

# First Graders Measure Up!

**Grade Level or Special Area:** First Grade

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**Length of Unit:** Ten Lessons (10 days)

## I. ABSTRACT

Through the use of various strategies, students will become familiar with instruments of measurement such as rulers, balance scales, cups, quarts, and gallons. Students will also learn how to measure and compare objects according to length, mass, and volume using standard and non-standard units.

## II. OVERVIEW

### A. Concept Objectives

1. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
2. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4, adapted)
3. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)

### B. Content from the *Core Knowledge Sequence*

1. Measurement p. 36
  - a. Linear measure
    - i. Measure length using non-standard units.
    - ii. Measure length in inches and feet, and in centimeters.
    - iii. Measure and draw line segments in inches and centimeters.
  - b. Weight (mass)
    - i. Compare weights of objects using a balance scale.
    - ii. Measure weight in non-standard units and in pounds.
  - c. Capacity (volume)
    - i. Estimate and measure capacity in cups
    - ii. Identify quart, gallon.
2. Properties of Matter: Measurement p. 38
  - a. Units of measurement:
    - i. Length: centimeter, inch, foot
    - ii. Volume: gallon, quart
3. Fiction p. 25
  - a. Stories
    - i. Jack and the Beanstalk
    - ii. The Knee-High Man (African American folktale)
    - iii. Rapunzel

### C. Skill Objectives

1. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
2. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
3. The student listens attentively and engages actively in a variety of oral language experiences. (TEKS ELA 1.1)

4. The student is expected to determine the purpose for listening such as to get information to solve problems, and to enjoy and appreciate. (TEKS ELA 1.1A)
5. The student is expected to respond appropriately and courteously to directions and questions. (TEKS ELA 1.1B)
6. The student is expected to listen critically to interpret and evaluate. (TEKS ELA 1.1D)
7. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4)

### III. BACKGROUND KNOWLEDGE

- A. For Teachers
  1. Van de Walle, John A. and Lovin, LouAnn H. *Teaching Student Centered Mathematics Grades K-3, Volume 1*
- B. For Students
  1. K-Measurement (p. 18)
  2. K-Plants and Plant Growth (p. 19)

### IV. RESOURCES

- A. Hirsch, Jr. E. D. *What Your First Grader Needs to Know*
- B. Murphy, Stuart J. *Room for Ripley*
- C. Pluckrose, Henry. *Capacity*
- D. Pluckrose, Henry. *Length*
- E. Rey, Margret. *Pretzel*

### V. LESSONS

#### Lesson One: Bean Plant Measurement

- A. *Daily Objectives*
  1. Concept Objective(s)
    - a. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4, adapted)
    - b. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
  2. Lesson Content
    - a. Measurement p. 36
      - i. Linear measure
        - Measure length in inches and feet, and in centimeters.
  3. Skill Objective(s)
    - a. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4)
    - b. The student is expected to respond appropriately and courteously to directions and questions. (TEKS ELA 1.1B)
- B. *Materials*

1. *Jack and the Beanstalk* (found in *What Your First Grader Needs to Know* or any version)
  2. Container for each student or group of students with soil in them
  3. Bean seeds
- C. *Key Vocabulary*
1. Measure – find out size or amount of
- D. *Procedures/Activities*
1. Read *Jack and the Beanstalk*. Discuss the story and talk about the beanstalk growing so tall. Ask students how we could find out how tall the beanstalk is.
  2. Introduce vocabulary and write word and definition on chart tablet where visible to all.
  3. Tell students they are going to plant bean seeds. They will observe and measure the plant as soon as it comes out of the dirt.
  4. Have students plant the seeds in the containers. Each student can have their own container and seeds, or this can be done in small groups. The seed should be planted about one inch deep.
  5. Water the seeds and place the containers in a sunny window. Students will check plants each day for growth.
- E. *Assessment/Evaluation*
1. Teacher observation of student participation in group work.

## **Lesson Two: Non-Standard Linear Measurement**

- A. *Daily Objectives*
1. Concept Objective(s)
    - a. The student develops an understanding of the use of non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
    - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4, adapted)
    - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
  2. Lesson Content
    - a. Measurement p. 36
      - i. Linear measure
        - Measure length using non-standard units.
  3. Skill Objective(s)
    - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
    - b. The student listens attentively and engages actively in a variety of oral language experiences. (TEKS ELA 1.1)
- B. *Materials*
1. *Length* by Henry Pluckrose
  2. Items to be measured (scissors, pencil, glue bottle, crayon, book or any other small items in the classroom)
  3. Unifix Cubes, popsicle sticks, straws, or other non-standard units to use for measuring

4. Appendix A-1 (Inch Worms) 1 copy per student
  5. Appendix A-2 (Plant Growth Chart) 1 copy per student
- C. *Key Vocabulary*
1. Length – The measurement of something from one end to the other
  2. Standard measurement of length – Units used to measure length that are the same everywhere such as inches and centimeters
  3. Non-standard measurement of length – Units used to measure length that are not the same such as hand spans and paces
- D. *Procedures/Activities*
1. Read and discuss *Length* by Henry Pluckrose
  2. Introduce vocabulary words and write the words and definitions on the chart tablet started yesterday.
  3. Tell students they will be measuring the length of different items with non-standard units.
  4. Demonstrate how to measure the length of an item such as a pencil by placing the edge of the Unifix Cubes at one end of the pencil and continue adding cubes until they are the same length as the pencil. Count the cubes to determine how many Unifix Cubes long the pencil is. Repeat this procedure with other items.
  5. Give each student a copy of Appendix A-1 and the items to be measured. Have students cut the inch worms out and glue both parts together to make a ruler that is 12 inch worms long. Have students measure the items and record their answers on Appendix A-1.
  6. Students will check bean plants and measure and record results on Appendix A-2
- E. *Assessment/Evaluation*
1. Teacher observation of students while they are measuring items.
  2. Teacher will collect Appendix A-1 and assess completion and how reasonable measurements are.

### **Lesson Three: How Long is Your Name?**

- A. *Daily Objectives*
1. Concept Objective(s)
    - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
    - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4, adapted)
    - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
  2. Lesson Content
    - a. Measurement p. 36
      - i. Linear measure
        - Measure length using non-standard units.
  3. Skill Objective(s)
    - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)

- b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
- c. The student is expected to respond appropriately and courteously to directions and questions (TEKS ELA 1.1B)

B. *Materials*

- 1. *Pretzel* by Margret Rey
- 2. Appendix B-1 (Dachshund Pattern) 1 copy per student
- 3. Appendix B-2 (Graph paper) 1 copy per 4 students
- 4. Appendix A-2 (Plant Growth Chart)

C. *Key Vocabulary*

D. *Procedures/Activities*

- 1. Read *Pretzel* by Margret Rey
- 2. Ask students what is special about dachshunds. (They have long bodies)
- 3. Tell students to imagine if these dogs could grow longer and longer.
- 4. Tell students they will each make a long dachshund. Show the head and tail. Discuss how the middle part of the body is missing.
- 5. Give each student a strip of graph paper. Tell them they will write their first name putting one letter in each square. Demonstrate this using your name. Show students how to cut their strip at each end where their name begins and ends. The strips are the missing parts of the dog's body.
- 6. Tell students to count each square to see how long their name is. Students will construct a dachshund using the head and tail with their name in between for the body.
- 7. Make a graph on the board or butcher paper to show how many students have 4, 5, 6, etc. letters in their name. Discuss who has the longest name, shortest name, etc.
- 8. Students will check bean plants and measure and record results on Appendix A-2.

E. *Assessment/Evaluation*

- 1. Teacher observation of students making the body of their dachshund using their name.
- 2. Participation in class discussion while making the name graph.

**Lesson Four: Length Challenges**

A *Daily Objectives*

- 1. Concept Objective(s)
  - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
- 2. Lesson Content
  - a. Measurement p. 36
    - i. Linear measure
      - Measure length in inches and feet, and in centimeters.
      - Measure and draw line segments in inches and centimeters.

- b. Properties of Matter: Measurement p. 38
  - ii. Units of measurement
    - Length: centimeter, inch, foot
- 3. Skill Objective(s)
  - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
  - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
  - c. The student is expected to determine the purpose for listening such as to get information to solve problems, and to enjoy and appreciate. (TEKS ELA 1.1A)
- B. *Materials*
  - 1. *Rapunzel* (found in *What Your First Grader Needs to Know* or any version)
  - 2. Straws
  - 3. Ping-pong balls
  - 4. Small toy cars
  - 5. Long ramp (wooden board)
  - 6. Ruler with inch and centimeter markings
  - 7. Paper fans
  - 8. Variety of wind-up toys
  - 9. Appendix C-1 (How Far?) Cut apart and laminated for each center
  - 10. Appendix C-2 (Recording Sheet) 1 per student
  - 11. Appendix C-3 (Fish Pattern)
- C. *Key Vocabulary*
  - 1. Inch – A standard unit of measurement equal to one twelfth of a ruler
  - 2. Centimeter – A standard unit of measurement about one half an inch long
  - 3. Ruler – Measuring stick twelve inches long
- D. *Procedures/Activities*
  - 1. Read *Rapunzel* and discuss the length of her hair. Ask students how we could find out how long her hair is. What standard unit could we use to measure with?
  - 2. Show students a ruler and point to the inch side and the centimeter side. Introduce the vocabulary words and write the words and definitions on the chart paper.
  - 3. Brainstorm types of relays/races. Ask how many events involve length? (e.g. Who can jump the longest distance? Who can throw a football the longest distance?) Tell students that they will be participating in relays today.
  - 4. Explain the length challenge activities. Instructions are on Appendix C-1. Divide class into four groups.
  - 5. Give each student a copy of Appendix C-2. Students will rotate by groups to each station and record their results. (Students may need to collaborate using more than one ruler to measure sometimes.)
  - 6. Students will check bean plants and measure and record results on Appendix A-2.
- E. *Assessment/Evaluation*
  - 1. Teacher observation of student participation in length challenge activities.
  - 2. Teacher will collect Appendix C-2 and assess work completion and how reasonable the measurements are.

## **Lesson Five: How Tall Are You?**

### **A. Daily Objectives**

1. Concept Objective(s)
  - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4, adapted)
  - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1 adapted)
2. Lesson Content
  - a. Measurement p. 36
    - i. Linear measure
      - Measure length in inches and feet, and in centimeters.
  - b. Properties of Matter: Measurement p. 38
    - i. Units of measurement:
      - Length: centimeter, inch, foot
3. Skill Objective(s)
  - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
  - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
  - c. The student listens attentively and engages actively in a variety of oral language experiences. (TEKS ELA 1.1)

### **B. Materials**

1. *The Knee-High Man* (found in *What Your First Grader Needs to Know* or any version)
2. Butcher paper – one body length piece for every two students
3. Rulers and/or yard sticks

### **C. Key Vocabulary**

1. Height – distance from bottom to top
2. Shorter – not long or tall
3. Taller – extending to a great or specified height
4. Foot – Standard unit of measurement equal to twelve inches
5. Yard – Standard unit of measurement equal to three feet (36 inches)
6. Yardstick – Measuring stick three feet long

### **D. Procedures/Activities**

1. Read *The Knee-High Man*
2. Discuss the different heights of the knee-high man and the different animals.
3. Talk about the difference between length and height. Introduce the vocabulary words and add the words and definitions to the chart tablet.
4. Ask students to stand up and look at their neighbors. Ask if we are all the same height. Tell students they are going to measure to see how tall they are.

5. Tape a piece of butcher paper to the wall. Have students #1 and #2 come up and teacher marks their heights on the paper. Write each students name by their height. Continue process, measuring and marking two students per butcher paper strip.
6. Allow students to come up and measure their heights with a ruler. Demonstrate how to put the beginning of the ruler at the bottom of the paper and hold the ruler so it goes up and down. Have students work in pairs. Put the ruler down, one marks the top of the ruler with their finger, the other moves the ruler up. Continue until they reach the top of their mark. You could use a yard stick if available.
7. On the board or butcher paper, make a graph of the students' heights.
8. Discuss who is the tallest in the class, who is the shortest, etc.
9. Students will check bean plants and measure and record results on Appendix A-2.

E. *Assessment/Evaluation*

1. Teacher observation of student participation in measuring heights and discussion of the results.

**Lesson Six: What Balances It?**

A. *Daily Objectives*

1. Concept Objective(s)
  - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4, adapted)
  - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
2. Lesson Content
  - a. Measurement p. 36
  - b. Weight (mass)
    - i. Compare weights of objects using a balance scale.
3. Skill Objective(s)
  - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
  - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
  - c. The student is expected to listen critically to interpret and evaluate. (TEKS ELA 1.1D)

B. *Materials*

1. Balance scales
2. Collections of light to heavy objects
3. Containers of non-standard units
4. 16 pennies
5. 16 cotton balls



6. Unifix Cubes
  7. Appendix D-1 (Balance Activities) (Cut and laminated to use at each station)
  8. Appendix D-2 (Predict and Check)
- C. *Key Vocabulary*
1. Balance – Equalize
  2. Weight – Amount something weighs
  3. Equal – The same
  4. Predict – Say in advance, a good guess
- D. *Procedures/Activities*
1. Introduce vocabulary words and write words and definitions on chart tablet.
  2. Show students a pan balance. Tell them to pretend it is a seesaw. Ask what would happen if they were on one side of the seesaw and one of their parents were on the other side. What could you do to make it balance? (Put more kids on the side they are on until the combined weights equal the weight of their parent.)
  3. Ask students what they think would happen if you put 8 pennies on both sides. Do this and ask students if their predictions were correct. Ask what if you put 8 pennies on one side and 8 cotton balls on the other? Do this and ask students if their predictions were correct. Take pennies away one at a time until the scales are balanced. Students will count down each time you take away a penny to see how many pennies the cotton balls weigh.
  4. Tell students they will find two objects that they think have the same weight. (e.g. a book and a box) Have students predict what will happen when the objects are placed on the scale. Have students check to see if their predictions were correct.
  5. Tell students to put the book on one side of the pan balance. Tell them to predict how many Unifix Cubes the book weighs and record their answers. Tell students to add Unifix Cubes to the other side until the scale is balanced. Ask if their predictions were correct. (Any non-standard unit can be used in place of the Unifix Cubes.)
  6. Explain the balance activities. Give each student a copy of Appendix D-2. Divide the class into 4 groups. Groups will rotate through stations A-D. Have students predict, complete activity, and record their answers on Appendix D-2.
  7. Students will check bean plants and measure and record results on Appendix A-2.
- E. *Assessment/Evaluation*
1. Teacher observation of student participation in group activities.
  2. Teacher observation of listening skills and accuracy of predictions.
  3. Teacher will collect Appendix D-2 and assess work completion and how reasonable predictions are.

### **Lesson Seven: Weighing in Pounds**

#### **A** *Daily Objectives*

1. Concept Objective(s)
  - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4 adapted)

- c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
  - 2. Lesson Content
    - a. Measurement p. 36
      - ii. Weight (mass)
        - Measure weight in non-standard units and in pounds.
  - 3. Skill Objective(s)
    - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
    - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
    - c. The student is expected to respond appropriately and courteously to directions and questions. (TEKS ELA 1.1B)
- B. *Materials*
  - 1. Diet Scale or balance scale with an object that weighs 1 lb. (e.g. 1 lb. fishing weight)
  - 2. Collection of light and heavy objects (1lb., less than 1 lb. and more than 1 lb.)
  - 3. Appendix E (Recording Sheet) 1 copy per student
- C. *Key Vocabulary*
  - 1. Pound – A standard unit of weight equal to 16 ounces
- D. *Procedures/Activities*
  - 1. Introduce vocabulary word and write word and definition on chart paper. Review procedures used to weigh items using the balance scale.
  - 2. Tell students today they will be measuring weight in pounds. Discuss things that are weighed in pounds. (e.g. people’s weight, fruits, vegetables, etc.)
  - 3. Demonstrate how to use the diet scale. (If you do not have access to a diet scale, you can use a balance scale and an item that weighs one pound such as a one pound fishing weight. Put the one pound item on one side of the balance scale and students will find items that weigh one pound, less than one pound, or more than one pound by putting different items on the other side of the balance scale.)
  - 4. Put different items on the diet scale. Students will determine if each item weighs one pound, less than one pound, or more than one pound.
  - 5. Give each student a copy of Appendix E. Divide students into small groups. Each group will need a diet scale or balance pan with 1 pound weight and items to weigh.
  - 6. Students will check bean plants and measure and record results on Appendix A-2.
- E. *Assessment/Evaluation*
  - 1. Teacher observation of student participation in group activity.
  - 2. Teacher will collect appendix E and assess work completion and reasonable answers.

**Lesson Eight: Measuring Capacity in Cups**

A *Daily Objectives*

- 1. Concept Objective(s)

- a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4 adapted)
  - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
2. Lesson Content
- a. Measurement p. 36
    - i. Capacity (volume)
      - Estimate and measure capacity in cups
3. Skill Objective(s)
- a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
  - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
  - c. The student is expected to determine the purpose for listening such as to get information to solve problems, and to enjoy and appreciate. (TEKS ELA 1.1A)

**B** *Materials*

- 1. *Capacity* by Henry Pluckrose
- 2. 4 small containers, 4 medium containers, 4 large containers
- 3. 8 measuring cups (4 1 cup, 4 ½ cup)
- 4. Material that can be scooped and measured such as beans, rice, etc.
- 5. Appendix F (Recording Sheet)

**C** *Key Vocabulary*

- 1. Capacity – The most that a container can hold.

**D** *Procedures/Activities*

- 1. Read *Capacity* by Henry Pluckrose and discuss.
- 2. Introduce vocabulary word and write word and definition on chart tablet.
- 3. Divide students into 4 groups. Give each group a small, medium, and large container, 2 different size measuring cups, rice, beans, etc, and a copy of Appendix F.
- 4. Have students estimate how many large scoops the first container will hold and record their answers. Have them fill the container using level scoops of rice or beans. Have students record the results on their recording sheets.
- 5. Have students follow this procedure with the other two containers.
- 6. Have students follow this same procedure with the smaller scoop and record their results on their recording sheets.
- 7. Students will check bean plants and measure and record results on Appendix A-2.

**E.** *Assessment/Evaluation*

- 1. Teacher observation of student participation in group activities.
- 2. Teacher will collect appendix F and assess work completion and how reasonable predictions and answers are.

## Lesson Nine: Identifying Quarts and Gallons

### A. Daily Objectives

1. Concept Objective(s)
  - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4 adapted)
  - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
2. Lesson Content
  - a. Measurement p. 36
    - i. Capacity (volume)
      - Estimate and measure capacity in cups
      - Identify quart, gallon
  - b. Properties of Matter: Measurement p. 38
    - i. Units of measurement:
      - Volume: gallon, quart
3. Skill Objective(s)
  - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
  - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
  - c. The student is expected to determine the purpose for listening such as to get information to solve problems, and to enjoy and appreciate. (TEKS ELA 1.1A)

### B. Materials

1. *Room for Ripley*, by Stuart J. Murphy
2. Quart and gallon containers
3. Measuring cup
4. Appendix G (Fish bowl) 1 copy per student

### C. Key Vocabulary

1. Quart – A standard unit of liquid measure equal to 4 cups
2. Gallon – A standard unit of liquid measure equal to 4 quarts

### D. Procedures/Activities

1. Read *Room for Ripley* by Stuart J. Murphy.
2. This lesson could be done as a whole group, or you could divide the class into small groups. Show students the quart and gallon containers. Discuss items like milk, water, or orange juice that come in containers of different capacities.
3. Show students the measuring cup and ask them to estimate how many cups it will take to fill the quart container. Record their estimates then fill the cup with water and pour the water into the quart until it is full. Record the capacity of the container. (How many cups equal one quart?)

4. Follow this procedure with the gallon container. Ask students to estimate how many quarts make a gallon. Fill the quart container with water and pour the water into the gallon container until it is full. Record the capacity of the container. (How many quarts equal one gallon?)
  5. Have students generate definitions for the two vocabulary words and add these words and definitions to the class chart.
  6. Give each student a copy of Appendix G. Ask students how many quarts make a gallon. Tell students to pretend that the picture is a gallon. Demonstrate while you give instructions. Tell students to fold the paper in half. Have them fold the paper in half the other way. Tell students to cut their paper on both folds making 4 pieces. Tell students to pretend that the 4 pieces are a quart. Have them lay the 4 pieces on their desks to show that 4 quarts make a gallon. Ask students how many cups make a quart. Tell students to take one of their quarts and fold it in half. Have them fold the quart in half the other way. Tell students to cut this piece of paper on both folds making 4 pieces. Tell students to pretend that the 4 smaller pieces of paper are cups. Have them lay the 4 smaller pieces of paper on their desks to show that 4 cups make a quart. Ask students how many cups make a gallon. Repeat the preceding procedure with the other 3 pieces of paper. Tell students to put all 16 pieces of paper back together to show that 16 cups make a gallon.
  7. Students will check bean plants and measure and record results on appendix A-2.
- E. *Assessment/Evaluation*
1. Teacher observation of listening skills and accuracy of predictions.
  2. Teacher observation of students taking apart and putting together the fish bowl to show quarts, cups, and a gallon.

### **Lesson Ten: Unit Assessment**

#### *A. Daily Objectives*

1. Concept Objective(s)
  - a. The student develops an understanding of the use of standard and non-standard units to describe length, weight, and capacity. (TEKS Math 1.7, adapted)
  - b. The student develops an understanding of the use of age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. (TEKS Science 1.4 adapted)
  - c. The student understands the importance of listening attentively and engaging actively in a variety of oral language experiences. (TEKS ELA 1.1, adapted)
2. Lesson Content
  - a. Measurement p. 36
    - i. Linear measure
      - Measure length in inches and feet, and in centimeters.
      - Measure and draw line segments in inches and centimeters.
    - ii. Weight (mass)
      - Compare weights of objects using a balance scale.
    - iii. Capacity (volume)
      - Identify quart, gallon
  - b. Properties of Matter: Measurement p. 38

- i. Units of measurement:
      - Length: centimeter, inch, foot
      - Volume: gallon, quart
- 3. Skill Objective(s)
  - a. The student is expected to estimate and measure length, capacity, and weight of objects using non-standard and standard units. (TEKS Math 1.7A, adapted)
  - b. The student is expected to describe the relationship between the size of the unit and the number of units needed in a measurement (TEKS Math 1.7B)
  - c. The student uses age appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, describes, and measured. (TEKS Science 1.4)
- B. *Materials*
  - 1. Appendix H 1 copy per student
  - 2. Rulers with inch and centimeter markings 1 per student
- C. *Key Vocabulary*
- D. *Procedures/Activities*
  - 1. The teacher should look at the unit assessment and review students for the assessment prior to administering it. You could make a transparency of the assessment to use for a review depending on your class.
  - 2. Give each student a copy of Appendix H and a ruler. Read the instructions and administer the unit assessment.
- E. *Assessment/Evaluation*
  - 1. Teacher will collect the unit assessment. Students should be able to complete the assessment with at least 85% accuracy.

## VI. HANDOUTS/WORKSHEETS

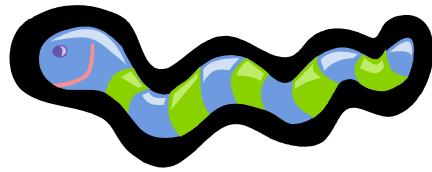
- A. Appendix A-1: Inch Worms
- B. Appendix A-2: Plant Growth Chart
- C. Appendix B-1: Dachshund Pattern
- D. Appendix B-2: Graph Paper
- E. Appendix C-1: How Far?
- F. Appendix C-2: Length Challenges Recording Sheet
- G. Appendix C-3: Fish Pattern
- H. Appendix D-1: Balance Activities
- I. Appendix D-2: Predict and Check
- J. Appendix E: Weighing in Pounds Recording Sheet
- K. Appendix F: Capacity Recording Sheet
- L. Appendix G: Fish Bowl
- M. Appendix H: Unit Assessment

## VII. BIBLIOGRAPHY

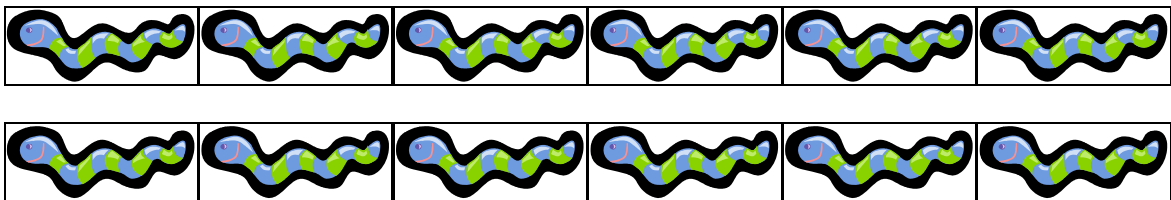
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Appendix A-1

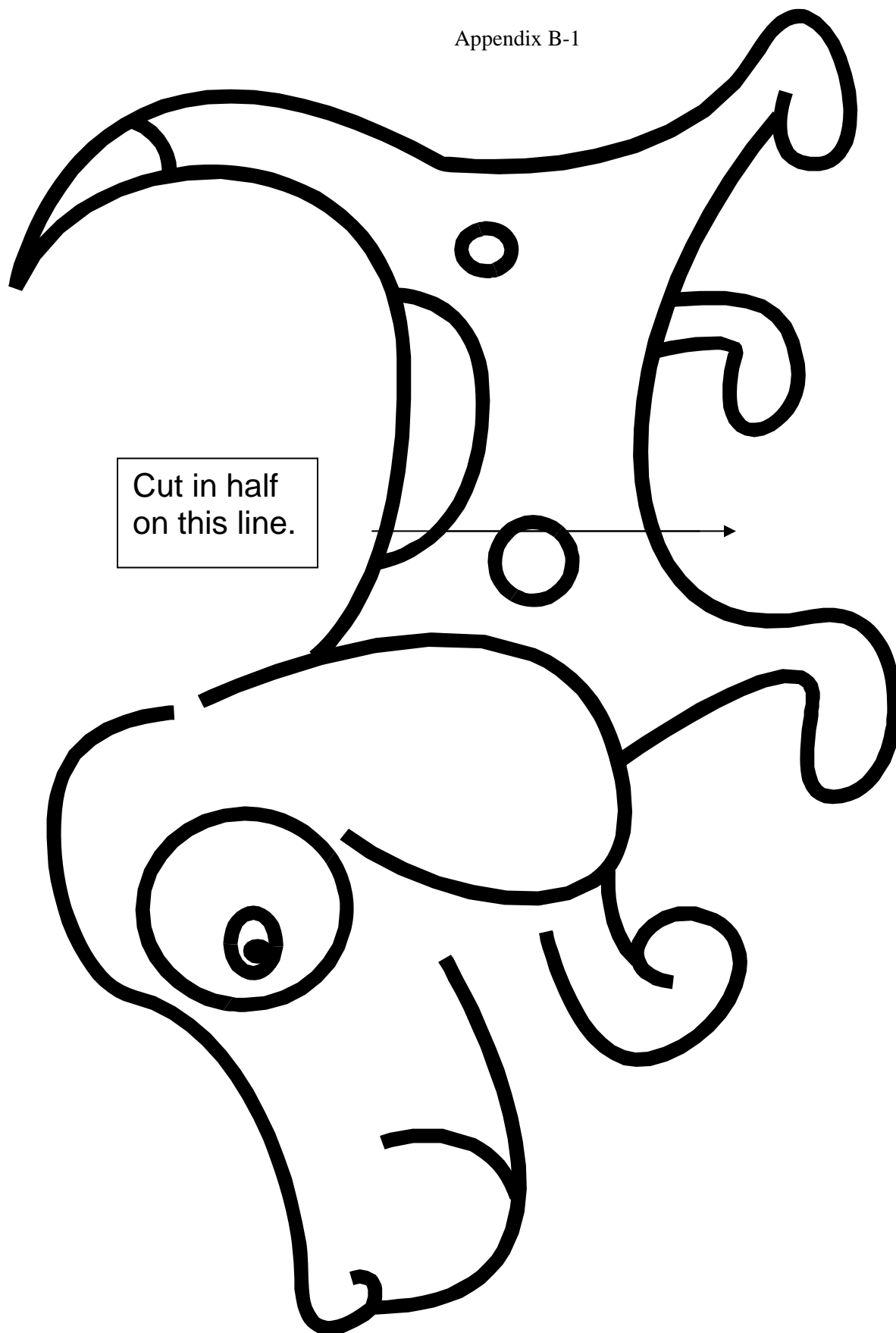


Item to be measured.	How many inch worms?





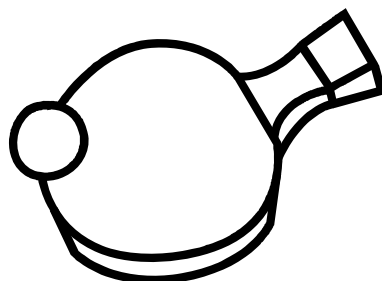




Appendix B-2


## How far can you blow?

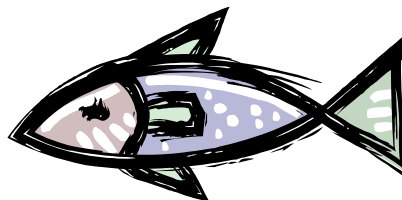
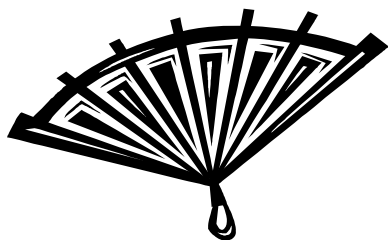
- Each student needs a straw and a ping-pong ball.
- Using the straw, how far can you blow the ball in one blow?
- Measure the distance with your ruler and mark it on your paper.



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## How far can it swim?

- You will need to use a fan and a paper fish.
- Put the paper fish on a flat table or the floor. Use the fan to blow the fish across the table or the floor.
- Using the fan, how far can your fish swim? Fan your fish three times.
- Measure the distance and record your answer on your paper.



## How far can it walk?

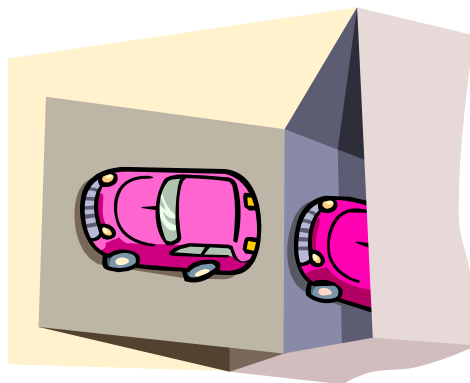
- You will need a wind-up toy.
- Wind the toy. Let it travel as far as you can.
- Measure the distance and record your answer on your paper.





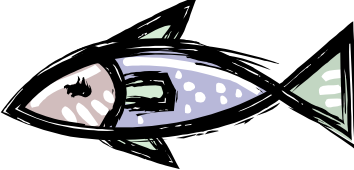
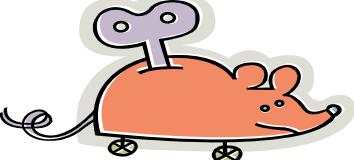

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## How far can it roll?

- Make a ramp. Use a toy car.
- How far can your car travel when it goes down the ramp?
- Measure the length and record your answer.



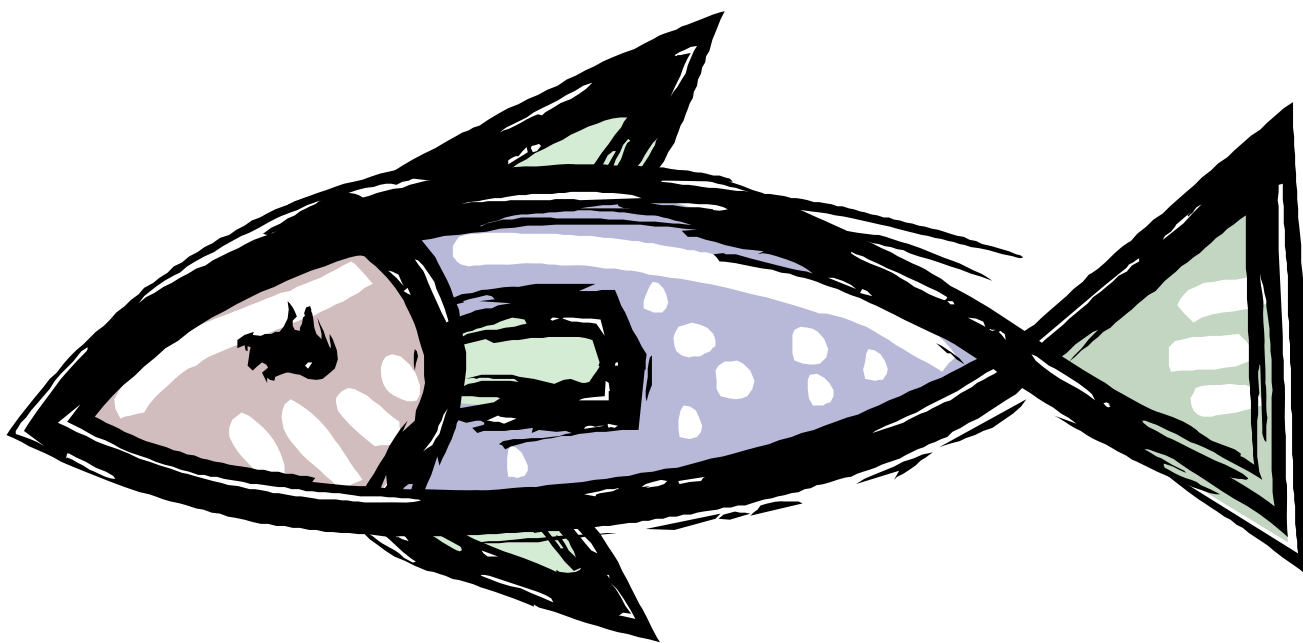
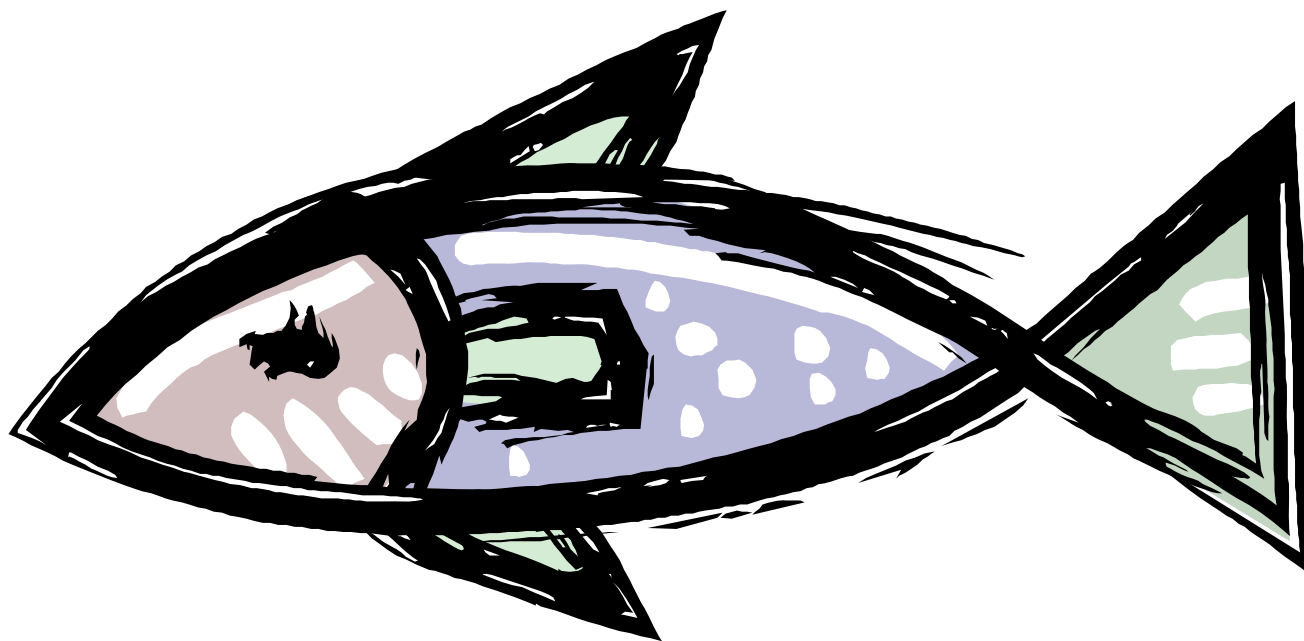
Name \_\_\_\_\_

Stations		
	How far can you blow the ball in one blow?	INCHES
	How far can your fish swim?	INCHES
	How far can your wind-up toy travel?	INCHES
	How far can your car travel?	INCHES

Using your ruler, draw a line that is 6 inches long.

Using your ruler, draw a line that is 6 centimeters long.

Draw a circle around the line that is the longest.



1. Raise two objects. One in each hand.
2. **Predict** which object will be heavier. Record your prediction.
3. **Check** to see what happens to each side when you put them on the balance scale. What do you see? Record your answer.



A

1. Put a heavy object on one side of the balance scale.
2. **Predict** how many lighter objects balance the heavy one. Record your prediction.
3. **Check** how many lighter objects balance the heavy one. What do you see? Record your answer.



B

1. Raise two objects. One in each hand.
2. **Predict** which objects will have the same weight.
3. **Check** the objects with a balance scale. What do you see? Record your answer.





C

1. Raise three or more objects
2. **Predict** which object is the heaviest and which is the lightest. Place in order of heaviness. Record your answer.
3. **Check** the objects by placing them on the balance scale. What do you see? Record your answer.



D



<b>I Predict...</b> 	<b>I Checked and I saw...</b> 
<b>A</b>	<b>A</b>
<b>B</b>	<b>B</b>
<b>C</b>	<b>C</b>
<b>D</b>	<b>D</b>



Name \_\_\_\_\_

Weigh the item. Circle the correct answer.

Item	1 pound		
	< Less	= Equal	> Greater
	< Less	= Equal	> Greater
	< Less	= Equal	> Greater
	< Less	= Equal	> Greater
	< Less	= Equal	> Greater
	< Less	= Equal	> Greater
	< Less	= Equal	> Greater
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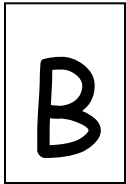
Appendix F

Name \_\_\_\_\_

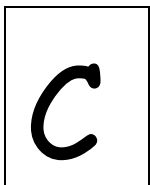
Measure the capacity of each container with both a small and a large scoop. Record your measurements.



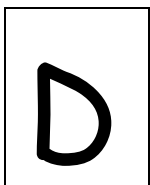
Estimate: _____ <b>small scoops</b> Actual: _____ <b>small scoops</b>	Estimate: _____ <b>large scoops</b> Actual: _____ <b>large scoops</b>
--	--



Estimate: _____ <b>small scoops</b> Actual: _____ <b>small scoops</b>	Estimate: _____ <b>large scoops</b> Actual: _____ <b>large scoops</b>
--	--



Estimate: _____ <b>small scoops</b> Actual: _____ <b>small scoops</b>	Estimate: _____ <b>large scoops</b> Actual: _____ <b>large scoops</b>
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Estimate: _____ <b>small scoops</b> Actual: _____ <b>small scoops</b>	Estimate: _____ <b>large scoops</b> Actual: _____ <b>large scoops</b>
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Appendix G



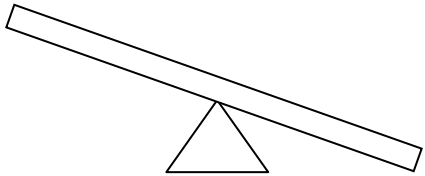
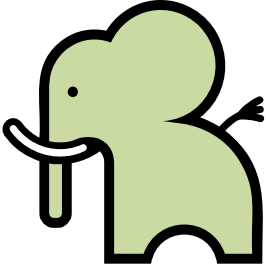

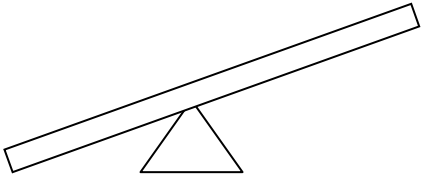


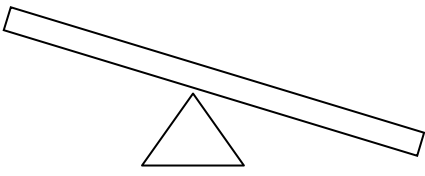
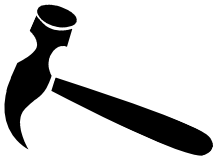

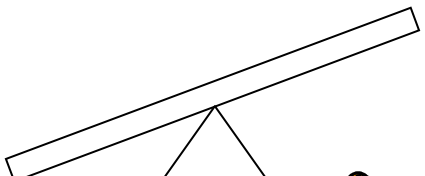


Name \_\_\_\_\_

**Unit Assessment**

Use the inch side of your ruler to measure the lines. Record your answer in the boxes.

1. 2. 3. 4. 5. 6. Draw a line that is **6 centimeters** long.7. Draw a line that is **4 centimeters** long.8. Draw a line that is **9 centimeters** long.9. Draw a line that is **2 inches** long.10. Draw a line that is **5 inches** long.

Draw a line to the correct side of the pan balance for each object.

<p>11.</p>   	<p>12.</p>   
<p>13.</p>   	<p>14.</p>   

Circle the item that holds **less**.

15.	1 Cup	or	1 Gallon
16.	1 Quart	or	1 Cup
17.	1 Gallon	or	1 Quart

Circle the item that holds **more**.

18.	1 Gallon	or	1 Quart
19.	1 Cup	or	1 Gallon
20.	1 Quart	or	1 Cup

