

Kindergarten- Measurable Attributes

K(7)(A) **Geometry and Measurement.** The student applies mathematical process standards to directly compare measurable attributes. The student is expected to give an example of a measurable attribute of a given object, including length, capacity, and weight.

K(7)(B) **Geometry and Measurement.** The student applies mathematical process standards to directly compare measurable attributes. The student is expected to compare two objects with a common measurable attribute to see which object has more of/less of the attribute and describe the difference.

Materials:

- **Measurable Attribute Cards Set 1**
- **Measurable Attribute Cards Set 2**
- Classroom objects
- 10 linking cubes (train)
- Primary balance
- Linking Cubes

Teacher Directions:

Part I:

1. Arrange the students in a group circle.
2. Prompt the students to go and search for an object they would like to measure.
3. Prompt the students to bring the item back to the circle.
4. Prompt the students to turn to their elbow partner and discuss whether they can measure the length, capacity, and weight of the object.
5. Display **Measurable Attributes Cards Set 1** on the floor.
6. Prompt the students to place their object under one of the measurable attributes of the object.
7. Debrief each attribute.

Length


- a. After the objects are sorted, prompt the students to examine the objects in the length group.
- b. Prompt the students to directly compare the length of the objects to a train of 10 linking cubes.
- c. Prompt the students to use comparative language (shorter than, longer than). For example: "The crayon is shorter than the train of linking cubes."
- d. Tell the students that they can measure the length of the objects to determine how long or wide an object is.

Weight

- a. Prompt the students to examine the objects in the weight group.
- b. Prompt the students to compare the weight of two of the objects using a primary balance.
 - Ask, "How do you know which object is heavier? Lighter?"
- c. Prompt the students to use comparative language such as, "The block is heavier than the rubber band."
- d. Tell the students that they can measure the weight of objects to determine how heavy an object is.

Capacity

- a. Prompt the students to examine the objects in the capacity group.
- b. Prompt the students to compare the capacity of two of the objects by filling one object to the top with linking cubes and then pouring it into the other object.
 - Ask, "How do you know which object holds more? Holds less?"

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- c. Prompt the students to compare the number of linking cubes each object will hold. Use the following description as an example: “The bag holds more than the paper cup.”
 - d. Tell the students that you can measure the capacity of objects to determine how much an object will hold.

Part II:

1. Ask, “*Are there objects in the weight or capacity group in which you could also measure the length?*”
2. Prompt the students to measure the object using the linking cubes to determine if the objects are, in fact, also able to be measured using the length of the linking cubes.
3. Ask, “*Is it possible for an object to be in more than one place?*”
4. Display **Measurable Attributes Cards Set 2** on the floor.
5. Prompt the students to rearrange the objects under the new labels. Use the balance, linking cube train, and linking cubes to verify the measurable attributes of each object.

Measurable Attribute Cards Set 1

Cut along the dotted line.

Length

Capacity

Weight

Measureable Attribute Cards Set 2

Cut along the dotted line.

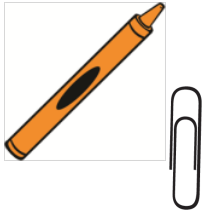
Length and Weight

**Length and
Capacity**

**Length, Capacity,
and Weight**

Part I Answer Key: Answers may vary.

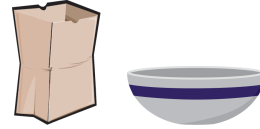
Length



Weight



Capacity

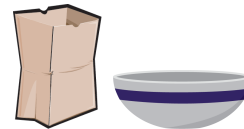
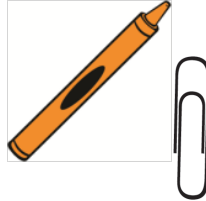


Part II Answer Key: Answers may vary.

Length and Capacity

Length and Weight

Length, Weight, and Capacity



Grade 1- Measuring Length (Non-standard)

1(7)(A) **Geometry and Measurement.** The student applies mathematical process standards to select and use units to describe length and time. The student is expected to use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

1(7)(B) **Geometry and Measurement.** The student applies mathematical process standards to select and use units to describe length and time. The student is expected to illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other.

1(7)(C) **Geometry and Measurement.** The student applies mathematical process standards to select and use units to describe length and time. The student is expected to measure the same object/distance with units of two different lengths and describe how and why the measurements differ.

Materials:

- **Measuring Length**
- Classroom objects
- Number cubes – 2 per group
- Linking cubes – approximately 24 per group
- Paperclips – approximately 24 per group
- String or ribbon on spool – several spools
- Scissors

Grade 1-Measuring Length (Non-Standard)

Teacher Directions:

Part I:

1. Place the students in groups of two.
2. Distribute **Measuring Lengths** to each student and linking cubes and number cubes to each group of students.
3. Prompt the students to roll two number cubes and record the numbers on **Measuring Lengths**.
4. Prompt the students to find the sum of the two numbers and record the sum on **Measuring Lengths**.
5. Prompt the students to create a linking cube train with the total number rolled.

For Example: A group of students roll a 4 and a 6. The students would create a linking cube train of 10 linking cubes.

6. Prompt each student to find an object in the classroom that has a length as close to the length of their linking cube train as possible. Prompt the students to record a picture of the object on **Measuring Lengths**.
7. Prompt the pair of students to compare the length of their objects.
 - Ask, "Which object is longer? How do you know?"
 - Ask, "How many linking cubes longer is one object than the other?"
 - Ask, "What do you notice about the size of each linking cube?" *Each linking cube is the same size.*
8. Ask, "How could we use string to measure the length of the objects?" *I could measure the length of the object by stretching the string from the beginning to the end of the object.*
9. Distribute a spool of string to each group of students.
10. Prompt the students to cut the string to a length equal to the length of each object.
 - Ask, "Which piece of string is longer? How do you know?"
11. Prompt the students to verify that the length of the string is also equal to the length of the linking cube train.

Part II:

1. Prompt two groups of students to trade pieces of string.
2. Prompt the students to find an object that equals the length of the "new" string and record a picture of the object on **Measuring Lengths**.
3. Prompt the students to use paperclips to measure the length of the new object and record the length of the object in paperclips on **Measuring Lengths**.
4. Prompt the students to measure the length of the string using the paperclips.
 - Ask, "Was the length of the object and the length of the piece of string the same? Why or why not?"
 - Ask, "How did you arrange the paperclips to measure the string?" *I laid the paperclips end to end without any spaces between the paperclips.*

Measuring Length

Part I:

Number Rolled	Number Rolled	Sum (Total Length in Linking Cubes)
Picture of Object:		

Part II:

Picture of Object:
Length in Paperclips:

Grade 2- Measuring Length

2(9)(B) **Geometry and Measurement.** The student applies mathematical process standards to select and use units to describe length, area, and time. The student is expected to describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object.

2(9)(D) **Geometry and Measurement.** The student applies mathematical process standards to select and use units to describe length, area, and time. The student is expected to determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes.

Materials:

- **Objects to Measure** – on cardstock
- **Measuring Strips**
- **Measuring Objects**
- Glue or tape
- Scissors

Teacher Directions:

1. Prompt the students to cut out the **Measuring Strips** (inches and centimeters).
2. Prompt the students to measure each object on the **Objects to Measure** card using an inch measuring strip and again with a centimeter measuring strip.
3. Prompt the students to shade the measuring strips to represent the number of units that is closest to the length of the object.
4. Prompt the students to number their measuring strips to correspond to the length of the object.
5. Prompt the students to glue or tape their measuring strips in the appropriate place on the **Measuring Objects** recording sheet and complete **Measuring Objects**.

Measuring Objects

Inch Measuring Strip

Centimeter Measuring Strip

The length of the leaf is about _____ inches.

The length of the leaf is about _____ centimeters.

Describe your procedure for measuring the leaf.

Inch Measuring Strip

Centimeter Measuring Strip

The wingspan of the butterfly is about _____ inches.

The wingspan of the butterfly is about _____ centimeters.

Describe your procedure for measuring the butterfly.

Measuring Objects (Continued)

Inch Measuring Strip

Centimeter Measuring Strip

The height of the flower is about _____ inches.

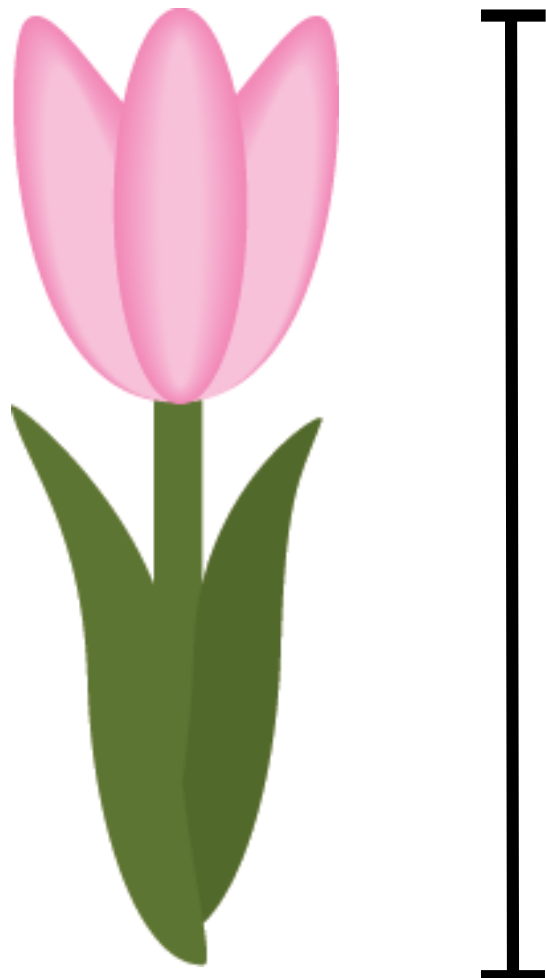
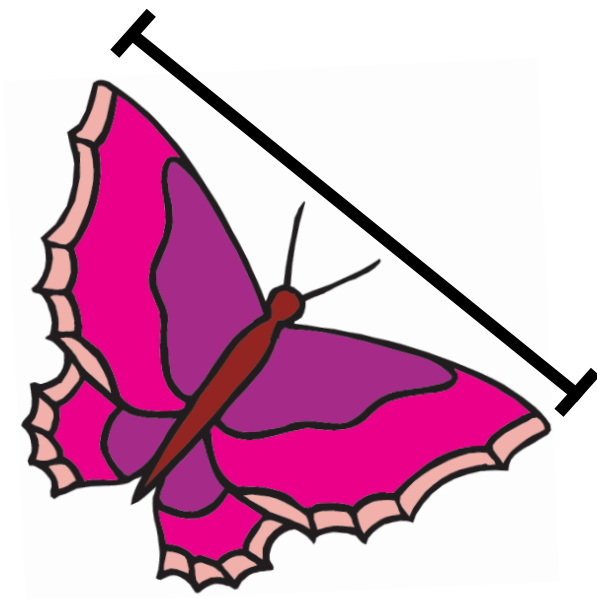
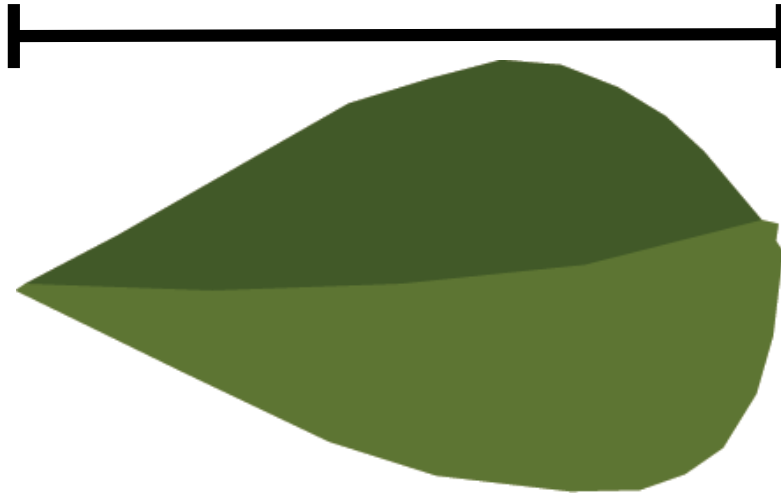
The height of the flower is about _____ centimeters.

Describe your procedure for measuring the flower.

What do you notice about the number of inches needed to equal the length of the object and the number of centimeters needed to equal the length of the same object? Explain your thinking process.



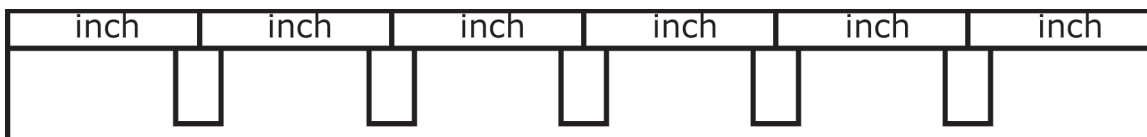
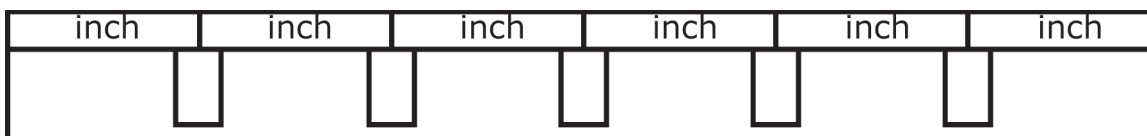
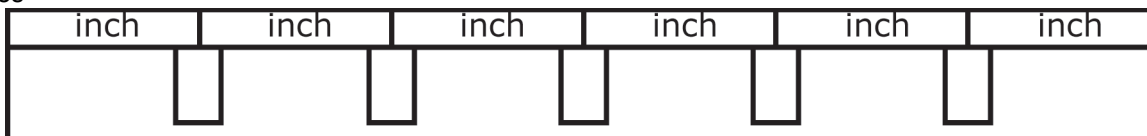
Objects to Measure



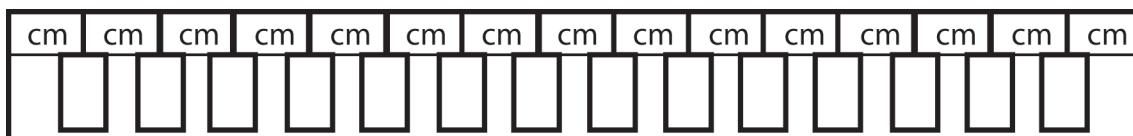
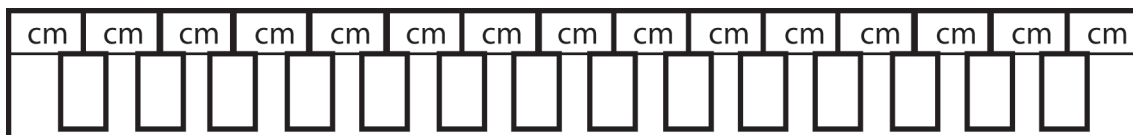
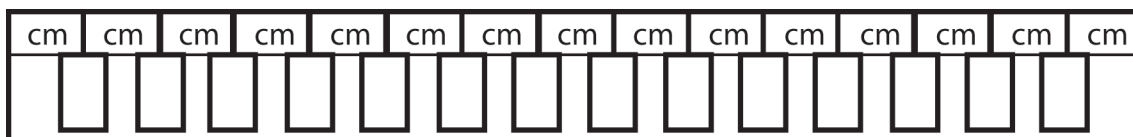
Measuring Strips

Cut out each measuring strip.

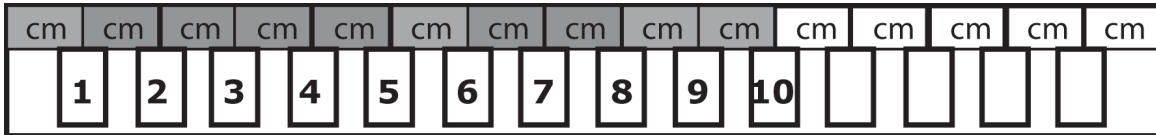
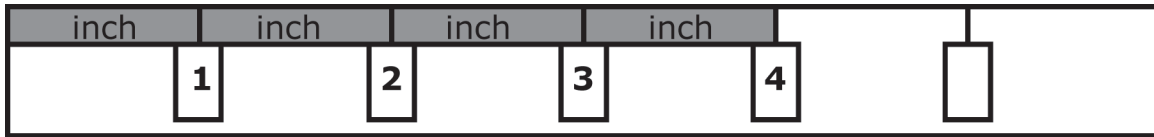
Inches



Centimeters



Answer key:

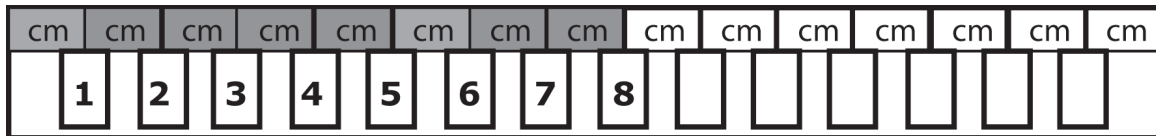
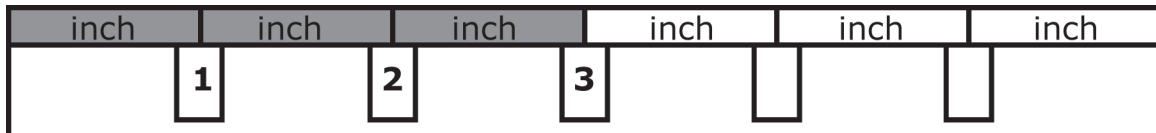


The length of the leaf is about 4 inches.

The length of the leaf is about 10 centimeters.

Describe your procedure for measuring the leaf.

I aligned the left end of the measuring strip to the left end of the leaf and shaded and counted the number of units on the measuring strip that was closest to the length of the leaf.



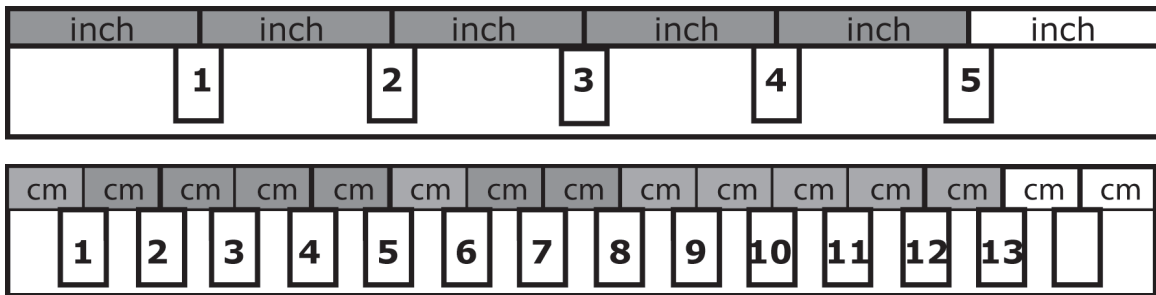
The wingspan of the butterfly is about 3 inches.

The wingspan of the butterfly is about 8 centimeters.

Describe your procedure for measuring the butterfly.

I aligned the left end of the measuring strip to the left wingtip of the butterfly and shaded and counted the number of units on the measuring strip that was closest to the wingspan of the butterfly.

Answer key (continued):



The height of the flower is about 5 inches.

The height of the flower is about 13 centimeters.

Describe your procedure for measuring the flower.

I aligned the top end of the measuring strip to the top of the flower and shaded and counted the number of units on the measuring strip that was closest to the height of the flower.

What do you notice about the number of inches needed to equal the length of the object and the number of centimeters needed to equal the length of the same object? Explain your thinking process.

The number of inches needed to measure the object is less than the number centimeters needed to measure the same object because a centimeter is a smaller unit than an inch. The smaller the unit the larger the quantity.