

Activity 1.3.1 History of Measurement

Introduction

Before humans created a standardized system of measurement, many cultures used local customs for measuring objects. The English at one time used grains of barley as their standard for measurement! What do you think could be a problem with this system? All grains of barley are not the same, so this system is not at all accurate.

Early measurement was a conglomeration of irregular, nonstandard units.

A **cubit**, used by the Egyptians to build the pyramids, is the measure from the tip of your middle finger to the tip of your elbow.

The **fathom** is the measure from fingertip to fingertip when your arms are stretched sideways as far as they can go.

The **hand/span** is the measure from the tip of your pinky to the tip of your thumb when your hand is stretched out. You still hear people talk about horses as being so many hands high.

The **pace** (two steps: one-step is a **stride**) was used by the Romans to describe the rate of movement of their soldiers.

A **foot** was determined by the length of a person's foot.

The **girth** is the measure around your stomach (your belt measure). Fishing line was measured in girths.

The width found by placing your four fingers together was known as a **palm**.

Does it make you wonder how the early engineers built the pyramids with such inaccurate measurement systems?

Equipment

PLTW Gateway notebook

Pencil

String

Procedure

Today you and your partner will have a chance to use some of the early forms of measurement and explore why many are considered inaccurate.

With your partner determine the best ways to measure each of the objects on the chart. Measure each item three different ways (not all seven ways).

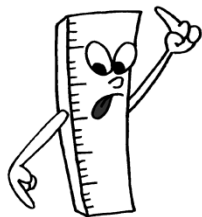
Use each type of measurement at least three times to complete the chart. Place your answers above the dotted line.

Find another group in your class that measured an item with the same method that your group used. Record their answers below the dotted line on the chart.

Compare your measurement to their measurement. **If the results were exactly the same, highlight them.**

Complete the Conclusion questions and turn in the activity to your instructor.

Early Measurement Chart



Directions: Review the presentation on early measurement methods. You and a team member will use these “old time” measurement units to measure common classroom items. You will place your measurements in the chart below. Note that some units of measure may be smaller than what you are measuring. You may need to use a length of string to help you measure. Measure each item in three different ways. Make sure to use each form of measurement at least three times.

	Palm	Fathom	Hand	Cubit	Foot	Stride	Girth
Lab Table Width							
Lab Table Length							
Textbook Width							
One Partner's Height							
Classroom Width							
Bookcase Width							
Lab Door Height							

Conclusion

1. Your group should have taken 21 measurements and compared them to measurements of other groups. How many measurements were the same when compared (how many did you highlight)? Please read the procedure to find out what this means.
2. Of the 21 measurements that your group recorded, how many of the measurements could you compare with the other groups in your class?
3. What percent of your measurements match another group's measurements?
$$\frac{\text{Same measurements (answer to \#1)}}{\text{Comparison group (answer to \#2)}} \times 100 =$$
4. Why do you think we have a standardized measurement system now?
5. Do you think we should use the Metric or English system in the United States? Why?