

California Content Standards — Grade 2

By the end of grade two, students understand place value and number relationships in addition and subtraction, and they use simple concepts of multiplication. They measure quantities with appropriate units. They classify shapes and see relationships among them by paying attention to their geometric attributes. They collect and analyze data and verify the answers.

Measurement and Geometry

- 1.0** Students understand that measurement is accomplished by identifying a unit of measure, iterating (repeating) that unit, and comparing it to the item to be measured:
- 1.1** Measure the length of objects by iterating (repeating) a non-standard or standard unit.
- 1.2** Use different units to measure the same object and predict whether the measure will be greater or smaller when a different unit is used.
- 1.3** Measure the length of an object to the nearest inch and/or centimeter.

Aligning Learning With the Content Standards:

Using concrete objects, students will be able to:

- Know that rulers and tape measures will be used to measure length.
- Be willing to explore different ways of measuring using a variety of non standard units.
- Make estimates and record measurements to the nearest inch/centimeter.
- Make non standard estimates such as just over 2 centimeters, nearly 3 inches etc.
- Be able to predict measurements, by comparing them with each other.
- Develop an understanding that the longer the unit of measurement, the less they will need.
- Make estimates that are reasonable.



Math Language:

Students should become increasingly familiar with such terms and phrases as:

Inch, centimeter, nearly, almost, about, just more than, just less than, longer, shorter, longest, shortest, estimate.

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Student Exercise: Measuring with Non-Standard Measurements



Use packs of playing cards laying end to end, widthways or lengthways across given things to measure. Then do the same with plastic coins.



How many playing cards can be placed along the length of a table?

My estimate is about **20 cards**.

My estimate is about **100 pennies**.

It measures **90 centimetres** with a ruler.

Explain why you needed more pennies than cards.

How many pennies can be placed along the edge of a pencil?



My estimate is about **6 pennies**.

It measured **7 pennies**.

Will you get a different result if you use cards to measure? Measure to find out.

My estimate is about **2 cards**.

It measured **2 cards**.

How close was your estimate?

This is the right way to measure with a ruler.



Line up the object on the left of the ruler.




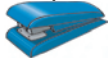






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Student Exercise: Which do you Think Measures Longer?

Use pegs to help you estimate some things around you.



Item A	Item B	Answer
<p>Key</p>  <p>about _____ pegs</p>	<p>Calculator</p>  <p>about _____ pegs</p>	Item B
<p>Ruler</p>  <p>about _____ pegs</p>	<p>Stapler</p>  <p>about _____ pegs</p>	Item A
<p>Chalkboard width</p>  <p>about _____ pegs</p>	<p>Folder</p>  <p>about _____ pegs</p>	Item A
<p>Door width</p>  <p>about _____ pegs</p>	<p>Window sill</p>  <p>about _____ pegs</p>	Item B
<p>School desk width</p>  <p>about _____ pegs</p>	<p>School chair width</p>  <p>about _____ pegs</p>	Item A

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Student Exercise: Use Hands and Feet to Measure Along Flat Surfaces



Use feet to measure toe touching heel, or as paces or strides. Make sure that you start at the end of the thing you are measuring and that you don't leave any gaps. Then measure the same thing with a ruler or tape measure.



Write your results like this:

The television is **5** of my hand spans. It measures **15** inches with a ruler.

I estimate the table will be _____ of my hand spans.
 The table is _____ of my hand spans.
 It measures _____ inches with a ruler.

I estimate the door will be _____ of my hand spans.
 The door is _____ of my hand spans high.
 It measures _____ inches with a ruler.

The corridor is _____ of my paces.
 The path is _____ of my paces.
 The rug is _____ of my footsteps (toe to heel).
 The doorway is _____ of my footsteps.

Do I take more paces across the doorway or along the path?
 Would it be better to measure this distance with paces or cards?

TPS Teacher Tip







Talk to students about their answers.

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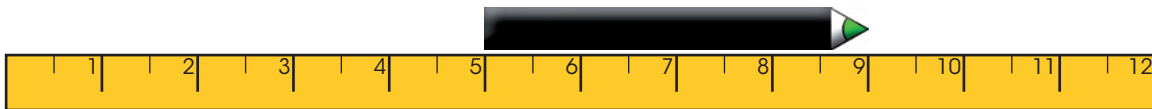
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Student Exercise: Record your Estimates and Measurements on a Chart

Choose what unit of measurement you will use.

Item A	Item B	Item C
		
		
Measure with cards	Measure with coins	Measure with footsteps
I estimate	I estimate	I estimate
about _____ cards	about _____ coins	about _____ footsteps

Is this the right way to measure with a ruler?



Draw the pencil where it should be.



TPS Teacher Tip

Remember that answers to estimation problems will vary.
Ask the students how they reached their answers.

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Developmental Watch:

- Students may make mistakes when using non-standard units.
- Students need practice to become confident with non-standard units.
- Students may not fill in all the gaps when using non-standard units.
- Make sure the units of measurement are placed end to end and don't overlap.

**TPS Teacher Tip**

Estimates may not be accurate but students will learn this with practice.

In the Classroom:

- Collect a variety of objects that students can use for non standard measurements, e.g., paper clips, wooden sticks, straws.
- Help students choose suitable objects to measure from within the classroom.

**In the Home:**

- Encourage your child to be involved with measuring around the home.
- Encourage them to estimate lengths and discuss how near they are to the exact measurement.
- Compare your child's estimate with your estimate.
- At home, compare a child's hand span with that of an adult.
- Let your child practice measuring things around the home with an inch ruler.
- Make sure your child knows how to use a ruler.

