

Measuring Up!

Utah Math Core Standards



Materials

- ◆ Rulers (metric and customary scale)
- ◆ Barn Fold-up
- ◆ Measurement Recording Worksheet
- ◆ Clear Tape
- ◆ Crayons or Colored Pencils
- ◆ Tape Measure (at least 1 meter, metric and customary scale), *Additional Activity*
- ◆ Scrap lumber (2' x 4's, plywood etc.), *Additional Activity*
- ◆ Scene Yarn, *Additional Activity*

Background

Being able to measure in a variety of ways is a life skill and part of the National and State Standards for mathematics. How many times a day are we asked, or do we ask, “How much?” “How big?” “How far?” Fortunately, it’s pretty easy to incorporate the math standards of measurement into daily curriculum.

This lesson provides students with an opportunity to practice measuring length in both the metric and customary (English) system using a variety of tools and agricultural products. (For more resources on teaching measuring, visit the Utah Education Network website, www.uen.org, and search “measuring.” You will find a variety of lesson plans and worksheets that will help you teach students how to measure things from a quarter of an inch to a sixteenth of an inch, and in millimeters. There are even ready-made PowerPoint slides on the site to teach measuring.)

The material list for this lesson is easily obtained—most can be found in your classroom or garage. Most measuring tools contain measurement units for both the metric and customary system.

Third graders should be able to measure to the 1/2 inch, fourth graders to the 1/4 inch, fifth graders to 1/8 of an inch and sixth graders should be able to measure to 1/16 of an inch. All third through sixth graders should be able to measure in millimeters. The “Build a Barn” activity is currently constructed in 1/4 inch increments. However, the “Barn Fold-up” page could be scaled on a photocopier to vary the measurements and increase measurement difficulty for older students. In addition, you can check students’ measurement skills by having them create windows, doors, or wall planking in 1/8 inch or 1/16 inch increments.

To add a “real world” skill to this lesson, provide students with a variety of scrap lumber and a tape measure. This adds a new dimension of difficulty especially if the boards are longer than a foot. Larger measurements (greater than a foot) will check their understanding of inches to feet and feet to yards. They should also measure the boards using metric units. Check to see that the lengths of the two-by-fours or one-by-fours are in increments students are capable of measuring. Also be sure to caution students about splinters (try to select smooth lumber for measuring).

Time: 1 - 2 hours

Grade Levels: 3-6

Objectives

1. Identify and describe measurable attributes of objects and units of measurement.
2. Use appropriate techniques and tools to determine measurements.
3. Determine measurements using appropriate tools and formulas.
4. Estimate length using metric and customary (English) units.



Activity Procedures: Build a Barn

1. Duplicate the “Measurement Recording” and “Barn Fold-up” worksheets for each student.
2. Provide each student with a ruler and ask students to complete the “Measurement Worksheet.”
3. After the students have completed the “Measurement Worksheet,” you may want to check their work before they color and cut out the barn. You may request that older students draw their doors to specific sizes ($\frac{1}{8}$ and $\frac{1}{16}$ of an inch increments).

Additional Activities, What’s Next?

Using a variety of scrap lumber, ask students to use a tape measure to measure the boards and record their findings in both customary and metric units.

NAME _____

Build a Barn Measurement Recording Worksheet

1. Measure the distance between points A and B and record your measurements.

_____ inches _____ millimeters

2. Measure the distance between points C and D and record your measurements.

_____ inches _____ millimeters

3. Measure the windows.

_____ inch wide _____ inch high

_____ millimeters wide _____ millimeters high

4. Draw a door on your barn (one end) to your teacher's requested measurement or draw it yourself and take the measurement.

My door is _____ inch wide _____ inch high

My door is _____ millimeters wide _____ millimeters high

5. Draw two more windows on your barn (on the opposite barn wall) as requested by your teacher or draw it yourself and record the measurement.

_____ inch wide _____ inch high

_____ millimeters wide _____ millimeters high

Discussion Questions:

How important would it be to know how to measure if you needed to build a real barn or house?

Who needs to be able to measure?

Which measurement scale was easier to use? Metric or Customary?

Which system is usually used in America to build buildings?

Measuring Up!

Find the measurement of the animals below on a tape measure. What is the measurement in millimeters? In meters? How tall are you in feet and inches? How about millimeters or meters?



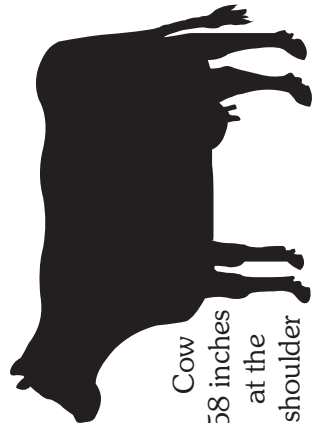
Chicken
16 inches
head-to-toe



Pig
25 inches
at the
shoulder



Sheep
30 inches
at the
shoulder



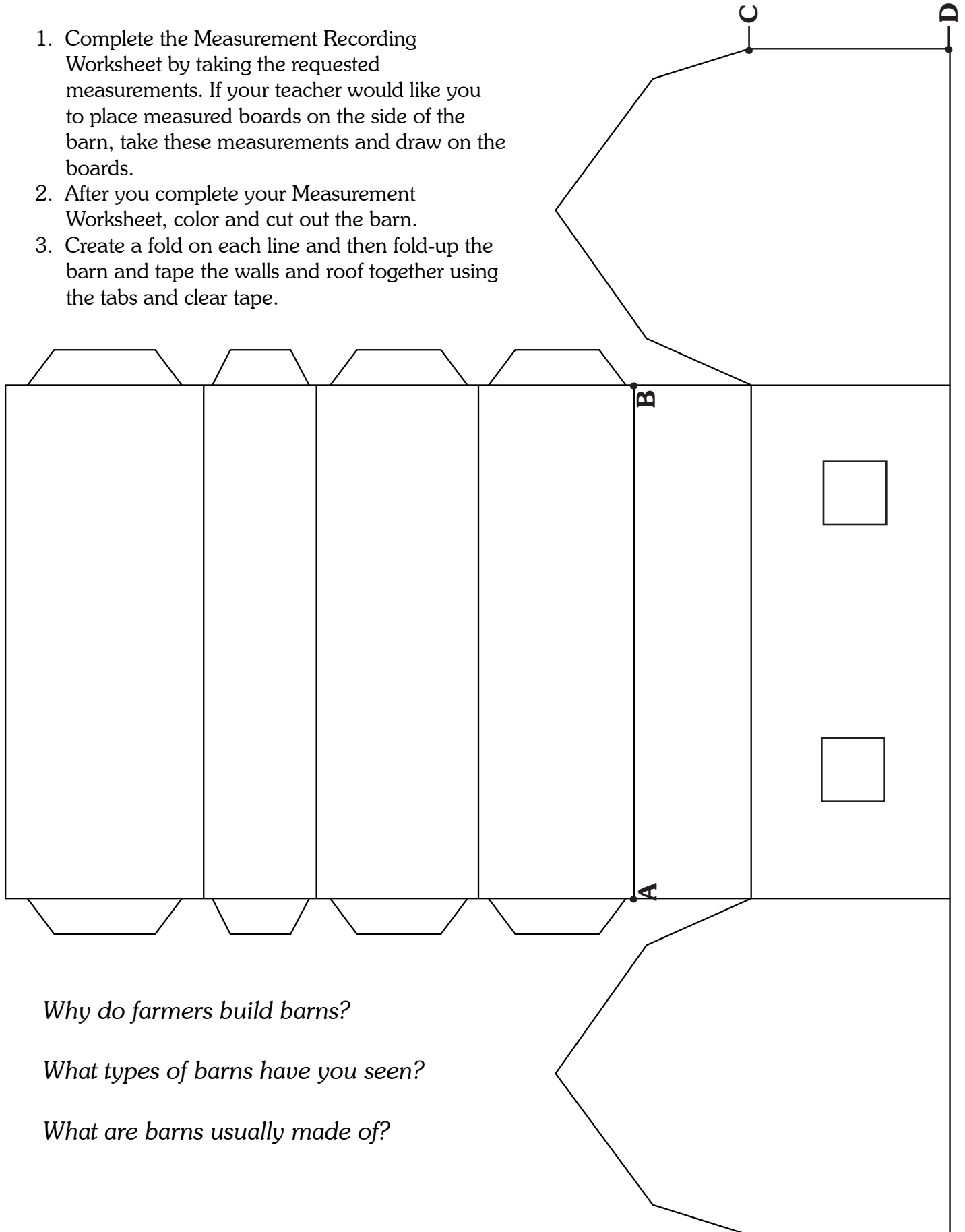
Cow
58 inches
at the
shoulder



I am
_____ inches
tall

Build a Barn

1. Complete the Measurement Recording Worksheet by taking the requested measurements. If your teacher would like you to place measured boards on the side of the barn, take these measurements and draw on the boards.
2. After you complete your Measurement Worksheet, color and cut out the barn.
3. Create a fold on each line and then fold-up the barn and tape the walls and roof together using the tabs and clear tape.



Why do farmers build barns?

What types of barns have you seen?

What are barns usually made of?