

## Grade 4 Mathematics

### Measurement: Lesson 3

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students will have an arrow symbol ( $\Rightarrow$ ) by them.

#### *Purpose of Lesson 3:*

- In this lesson, the tutor and the students will
  - ✓ select the best unit to measure weight/mass and capacity,
  - ✓ choose the appropriate measuring tool,
  - ✓ read weight/mass and capacity measurements, and
  - ✓ estimate weight/mass and capacity measurement.

#### *Equipment/Materials Needed:*

- Copies of Student Sheet 41 – 43
- Paper and pencils
- An object that weighs about 1 pound, one that weighs about 1 ounce, one that weighs about 1 kilogram, and one that weighs about 1 gram.

#### *Preparations before beginning Lesson 3:*

- Run off 1 copy of Student Sheets 41 – 43 for each student.
- Gather paper and pencils.
- Measure some objects around the room. You need objects that weigh 1 pound, 1 ounce, 1 kilogram, and 1 gram. Find a few objects that weigh more and less than these objects do.

### Lesson 3: Weight/Mass and Capacity

Say:

**Let's talk about weight. When might you need to measure weight?** (When buying fruits and vegetables, to see if you qualify for a sports team, to ship something by mail) **What kind of tool would you use to measure weight?** (scales) Students will see both the terms *weight* and *mass*. *Mass* is the amount of matter in an object. *Weight* is a measure of how heavy an object is. Customary units are used to measure weight. Metric units are used to measure mass. Do not make a big deal of this difference. **What units do you use to measure weight/mass?** (pound, ounce, ton, gram, kilogram) There are others, but these are the most common ones.

⇒ Write *customary* and *metric* on a piece of paper or on the board. Divide the units into customary and metric units.

**Customary**

Pound, ounce, ton

**Metric**

gram, kilogram

Say:

**Let's put the units in order from the smallest to the largest in each system.** Write the symbol next to the unit.

**Customary**

ounce (oz)

pound (lb)

ton (T)

**Metric**

gram (g)

kilogram (kg)

Say:

**Let's start with the customary system. Can you think of something that weighs about an ounce?** (A slice of bread) **Something that weighs about a pound?** (A loaf of bread) **About a ton?** (A small car)

**What units would you use to measure the following items?**

- A. **The weight of a grown cat** (pounds)
- B. **The weight of a whale** (tons)
- C. **The weight of a TV** (pounds)
- D. **The weight of an orange** (ounces)
- E. **The weight of a sack of potatoes** (pounds)

⇒ Find an object that weighs about 1 pound and some other objects that weigh more or less than a pound. (You need to weigh these objects ahead of time.) Have several students hold the 1 pound object in one hand and another object in the other hand.

Say:

**Does the other object weigh more or less than 1 pound?** Don't use objects that are similar in weight. Keep trying objects around the room. Do the same thing with ounces.

⇒ Students need to be able to read scales. Use problems 1 – 3 on Student Sheet 41 to make sure they can read scales. Then give the students the rest of the sheet. Answers:

- |           |           |           |          |
|-----------|-----------|-----------|----------|
| 1) 4 lbs. | 2) 8 oz.  | 3) 3 lbs. | 4) B     |
| 5) C      | 6) less   | 7) more   | 8) ounce |
| 9) pound  | 10) ounce |           |          |

Say:

**Let's look at the idea of weight or mass in the metric system. Can you think of something that has the mass of 1 gram?** (a small grape, a shoelace) **About 1 kilogram?** (A textbook, or since a kilogram is about 2 pounds, 2 loaves of bread)

Say:

**What unit would you use to measure the weight of the following items?**

- A. The weight of a grown cat (kilograms)
- B. The weight of a whale (kilograms)
- C. The weight of a TV (kilograms)
- D. The weight of an orange (grams)
- E. The weight of a sack of potatoes (kilograms)

⇒ Find an object that weighs about 1 kilogram and some other objects that weigh more or less than a kilogram. (You need to weigh these objects ahead of time.) Have several students hold the 1-kilogram object in one hand and another object in the other hand.

Say:

**Does the other object weigh more or less than 1 kilogram?** Don't use objects that are similar in weight. Keep trying objects around the room. Do the same thing with grams.

⇒ Give Student Sheet 42 to the students. Talk about each problem.

Answers:

- |               |             |         |       |
|---------------|-------------|---------|-------|
| 1) 1 kilogram | 2) 60 grams | 3) B    |       |
| 4) C          | 5) more     | 6) less |       |
| 7) g          | 8) g        | 9) kg   | 10) g |

Say:

**Capacity is the amount of liquid that will fit in a container. When might you need to find the capacity of a container.** (When buying milk, when taking cough syrup) **What kind of tool would you use to measure capacity?** (Measuring cups) **What units do you use to measure capacity?** (Cup, quart, gallon, pint, milliliter, liter) There are others, but these are the most important ones. Divide the units into customary and metric units.  
**Customary:** cup, quart, gallon, pint **Metric:** milliliter, liter

Say:

**Let's put the units in order from the smallest to the largest in each system. Write the symbol next to the unit.**

**Customary**

cup (c)

pint (pt)

quart (qt)

gallon (gal)

**Metric**

milliliter (ml)

liter (L)

Say:

**What units would you use to measure the capacity of the following:**

- A. The amount of water used to take a bath** (gallons)
- B. The amount of milk in a cake recipe** (cups)
- C. The amount of gasoline in your car** (gallons)

Say:

**Let's talk about the metric system. A milliliter is about 10 drops of medicine. A liter is a little more than a quart. Which units would you use to measure the capacity of the following items?**

- A. The amount of water used to take a bath** (liters)
- B. The amount of milk in a cake recipe** (milliliters)
- C. The amount of gasoline in your car** (liters)
- D. The amount of cough medicine you take** (milliliters)

⇒ Give Student Sheet 43 to the students. Have the students discuss the problems. Answers:

- 1) C
- 2) D
- 3) less
- 4) less
- 5) cup
- 6) gallon
- 7) C
- 8) B
- 9) less
- 10) more

⇒ Have one student summarize today's lesson.

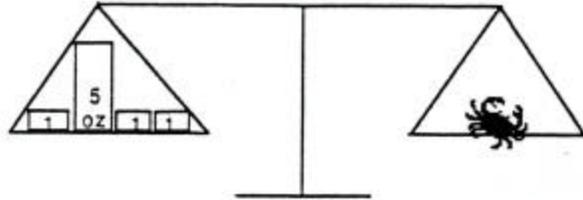
**Student Sheet 41 (Measurement: Lesson 3)**

1. Read the scale. How much does the dog weigh?

\_\_\_\_\_

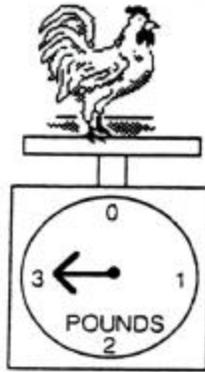


2. Look at the balance scale. How much does the crab weigh? \_\_\_\_\_



3. About how much does the rooster weigh?

\_\_\_\_\_



**Choose the best answer.**

4. What is the best estimate of the weight of a hamburger?

- A. 1 oz
- B. 6 oz
- C. 4 lbs.
- D. 6 lbs.

5. What is the best estimate of the weight of a pair of leather hiking boots?

- A. 2 oz
- B. 4 oz
- C. 2 lbs.
- D. 12 lbs.

6. Is the weight of a lamp more or less than a ton? \_\_\_\_\_

7. Is the weight of a textbook more or less than an ounce? \_\_\_\_\_

**In 8–10, choose the best unit to measure the weight of each object. (ounce, pound, or ton)**

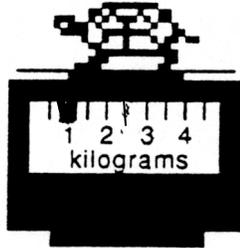
8. a pencil \_\_\_\_\_      9. a 4<sup>th</sup> grade student \_\_\_\_\_

10. a handful of grapes \_\_\_\_\_

## Student Sheet 42 (Measurement: Lesson 3)

1. Read the scale. How much does the turtle weigh?

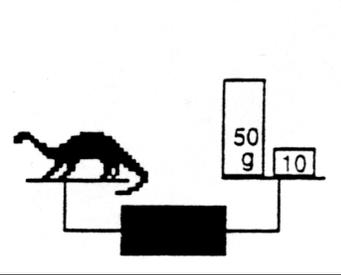
\_\_\_\_\_



2. Look at the balance scale.

How much does the

dinosaur weigh? \_\_\_\_\_



### Choose the best answer.

3. What is the best estimate for the weight/mass of an average fifth grader?

- A. 30 g
- B. 30 kg
- C. 70 g
- D. 70 kg

4. What is the best estimate for the weight/mass of a handful of grapes?

- A. 1 g
- B. 1 kg
- C. 7 g
- D. 7 kg

5. Is the weight/mass of a computer more or less than a gram? \_\_\_\_\_

6. Is the weight/mass of CD more or less than a kilogram? \_\_\_\_\_

### In 7–10, choose the best unit to measure the weight/mass of each object.

7. a pencil \_\_\_\_\_

8. a handful of popcorn \_\_\_\_\_

9. a dictionary \_\_\_\_\_

10. a box of tissues \_\_\_\_\_

**Student Sheet 43 (Measurement: Lesson 3)**

1. What is the best estimate of the amount of milk an average fifth-grader drinks each day?
  - A. 4 quarts
  - B. 4 gallons
  - C. 1 pint
  - D. 1 gallon
2. What is the best estimate of the amount of water used to take a bath?
  - A. 2 cups
  - B. 20 cups
  - C. 20 pints
  - D. 20 gallons
3. Does a small paper cup hold more or less than a pint? \_\_\_\_\_
4. Does a bowl of soup hold more or less than a quart? \_\_\_\_\_

**Which unit would you use to measure the capacity of the following objects? (cup, pint, quart, or gallon)**

5. the amount of water to add to a can of soup \_\_\_\_\_
6. the amount of water in a fish tank \_\_\_\_\_

**Choose the best answer.**

7. What is the best estimate of the amount of water in a 2-gallon bucket?
  - A. 1 milliliter
  - B. 10 milliliters
  - C. 10 liters
  - D. 100 liters
8. What is the best estimate of the amount of Contac lens solution in a bottle?
  - A. 1 milliliter
  - B. 100 milliliters
  - C. 1 liter
  - D. 100 liters
9. Does a cup of coffee hold more or less than a liter? \_\_\_\_\_
10. Does a swimming pool hold more or less than liter? \_\_\_\_\_