask the children to measure some cloth material which they have with the help of a tactile ruler. If possible let them measure one side of their classroom using a tactile ruler.*
- *Then ask their experience in measuring the room with the ruler and it would have been easier if they had a metre scale than centimetre scale. Also, Braille measuring tape will help to find the length of the side of a room.*
- *Ask the students in which of the situations are metre scales and measuring tapes used?*
  Example: 100-metre running race. We make use of measuring tape to measure the distance.

Conversion of unit of measurement

Activity 3: Conversion of unit of measurement

Materials Required: Thread, tactile ruler, tactile diagram of different lengths of lines.
Prerequisites: Multiplication.

Activity Flow

- *Tell the students that* $1 \text{ meter} = 100 \text{ cm}$. *Take two threads of length 100 cm each to join both of them and find the total length of the thread with the help of a tactile ruler. In the same way, take three threads of length 100 cm each, join them and find their total length. This means, measurement of 200 cm is equal to 2 m and measurement of 300 cm is equal to 3m.*
- *Give them the tactile diagram of different lengths of lines and ask them to measure.*
  And observe the following examples,
  $1 \text{ m} = 100 \text{ cm}$
  $2 \text{ m} = 2 \times 100 \text{ cm} = 200 \text{ cm}$
  $3 \text{ m} = 3 \times 100 \text{ cm} = 300 \text{ cm}$
  Similarly, $4 \text{ m} = 4 \times 100 \text{ cm} = 400 \text{ cm}$
  To convert metre into centimetre, multiply the number by 100.
- *Ask the students to convert the following examples from metre to centimetre.*

1. *13 m*
2. *9 m*
3. *20 m*

4. *5 m*

To convert centimetre into metre:
Note : $100\text{ cm} = 1\text{ m}$

- *Ask the students, in 200 cm, how many equal parts of length 100 cm will be there? In the same way, with a length of 300 cm, how many equal parts of 100 cm will be there?*

$$\begin{aligned} 200\text{ cm} &= 100\text{ cm} + 100\text{ cm} \\ &= 1\text{ m} + 1\text{ m} \\ &= 2\text{ m} \end{aligned}$$

Similarly,

$$\begin{aligned} 300\text{ cm} &= 100\text{ cm} + 100\text{ cm} + 100\text{ cm} \\ &= 1\text{ m} + 1\text{ m} + 1\text{ m} \\ &= 3\text{ m} \end{aligned}$$

- *The other simple way to convert centimetre into metre is to divide the given number by 100.*
  - $200\text{ cm} = 200/100 = 2\text{ m}$
  - $300\text{ cm} = 300/100 = 3\text{ m}$

$$\begin{aligned} 750\text{ cm} &= 750/100 \\ &= 700/100 + 50/100 \\ &= 7\text{ m} + 50\text{ cm} \end{aligned}$$

$$\begin{aligned} 875\text{ cm} &= 875/100 \\ &= 800/100 + 75/100 \\ &= 8\text{ m} + 75\text{ cm} \end{aligned}$$

- *Ask the students to convert the following examples from centimetre to metre.*
  1. *500 cm*
  2. *850 cm*
  3. *1100 cm*
  4. *475 cm*

Addition and subtraction of lengths

Activity 4: Addition and subtraction of lengths

Materials Required: Thread, tactile ruler, tactile diagram of different lengths of lines.
Prerequisites: Addition and place value

Activity Flow

Addition of lengths:
In addition, the numbers are added according to their place value, in the same way, the addition of length is done.

- *Discuss the following examples with students.*
  Examples:
- *Sinchana has used a thread of 4 m to prepare a garland. And Poornima used a thread of 7 m to prepare a garland of flowers. What is the total length of the thread used by them?*
    - *Length of the thread used by Sinchana = 4 m*
    - *Length of the thread used by Poornima = 7 m*
    - *The total length of the thread used by both = 11 m.*
- *For the school annual day programme, school management wanted to buy two carpets of lengths 13 m 50 cm and 21 m 25 cm. What is the total length of the two carpets?*
    - *Length of carpet 1 = 13 m 50 cm*
    - *Length of carpet 2 = 21 m 25 cm*
    - *The total length of both the carpets = 34 m 75 cm.*
- *Ask the students to add the following examples.*
    1. *93 m and 77 m*
    2. *130 m and 23 m 50 cm*
    3. *27 m 18 cm and 69 m 19 cm*

Subtraction of lengths:
In subtraction the numbers are added according to their place value, in the same way, addition of length is done.

- *Discuss the following examples with students.*
  Examples:
- *Rani has to thread beads for a length of 50 cm. She has already threaded the beads for a length of 30 cm. What is the length of the thread not filled by the beads?*
    - *The total length of the thread = 50 cm*
    - *The length already threaded = 33 cm*
    - *The remaining length of the thread = 17 cm*
- *Arun brings a wire of length 347 m 40 cm to fence a small garden. If, the wire used for fencing is 290 m 28 cm. What is the remaining length of the wire with him?*
    - *The total length of the wire = 347 m 40 cm*
    - *The length of the wire used = 290 m 28 cm*

Estimate the length of objects and the distance

Activity 4: Estimate the length of objects and the distance between two locations
Materials Required: Thread, tactile ruler, tactile diagram of different lengths of lines.
Prerequisites: Difference between meter, kilometre and centimeter.

Activity Flow

Note: The unit of measuring lengths varies with the size of the objects, also their units of measurements. There are objects and situations in which we measure in millimetre, centimetre and metre.

- *Ask the students, is it possible to measure the length and breadth of the playground in metres?*
- *Also ask them the distance between two places, for example, the distance between Bangalore and Mysore.*
- *It is difficult to express the distance between two places in centimetres or metres. Hence, there is one more measuring unit called kilometre. Kilometres are denoted by km.*
- *1 kilometre = 1000 metre.*
- *Explain, in many of our daily life situations, where without expressing the actual measurement of length, people will express a little more or less than the actual length.*

Examples:

1. *The distance between their schools from their home.*
2. *The distance between temple and their home.*
3. *The distance between their classroom to the playground.*

- *Ask the students to give a few examples on estimating the measurement of length (distance).*

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE*

Discuss the following questions with the students:

1. Why do you measure your height?
2. Why do we need to measure the objects?
3. Why do we need to know the distance between two places?

After the child is born, the doctor or the nurse measures the weight and height of the child to know the health condition of that child. Likewise, we measure our height and weight to know the fitness of our body.

We need to measure the objects length, capacity and height for many reasons:

1. A tailor needs to measure the height of a person to stitch a dress.
2. A carpenter needs to measure the length and breadth of the floor to make furniture.
3. To fence a garden, we need to measure the perimeter of the garden.

If you want to buy a plant for your garden, you will search for a nearby nursery. If it's within a kilometre, you can go by walk. If it's more than 3 kilometres, then you need to go by bus or car. So based on the distance you can plan for your journey.

4. EXERCISES & REINFORCEMENT

4.1 EXERCISES & REINFORCEMENT

Practice and Recall

Activity 5: Practice and Recall

Materials Required: None

Prerequisites: Measurement of lengths and conversion of units.

Activity Flow

I. Convert the given measurement into centimeter:

a) 9 m
b) 12 m
c) 10 m
d) 14 m
e) 20 m
f) 33 m

II. Fill up the blanks with correct answers.

a) 6 m = ? cm
b) 11 m = ? cm
c) 39 m = ? cm

III. The measurements in list 'A' are given in metre and the measurements in list 'B' are given in centimetre. Find the correct match.

A

1. *4 m*
2. *7 m*
3. *7m 20 cm*
4. *4 m 50cm*

B

1. *705 cm*
2. *450 cm*
3. *700 cm*
4. *720 cm*
5. *400 cm*

IV. Convert the measurements into meters.

a) 800 cm
b) 900 cm
c) 600 cm
d) 1000 cm
e) 3000 cm

f) 300cm

V. Fill up the blanks with correct answers.

d) 400 cm = ? m

e) 875 cm = ? m ? cm

f) 400 cm = ? m

VI. Say true or false.

a) 20 m = 1000 cm

b) 5 m = 500 cm

c) 750 m = 75 cm

d) 150 m = 1 ½ cm

VII. Add the following.

a) 150 m + 75 m = ?

b) 137 m + 112 m = ?

c) 250 m + 114 m = ?

VIII. Solve these problems.

a) Preethi has a red coloured tape of length 18 m and a blue coloured tape of length15 m. What is the total length of the tapes she has?

b) Azad travels a distance of 800 m in a rickshaw and 50 m on foot to reach the school. What is the total distance travelled by him?

c) Mary has a white thread of length 10 m and a black thread of length 18 m. What is the total length of the thread Mary has?

d) A shopkeeper sells a wire of length 50 m in the morning, 60 m in the afternoon and 5 m in the evening. What is the total length of the wire sold by him?

IX. Solve the sums given below.

a) 86 cm − 29 cm = ?

b) 94 cm − 88 cm = ?

c) 560 cm − 410 cm = ?

X. Solve the following problems.

a) In a bundle of thread, measuring a length of 450 metre, the shopkeeper sells 170 metre of thread. what is the remaining length of the thread in the bundle?

b) Ahmed brings a wire of length 227 m to fence a small garden. If the wire used for fencing is 190 m what is the remaining length of the wire with him?

c) In a bundle of cloth measuring 125 m, a length of 70 m is cut and removed. What is the remaining length of the cloth?

d) A hill climber climbs 475 m in the first attempt and 300 m in the second attempt. How much less height has he climbed in the second attempt than in the first?

e) The length of a goods train is 242 m. The length of a passenger train is 109 m. Which train is more in length? And by how much?

4.2 IMPORTANT GUIDELINES*

Exercise Reading

It is very important that the children practice their learnings as well as their reading. Hence have the children read out the newly learned concepts from their textbooks or other available resources.

Perform Textbook Activity

It is good practice to have the children perform the textbook activities. Your textbook activities might not be accessible hence go through this resource to learn how to make textbook content accessible

Provide Homework

To evaluate their understanding and to help the student revise and implement the new learnt concept ensure to provide them with homework. Students should perform one or two of the questions mentioned above or from the textbook exercises with the teacher in Class and the remaining may be given for homework. Also, ensure that the student knows their special skills linked to independently using their accessible books as it will be critical to doing homework independently

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