

# MEASUREMENT

GRADE 2

ONTARIO EDITION

# *hands-on* **mathematics**

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# Introduction

Measurement concepts and skills apply directly to the students' world. Through the active, hands-on lessons in this module, students develop spatial sense and an understanding of measurement. Concrete experiences help students become familiar with different types of measures, the process of measuring, and the relationships among figures.

In this module, students:

- estimate, measure, and compare, using standard units of measure for measuring length, and primarily non-standard units of measure for other measuring (area, capacity/volume, mass)
- select the most appropriate unit of measure
- construct tools to measure the passage of time in non-standard units
- use a thermometer to determine rising and falling temperatures

## Mathematics Vocabulary

Throughout this module, teachers should use, and encourage students to use, vocabulary such as: *estimate, measure, compare, length, height, distance around, centimetre, metre, iteration, mass/weight, area, volume, capacity, thermometer, and temperature.*

Continue to use your classroom Math Word Wall as a means of reinforcing new vocabulary. As new terms are introduced in the lessons, record the words on index cards and display them under the appropriate letters of the alphabet on your Math Word Wall.

# 2

## Measuring Objects by Height, Length, Width, and Distance Around

### Materials

- paper clip measuring tapes (hook paper clips together to make chains. You will need one chain for each pair of students.)
- chart paper
- markers
- pencils

### Activity

Explain to students that they will work in pairs to measure different parts of their bodies, including:

- the length of their *entire* bodies or their height
- the length of one of their arms
- the length of one of their legs
- the distance around their heads
- the width of one of their feet
- the distance around one of their wrists
- the distance around one of their ankles

Tell students that they will use paper clip measuring tapes to measure each body part. Have pairs of students work together to create a paper clip chain, ensuring that the length of the chain is greater than each student's height.

Have students look closely at their measuring tapes. Ask:

- What can you tell me about your paper clip measuring tape?
- With what unit are you measuring? (paper clip)

Gather students into a circle. Select a volunteer to stand in the centre of the circle. Ask students to estimate the height of the student in paper clips, and record their estimates on chart paper. Then, select another student to measure the first student's actual height with the paper clip chain. Record this under the estimates on the chart paper with "paper clips" as the unit of measure.

Have students compare the height estimates to the actual height measurement. Ask:

- Were any of the estimates correct?
- Were any of the estimates close to the actual height?
- How far off was this estimate? (Point to one of the estimates.)

Distribute Activity Sheet A (3.2.1) to students. Demonstrate how to measure the remaining body parts outlined on the sheet. Discuss the terms of measurement, focusing on the difference between *height*, *length*, *width*, and *distance around*.

Then, have students work in pairs to estimate and measure the height, length, width, or distance around their own body parts.

### Activity Sheet A

#### Directions to students:

Estimate, and measure each body part and record the actual length, width, distance around, or height in the space provided. Be sure to include the unit of measure (paper clips) (3.2.1).

### Next Steps

- Have students use standard centimetre tape measures to measure their body parts again. The same activity sheet (3.2.1) can be used for this task.
- Discuss the differences between non-standard and standard measurement.

### Problem Solving

Have students use their results from Activity Sheet A (3.2.1) to answer the questions found on the problem solving sheet called "Measuring Up" (3.2.2).

# 2

## Extensions

- Add the terms *height*, *length*, *width*, and *distance around* to your classroom Math Word Wall.
- Use other non-standard units to measure height, length, width, and distance around (for example, bead chains, straw chains).
- Read *Jim and Beanstalk*, a book by Raymond Briggs, about a young boy who climbs to the top of the beanstalk only to find an old and ailing giant.
- Measure and compare the heights of students in September, January, and again in June.
- Discuss the importance of accurate measuring in everyday life (for example, when constructing a home, when hemming a pair of pants, when building a piece of furniture, when sewing curtains for a window, when buying a pair of shoes).
- Have students make bracelets for one another based on their wrist measurements.

## Assessment Suggestions

- Observe students as they work together to measure their body parts. Record your observations using the Cooperative Skills Teacher Assessment sheet, found on page 22.
- Have students complete Cooperative Skills Self-Assessment sheets, found on page 24, to reflect on their abilities to work together.

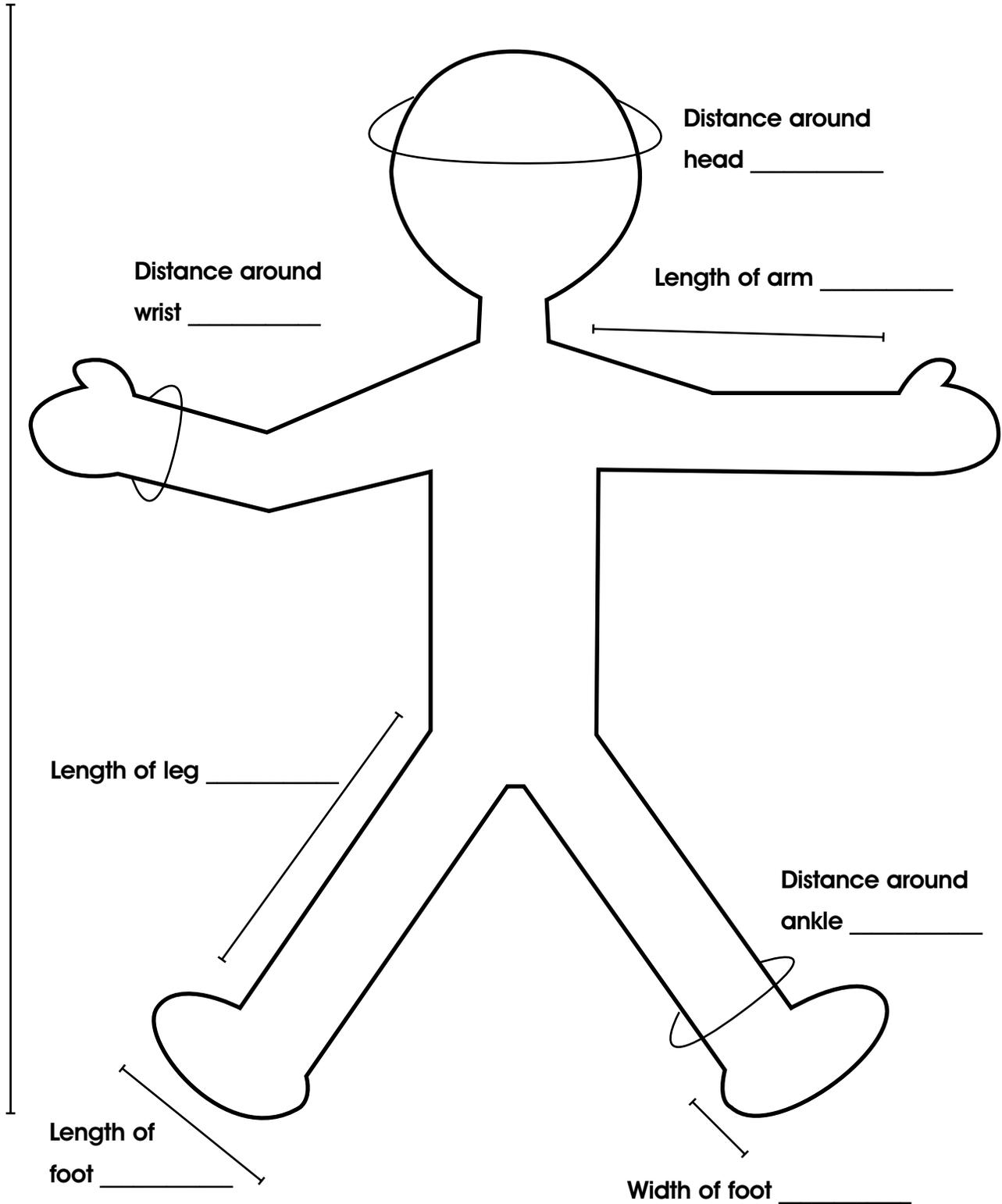
Date: \_\_\_\_\_

Name: \_\_\_\_\_

Partner: \_\_\_\_\_

# Measuring Me

Height of body \_\_\_\_\_



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Date: \_\_\_\_\_

Name: \_\_\_\_\_

Partner: \_\_\_\_\_

# Measuring Up

1. What unit of measure did you use to measure your height?

\_\_\_\_\_

2. Record your height. \_\_\_\_\_

Record your partner's height. \_\_\_\_\_

Who is taller? \_\_\_\_\_

By how much? \_\_\_\_\_

3. What is the length of your arm? \_\_\_\_\_

What is the length of your leg? \_\_\_\_\_

Which one is longer? \_\_\_\_\_

By how much? \_\_\_\_\_

4. Why would you need to know the following:

The length of your foot?

\_\_\_\_\_  
\_\_\_\_\_

The distance around your head?

\_\_\_\_\_  
\_\_\_\_\_