



Activities that contribute to the student's personal understanding of key concepts in mathematics

IDEAS

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Each IDEAS presents activities that are appropriate for use with students at various levels in the elementary school. The activity sheets are so arranged that they can be easily removed and reproduced for classroom use. Permission to reproduce these worksheets for classroom use is not necessary.

The activities for November provide practice in using two units of length—centimetre and metre. Be sure each student knows how to use a ruler before beginning these activities. The last worksheet (IDEAS) should be attempted only after students have had some experience measuring objects to the nearest centimetre and metre. Other measurement activities are contained in the 1976 NCTM Yearbook, *Measurement in School Mathematics*.

One "thank you" goes to Millie Lewis and Candy Slitor (Midway Elementary School) and Betty Pullin (Oak Grove Elementary School) in DeKalb County, Georgia, who spent time reviewing this month's IDEAS. A second "thank you" goes to all their students who helped pilot these worksheets. Their help is greatly appreciated.

I D E A S

For Teachers

Objective: To practice measuring lengths of objects less than 20 cm

Level: 1, 2, 3

Directions for teachers:

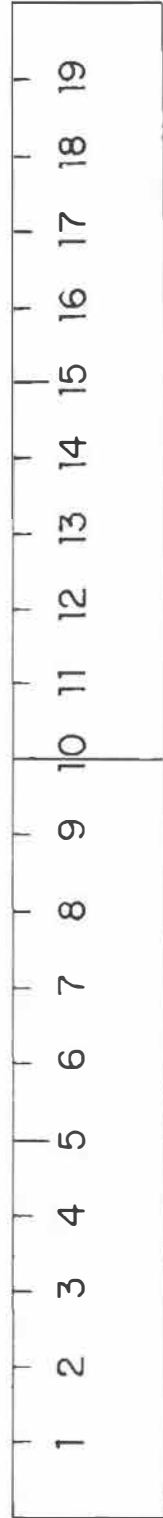
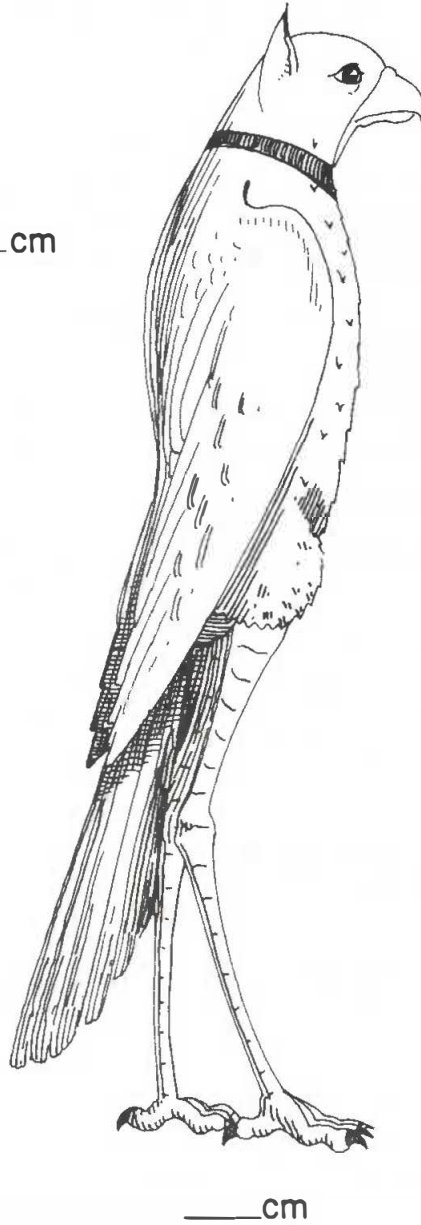
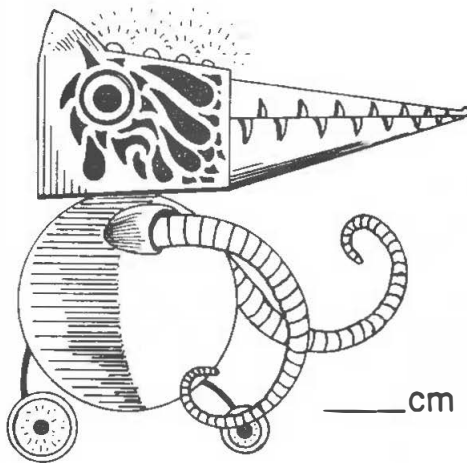
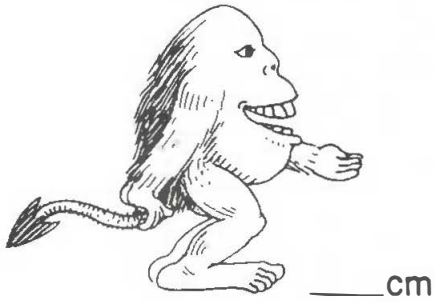
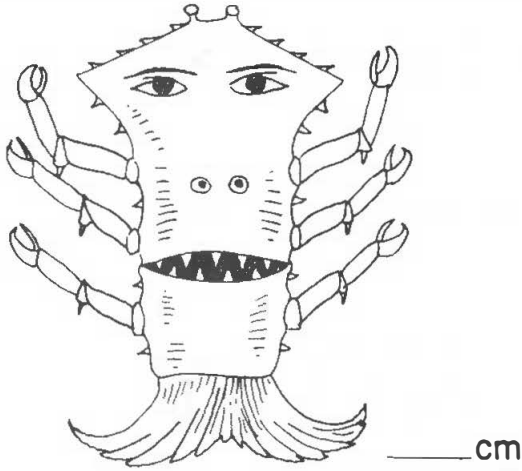
1. Give a copy of the worksheet to each student.
2. Tell the children to cut out the paper ruler.
3. Read the directions to the students.
(a) Be sure the students measure the vertical (not slanted) height of each creature.

(b) Be sure the "feet" of each creature are included in the height.

Going further:

1. Ask which creature is the tallest, shortest, fattest, and so on, or which has the most arms, eyes, feet, and so on.
2. Ask each student to draw a creature and measure its height.
3. Use the ruler to measure objects in the room; for example, eraser, pencil, paper, scissors, crayon.

Measure the height of each creature to the nearest centimetre.



IDEAS For Teachers

Objective: To develop a frame of reference for centimetre by measuring parts of the body

Level: 2, 3, 4, 5

Directions for teachers:

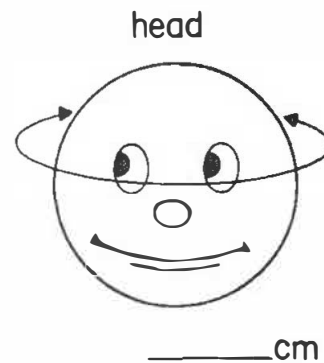
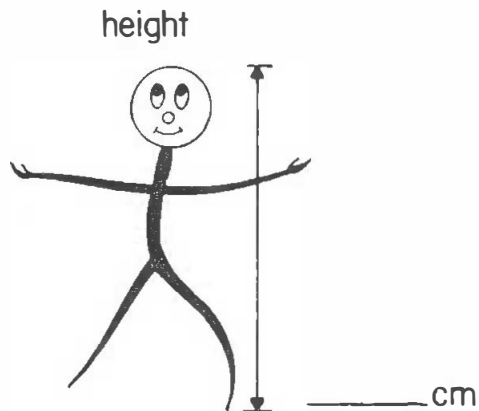
1. Provide students with measuring tapes marked off in centimetres, or pieces of string and centimetre rulers.
2. Give each student a copy of the worksheet.
3. Read the directions with the students and then have the students work in pairs

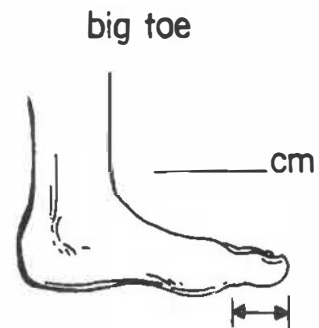
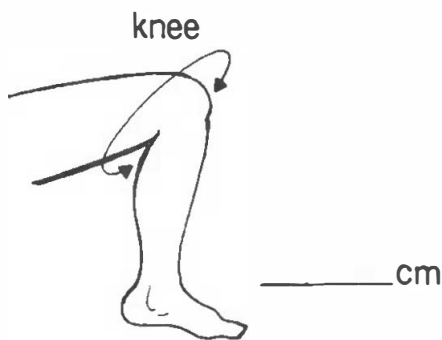
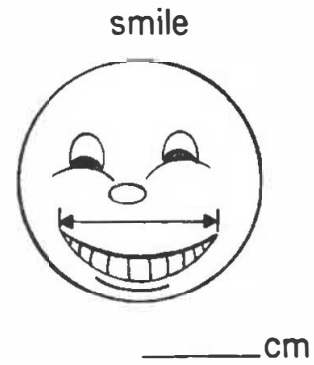
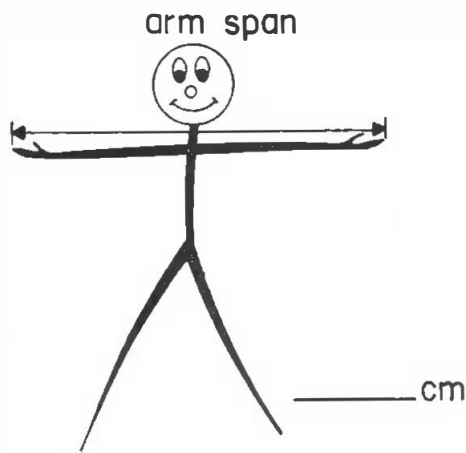
or small groups to measure each other's body parts.

Going further:

1. Have the students separate themselves into three groups: (see IDEAS in the *Arithmetic Teacher*, October 1974)
 - a. tall rectangles (height > arm span)
 - b. squares (height = arm span)
 - c. short rectangles (height < arm span)
2. Find approximate ratios: head to knee, knee to toe, head to toe, smile to toe, and so on.

Measure each body part to the nearest centimetre.





I D E A S For Teachers

Objective: To practice measuring line segments

Level: 4, 5, 6

Directions for teachers:

1. Give each student a copy of the worksheet.
2. Be sure each student has a centimetre ruler.
3. Let the students read the directions and go to work. The students are expected to measure each straight section of the path

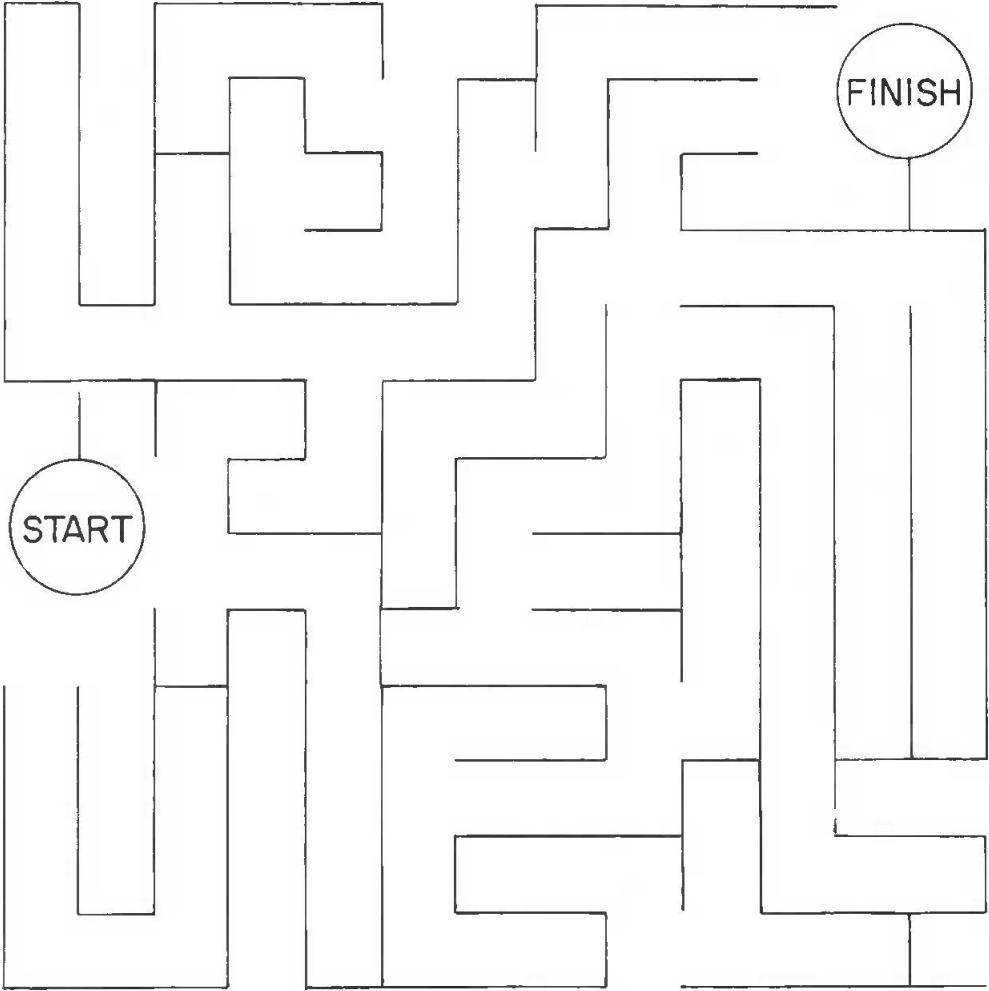
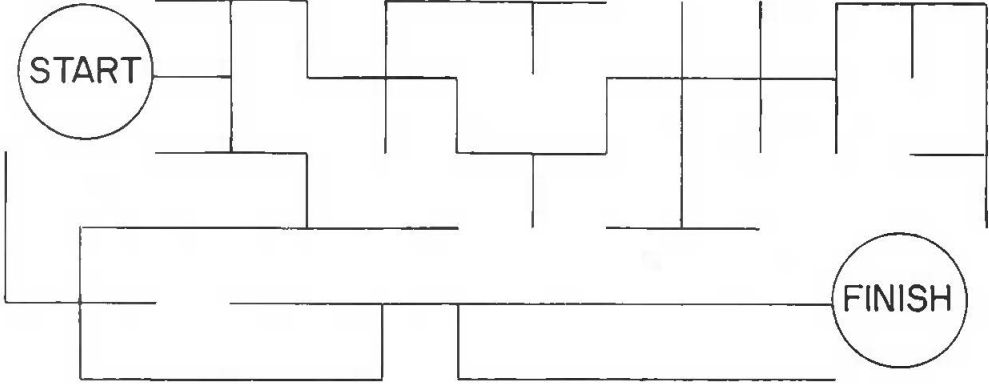
to the nearest centimetre and then to add these measurements.

Going further:

1. Ask students to put an "X" on each part of the maze that is 6 cm (or 5 cm or 4 cm) long.
2. Let each student make a maze and have another student find and measure the path.

Answers: first maze, 20 cm; second maze, 47 cm.

Find each line path from START to FINISH.
Measure the length of each path in centimetres.



I D E A S For Teachers

Objective: To estimate measurements and to use the relationship between metre and centimetre

Level: 6, 7, 8

Directions for teachers:

1. The students need to have some experience measuring in centimetres and metres before they can be successful with the exercises.
2. Give each student a copy of the worksheet.
3. Students should imagine the actual objects pictured. The best measurement may not be exactly correct, so students should choose the one which is closest.

Ask students to explain how they decided which measurement is best.

4. Ask students to make up exercises like those on the worksheet.

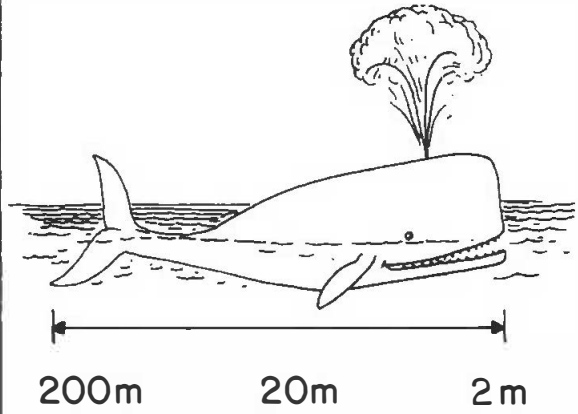
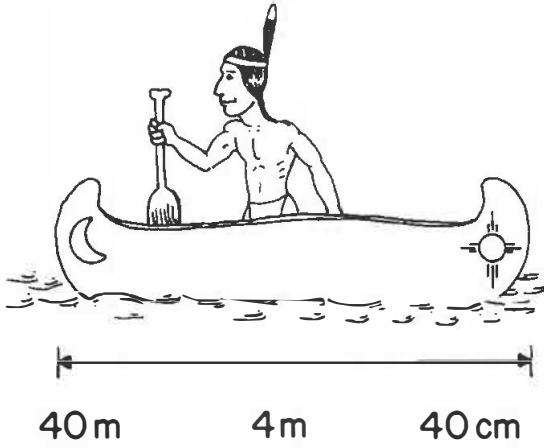
Answers: canoe, 4 m; whale, 20 m; penny, 2 cm; glasses, 10 cm;

4 cm, 8 m = 800 cm, 7 m, 100 cm.

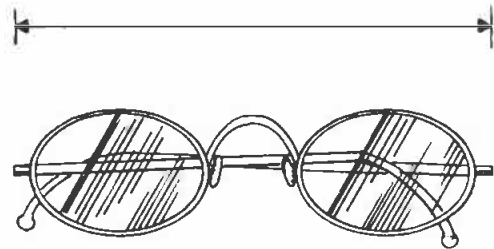
Comments: There are several ways to obtain answers to the exercises at the bottom of the page. In the first pair, 4 is less than 40 and cm is a smaller unit than m, so 4 cm is smaller than 40 m. Alternatively change one of the measurements in each pair to the unit of the other measurement; for example, since $7\text{ m} = 700\text{ cm}$ and $7000\text{ cm} = 70\text{ m}$, the pair 7000 cm, 7 m is the same as the pair 7000 cm, 700 cm or the pair 70 m, 7 m.

m means metre
cm means centimetre
1m 100 centimetres

Circle the best measurement for each object pictured below.



2m 20cm 2cm



20cm 10cm 5cm

Circle the measurement in each pair that represents the shorter length.

4 cm, 40 m

8 m, 800 cm

7000 cm, 7 m

10 m, 100 cm