

# MEASUREMENT

## KINDERGARTEN

### MISCONCEPTIONS:

- Longer = Bigger (up = out)
- Length conservation

### STANDARDS:

#### 1. ICCRS.K.M.1:

Make direct comparisons of the length, capacity, weight, and temperature of objects, and recognize which object is shorter, longer, taller, lighter, heavier, warmer, cooler, or holds more.

#### 2. CCSS.MATH.CONTENT.K.MD.A.2

Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

### TASK:

1. Stick Comparison – Find a stick that is longer, shorter, and equal length than a modeled stick.
2. Take students outside to find one stick that is longer, one that is shorter, and one that is equal length of the modeled stick. (Show the students the model stick only once.)
3. Have students glue stick in order of largest to smallest and have them label which is longer, which one is shorter, and which one is of equal length to the modeled stick.
4. Show stick again them compare the sticks they found to the modeled one.

## FIRST GRADE

### MISCONCEPTIONS:

- The length of an object doesn't change regardless of the unit of measurement used.

### STANDARDS:

#### 1. ICCRS.1.M.1:

Use direct comparison or a nonstandard unit to compare and order objects according to length, area, capacity, weight, and temperature.

#### 2. CCSS.MATH.CONTENT.1.MD.A.2

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

### TASK:

1. Read Inch by Inch by Leo Lionni.
2. Find several small sticks that equal the length of the tail. Draw your representation.
3. Use nonstandard forms of measurement (paper clips, toothpicks, etc.) to measure the length of the bird's tail.
4. As a class, create a chart of findings.

## SECOND GRADE

### MISCONCEPTIONS:

- Ruler marks
- The length of an object doesn't change regardless of the unit of measurement used.

### STANDARDS:

#### 1. ICCRS.2.M.2:

Estimate and measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes to the nearest inch, foot, yard, centimeter and meter.

#### 2. CCSS.MATH.CONTENT.2.MD.A.2

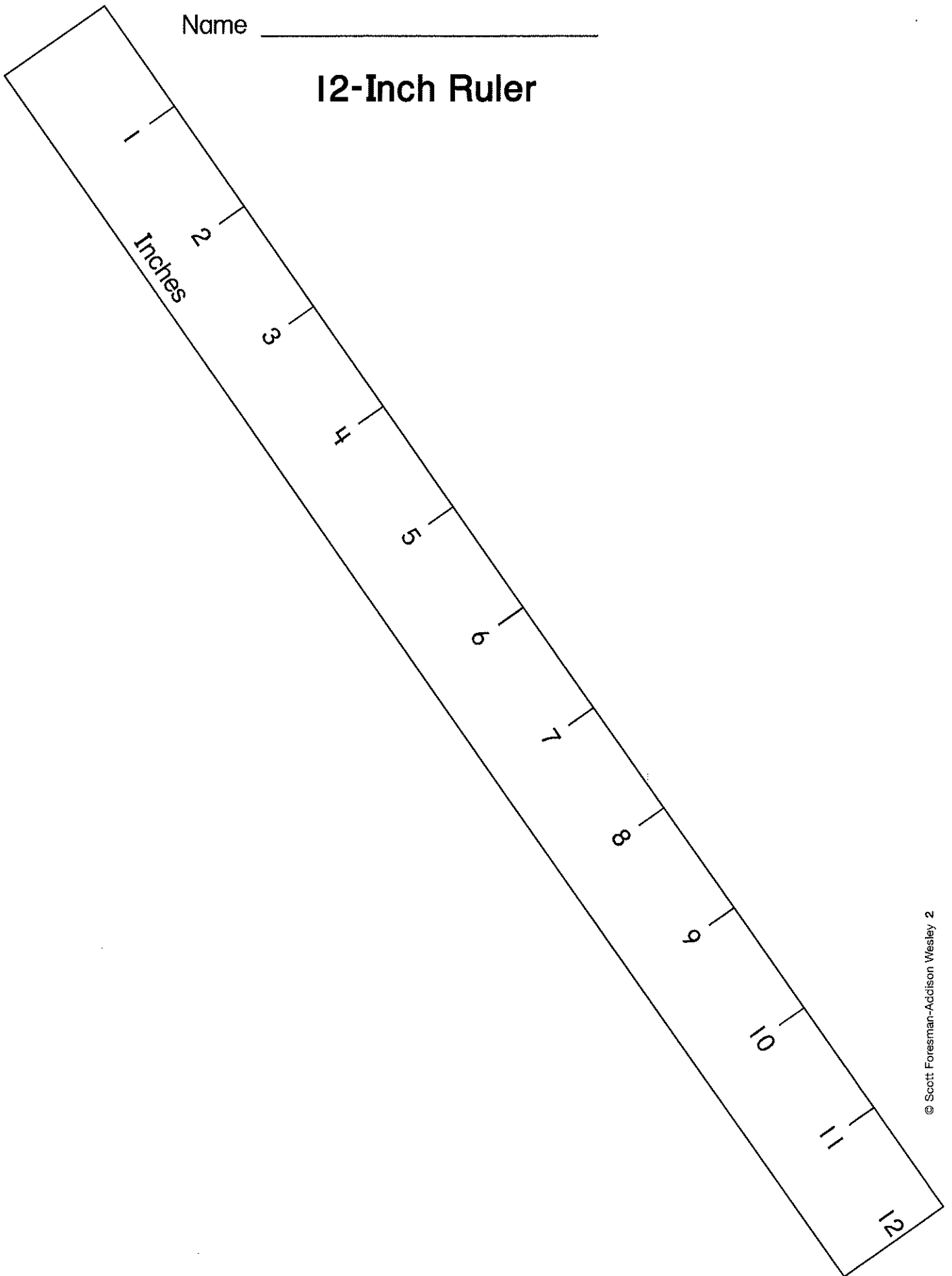
Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

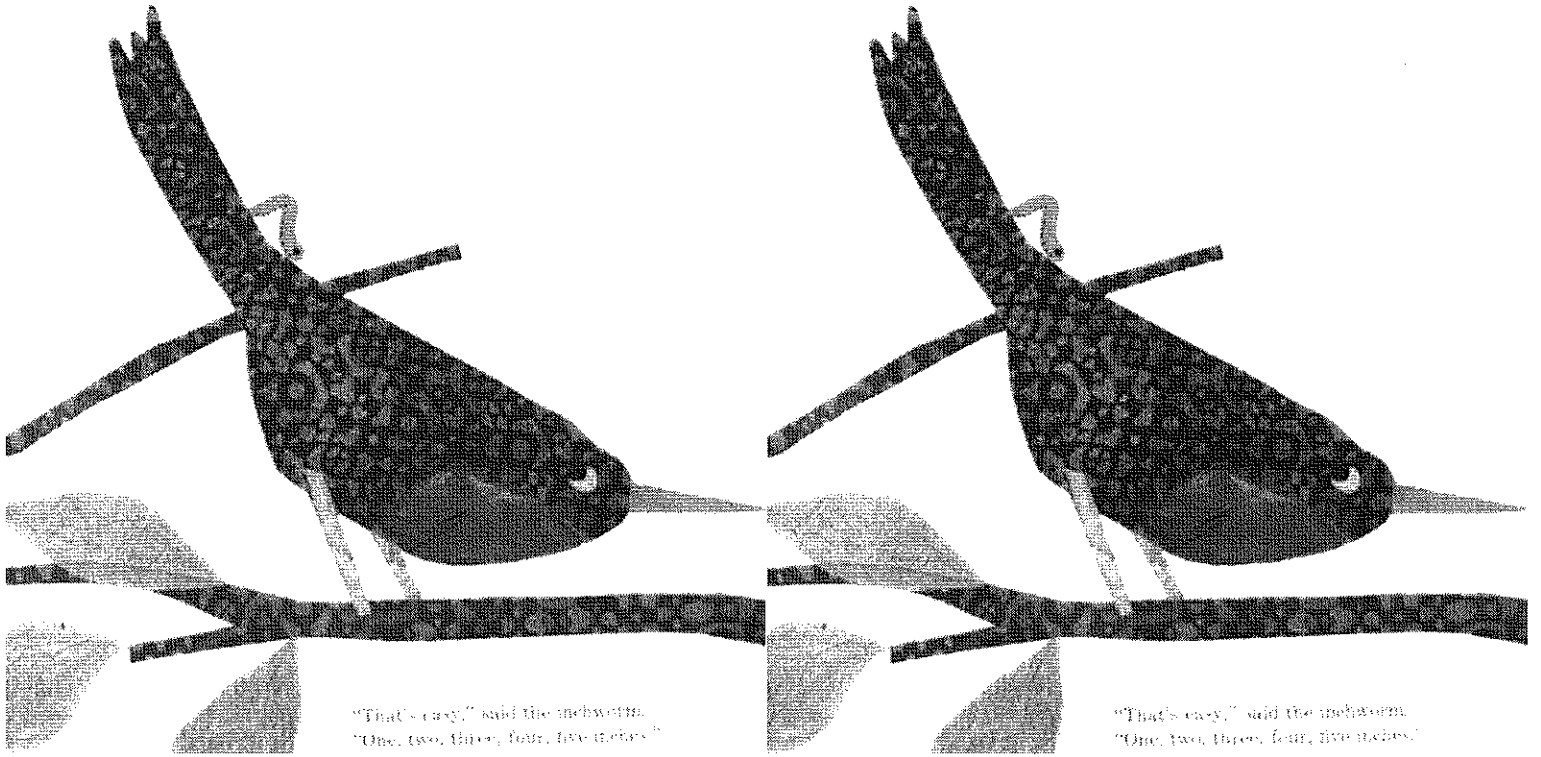
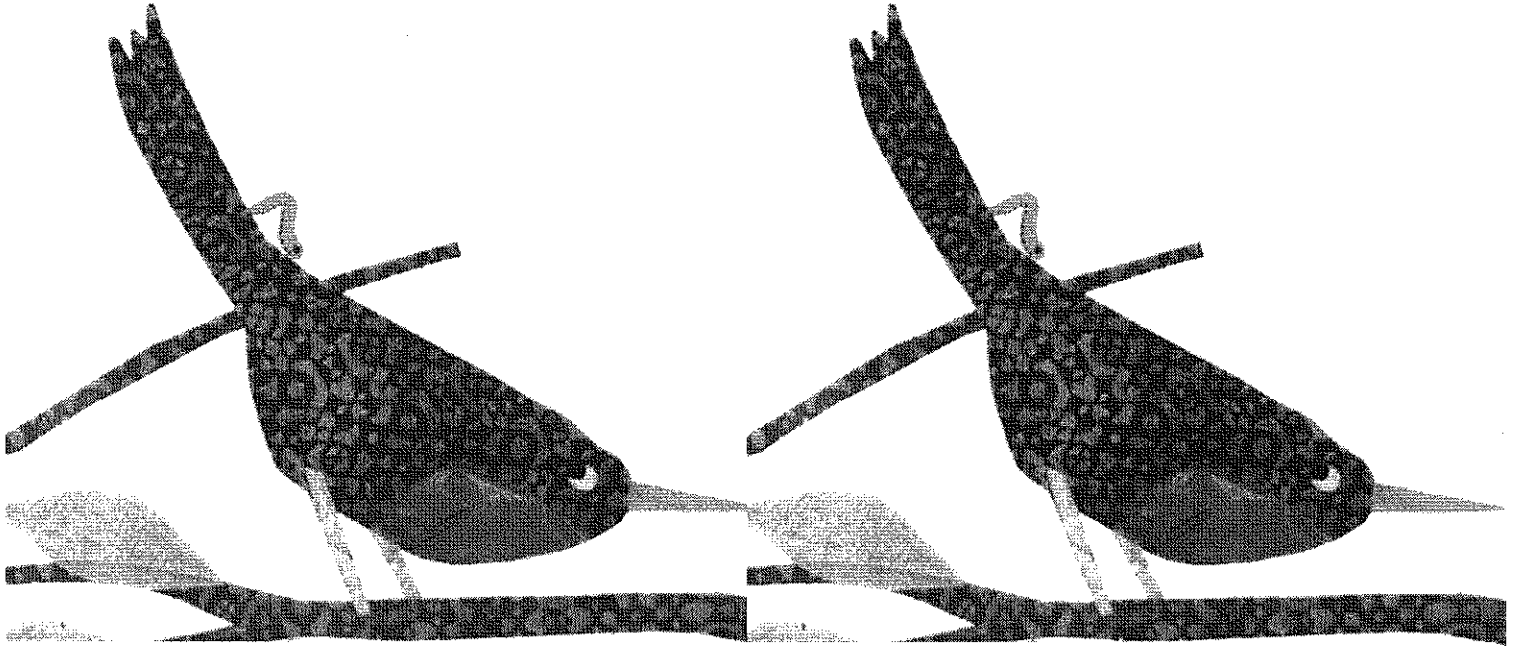
### TASK:

1. Stick Comparison – Which ruler would you use to best measure the length of the tail? Of the stick?
2. Create a center for each unit of measurement (yard stick, ruler, etc.). Have students explore the classroom for example of things they would use that measurement for.
3. Measure the sticks with different units of measurement. Explain to a partner why you chose the unit you did.

Name \_\_\_\_\_

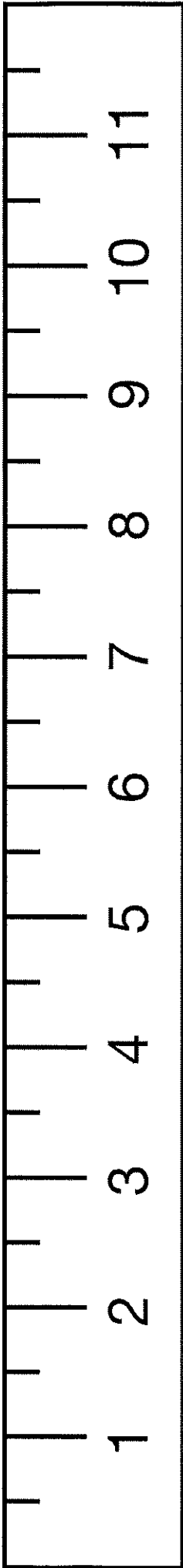
# 12-Inch Ruler





"That's easy," said the inchworm.  
"One, two, three, four, five inches."

"That's easy," said the inchworm.  
"One, two, three, four, five inches."





# ADDITIONAL TASKS

## KINDERGARTEN

### #1: Foot Fun

Each student will trace his foot on a piece of construction paper. He will cut out his tracing on the construction paper and use it as his tool for measuring the length of the smart board or white board in the classroom. Each student will do this task individually with his own foot tracing. Ask students what they notice about the different foot tracings. Hold a discussion about why some of the students came up with different measurements. Use this task to help students understand why we use rulers – they are a standard unit of measurement (Adapted from Knighten, 2012).

### #2: Shortest to Longest

Students will gather in a circle around several objects with varying lengths that the teacher has chosen from around the room. Students will order the objects in length from shortest to tallest. The students will each have a turn to pick up an object from the pile and place it on the ground. One after one, the students place their objects by estimating where their object will be on the spectrum (shortest to longest). (Kindergarten Kindergarten, 2013).

## FIRST GRADE

### #1: How Big is a Foot?

Read aloud the book *How Big is a Foot?* By Rolf Myller and give students items that are all the same but in various sizes (Jumbo marshmallows and mini marshmallows, big and small paper clips, etc.) Let students measure creatively with those objects.

### #2: Math About Me

Students will trace one another. They will choose a body part traced (arm, hand, foot, leg) to measure a distance (like head-to-toe). Students will continue to use different parts to measure. Teacher will hold a discussion to find if students think that a distance measured with foot is longer than a distance measured with a leg, which is actually the same distance.

## SECOND GRADE

### #1: Measurement Flapbooks

Have students create flapbooks that compare an inch, a foot, and a yard. Under each flap, students will list items that fit the appropriate length. For a description see this site:

[http://stepintosecondgrade.blogspot.com/2013/04/measuring-fun\\_3.html?m=1](http://stepintosecondgrade.blogspot.com/2013/04/measuring-fun_3.html?m=1)

### #2: Bobby's Blueprints

The carpenter needs an apprentice, and your students are sure to fit the role! Allow students to practice their measuring skills by helping Bobby bring his blueprints to life. Then, discuss scaling as blueprints do not reflect real-life measurements. For supplies see this site:

<http://www.education.com/slideshow/bobbys-blueprints/>

# Algebra

(K-2)

## TASK ONE: Dice Addition

Standards: (K.CC.A.3, K.OA.A.2)

CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.

Focus: Fluency

Each pair of students needs:

- One worksheet
- Two markers of different colors
- One pair of dice

### Task Description:

Student A rolls the two dice, finds the sum, and traces the number on the worksheet which corresponds to the answer with his/her marker. Student A then passes the dice to Student B who rolls both the dice, finds the sum and traces the correct number on the worksheet with his/her marker. Play continues this way until one of the numbers "wins" (i.e. all of the numbers of that quantity have been traced)

# Algebra

(K-2)

## TASK TWO: How Many Counters? (CCOPS, 2013)

Standards: (1.MD.C.4)

CCSS.MATH.PRACTICE.MP7 Look for and make use of structure.

CCSS.MATH.PRACTICE.MP3 Construct viable arguments and critique the reasoning of others.

Each pair of students needs:

- Blank ten-frames, one or more per player
- Counters
- A number cube

Task Description:

One player *secretly* arranges some counters on a ten frame. The other player asks questions that can be answered yes or no, trying to gain enough clues to work out the arrangement of counters. Example: Is the top row full? Is there an empty box in the bottom row?

As players become more skilled, the number of questions can be counted. The player asking fewer questions wins