

MEASUREMENTS

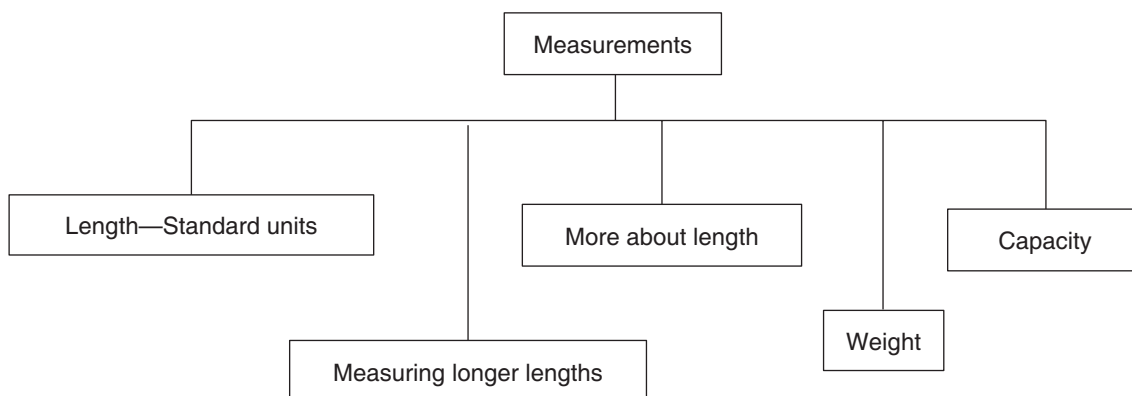
Learning objectives

Students will be able:

- To estimate and measure length, weight and capacity in non-standard units
- To compare weights of objects using a simple balance
- To order containers based on their capacities

Prior knowledge

- Concept of length, weight and capacity
- Non-standard units of measurement



Guidelines to teach:

Rewind:

- Review the units of measurements in the Rewind section.



Warm Up:

- Help students to complete the activity in the Warm Up section.

Length—standard units:

- Help students to conclude that the measurements are different because the handspans of different people are different.

To reinforce the idea, conduct the following activity in the class:

- Call a student to the front of the class. Ask the student to measure the length of the board using handspan.
- Record it on the board as given: length of the blackboard = _____ handspans of _____ .
(Write the name of the student in the second blank.)
- Now, measure the length of the board using your handspan.
- Write on the board: length of the board = _____ handspans of teacher. (*Note:* Write the number of your handspans in the blank.)

- Repeat this activity with two more things in the classroom.
- Help students conclude that handspan is different for different people.
- Help students to do the Activity on measuring the length of the desk using paper clips.
- To reinforce the concept of using fixed length as unit of measurement of length, do the following activity.
- Bring ice cream sticks of the same length.
- Draw a line on the floor using a ruler and chalk.
- Measure the line using the ice cream sticks.
- Count the number of sticks used. Suppose you have used 5 ice cream sticks, write your name and write 'Number of sticks used to measure the line is 5 ice cream sticks' on the board.
- Remove the sticks.
- Call a student to the front of the class.
- Ask the student to measure the same line using ice cream sticks.
- Ask the student to count the number of sticks and write the number on the board in the same manner.
- Ask students to compare the number of sticks and note that they are the same. Conclude that the measurements remain the same when a fixed unit of length is used.
- Ask students to measure lengths of different objects using paper clips / ice cream sticks and note the lengths in their note books.

Measuring longer lengths:

- Bring ice cream sticks and around 20 long rulers (or long sticks of the same length) to the class.
- Call 10 students to the front.
- Ask them to place ice cream sticks along the length of the class. Check if they have placed the sticks correctly and measure the length of the classroom by counting the number of ice cream sticks.
- Write, 'Number of ice cream sticks used to measure the classroom is: ____' on the board.
- Remove the sticks.
- Next, ask the same students to use rulers to measure the same length.
- Write, 'Number of rulers used to measure the classroom is: ____'.
- Ask the students to say which was easier to measure.
- When the student says, 'ruler', explain that it is difficult to measure larger lengths using small units and that larger lengths are measured using larger units.
- Use the examples given in the course book to reinforce the concept and guide them to complete the Tryout.

- Help them to complete the Activity on estimating and measuring lengths using paper clips.

More about length:

- Make a chain of paper clips as given in the course book.
- Take two pieces of string and measure them separately using a chain of required number of paper clips in front of the class. Carefully join the two strings together with a cello tape. (Make sure that their ends do not overlap at the joint.)
- Ask students to guess what the length of the long string will be. Ask them to say how they arrived at the answer.
- Measure the string with the help of the chain of paper clips to help students confirm their answer.
- Explain the example given in the course book for addition of length.
- Instruct students to complete the Tryout.
- Take two pieces of string of different lengths. Measure the longer string first and then the shorter string.
- Ask students: Is there a difference in their lengths? (*Yes*)
- How will you know how much the difference is? (*by subtracting the smaller length from the bigger length*)
- Instruct students to do the subtraction, by subtracting the paper clips used for the longer and shorter lengths, and tell you the answer.
- Place the shorter piece of string close to the longer one. Mark off the portion of the longer string that extends beyond the length of the shorter string. Measure this portion using paper clips to check if it matches the answer.
- Explain the example given in the Guided Learning section in the course book for subtraction of length.
- Instruct students to complete the Tryout for subtraction of length.

Weight:

- Explain that some objects are measured by checking how heavy or light they are.
- Explain that weights of two objects are compared to know the heavier or the lighter of the two.
- Bring a weighing scale to the class and tell students what it is used for.
- Place two objects of different weights, like a pencil and a geometry box, on the two pans of a weighing scale and ask students to say which is the heavier of the two. (*The heavier object is on the side of the scale which is lower. Explain this to students, by saying that the heavier object has more weight so its side goes down.*)
- Use the weighing scale to help students do the Activity.
- Instruct students to complete the Tryout on weights.

Capacity:

- Explain the term capacity with the help of the course book.
- Display different bottles which have visibly different capacities and ask students to identify the bottle that will hold the most amount of water and the bottle that will hold the least amount of water.
- Help students to complete the Activity for capacity.

More suggestions for extension activities:



- Take students to the playground and Instruct them to find the lengths of a slide, a see-saw and so on, using walking sticks/rulers.
- Display a few items of different weights, like a book, an empty water bottle, an empty pencil box, a pencil, a ruler and so on, on your table. Pass the pencil to the class and ask each student to feel the weight of the pencil. Ask them to take turns to guess if the other objects in the collection weigh more or weigh less when compared to the pencil.
- Display a few plastic bottles or jars of different capacities on your table. Give students the capacity of one bottle/ jar. Ask them to take turns to guess if the other bottles/jars in the collection have more capacity or less capacity when compared to the bottle whose capacity you had specified.



Question Bank

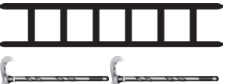
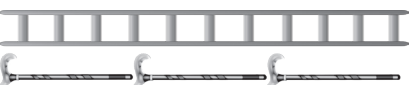
(I) LENGTH—STANDARD UNITS

(1) Use the paper clip chain shown to measure the length of each object.

- (a)  clips
- (b)  clips



(II) MEASURING LONGER LENGTHS

(2) Tick the longer ladder.

- (a) 
- (b) 




(III) MORE ABOUT LENGTH

(3) Find the total length.

- (a)  clips
- (b)  sticks

(IV) WEIGHT

(4) Fill in the blanks with 'heavier than', 'lighter than' and 'as much as'.

- (a)  A watermelon weighs _____
5 tomatoes.
- (b)  1 watermelon is _____
6 tomatoes.
- (c)  1 watermelon is _____
2 tomatoes.

(V) CAPACITY

(5) Tick the container that has the greater capacity.

- (a) A glass A bucket
- (b) A teaspoon A cup
- (c) A cup A mug

Answer Key to the Question Bank

(I) (1) (a) 6 clips (b) 3 clips (II) (2) (b) Longer ladder (III) (3) (a) 9 clips (b) 80 sticks
(IV) (4) (a) as much as (b) lighter than (c) heavier than (V) (5) (a) A bucket (b) A cup (c) A mug

Answer Key—Measurements

Worksheet 1

A. 1. clips 2. walking sticks 3. walking sticks B. 4 clips C. 8 erasers D. 1, 3, 2

Answer Key—Measurements

Worksheet 2

A. 1. paper clip 2. a. $5 + 3 + 8$ crayons b. $5 - 3 = 2$ crayons B. 1. lighter 2. heavier
C. 1. equal to 2. more than 3. less than

MEASUREMENTS

Worksheet 1

A. Will you use clips or walking sticks to measure these items?



1.



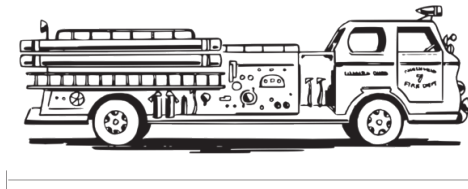
Clips / Walking sticks

2.



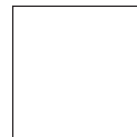
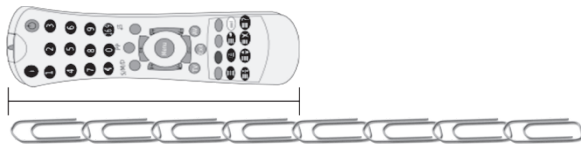
Clips / Walking sticks

3.



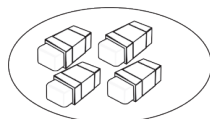
Clips / Walking sticks

B. Use the paper clip chain shown to measure the length of the given object.

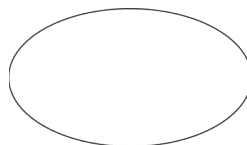
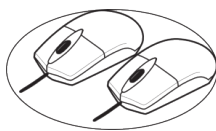


clips

C. Fill in the blanks.

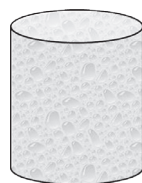


A computer mouse weighs as much as 4 erasers.



Two computer mice weigh as much as ____ erasers.

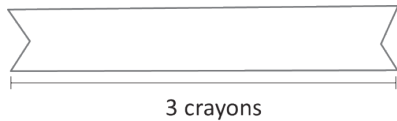
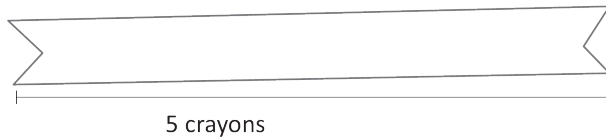
D. Write 1, 2 and 3 in the containers that has the most, less and the least waters.





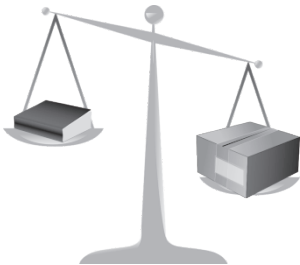
A. Answer the given questions

- Which is a fixed unit for measurement of length—a handspan or a paper clip?
- Find (a) the total length (b) the difference in length



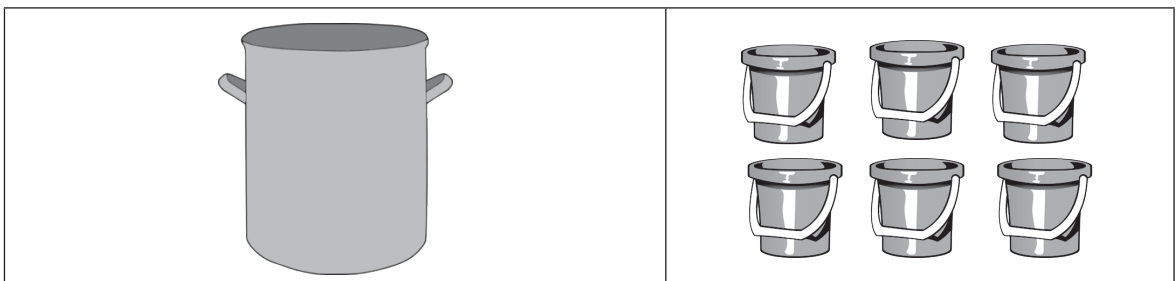
- a. crayons + crayons = crayons
- b. crayons – crayons = crayons

B. Look at the weighing balance. Fill in the blanks with 'heavier' or 'lighter'.



- The book is _____ than the box.
- The box is _____ than the book.

C. The container is filled by 6 buckets of water. Fill in the blanks with 'less than', 'more than' or 'equal to'.



- The capacity of the container is ___ the capacity of 6 buckets of water.
- The capacity of the container is ___ the capacity of 5 buckets of water.
- The capacity of the container is ___ the capacity of 7 buckets of water.