

Grade 3

Measuring and Graphing Unit



CCSS Aligned
Lesson Plans
and
Math Exploration



math Workshop

Created By:



Teacher's Page

Years ago I was introduced to the reading workshop model created by Fountas and Pinnell and immediately fell in love with its structure. As I became skilled in teaching through that model, I found myself wondering if it would lend itself well to math too. Over the years, I have researched guided math and math workshop so that I could implement it successfully in my classroom. This product is a result of that.

In this product you will find vocabulary cards that can be used for a word wall, anchor charts, and detailed mini-lessons along with the resources necessary to carry them out. For each lesson I have provided ideas for remediation and enrichment so that you can differentiate your lessons and meet the needs of all your students.

It is at your discretion as to how you work through this unit. You can pick and choose lessons as needed or parts of lessons. You can also decide to teach the remediation or enrichment piece to the whole class as a regular lesson. These are merely a suggestion of how I would pace in my classroom. Further, it is not necessary to follow the "scripted" portion of my lesson plans; rather, that is there as a guide to give you an idea of the workshop language used. You are welcome to modify it to your classroom needs. You will need to partner students up in advance as partner 1 and partner 2. Lastly, you may wish to modify the timing of the workshop or implement centers during independence time. You know your students best and should focus on their needs.

I would strongly recommend reading the lesson plans a few days before actually implementing them to be sure that they meet your children's needs and that you are prepared. It is also recommended to print some materials in color, on cardstock, and then laminated for repeated future use. Some activities in this unit plan will offer teacher choices as how to handle the particular lesson. I would also frequently have students practice their multiplication facts and provide additional supplementary worksheets for further practice.

If you are not following my store, or my blog, you may want to, as I will continue to produce more units in the math workshop model. All of my products are 50% off for the first 48 hours after posting. The best way to know about this deal is by following, as you'll then receive a notification! Please also consider leaving feedback so I know how I can improve on these units and so that others will have the opportunity to learn about them. Thank you for your purchase and feedback!

I hope that you enjoy it!

Tammy (The Owl Teacher)

Standards Addressed

3.MD.A.2

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.²

3.MD.B.3

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

3.MD.B.4

Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units- whole numbers, halves, or quarters.

SOURCE:

National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics*. Washington, DC: Authors.

Unit Overview

Lesson 1 Collecting and Organizing Data pg. 25	Lesson 2 Creating Picture Graphs pg. 28	Lesson 3 Creating Bar Graphs pg. 38	Lesson 4 Changing the Scale on a Graph pg. 43	Lesson 5 Changing the Scale on a Graph pg. 50
Lesson 6 Solving Word Problems Related to Graphs pg. 53	Lesson 7 Measuring Lengths to the Nearest Quarter of an Inch pg. 67	Lesson 8 Collecting Data and Constructing Line Plots pg. 73	Lesson 9 Collecting Data and Constructing Line Plots pg. 84	Lesson 10 Graphing Review pg. 90
Lesson 11 Identifying, Estimating, and Measuring Mass pg. 91	Lesson 12 Solving Word Problems Related to Mass pg. 96	Lesson 13 Identifying, Estimating, and Measuring Liquid Volume pg. 104	Lesson 14 Solving Word Problems Related to Liquid Volume pg. 107	Lesson 15 Review Graphing and Measurement pg. 114

Pretest pg. 15 - 18

Post test pg. 120 - 123

Vocabulary Covered

Bar Graph
Data
Vertical Bar Graph
Horizontal Bar Graph
Capacity
Metric System
Line Plot
Picture Graph

Survey
Tally Table
Length
Graphing
Key
Scale
Mass

Liter
Inch
Gram
Measure
Liquid Volume
Kilogram
Customary System

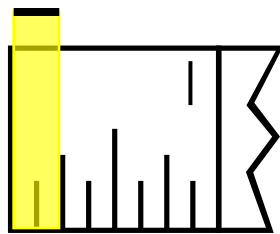
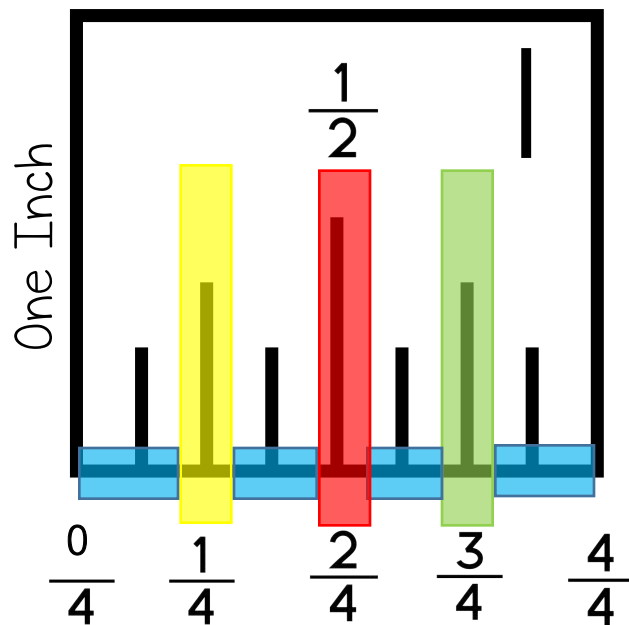
Math Workshop Routine

Warm Up	<p>5 minutes</p> <p>During this time you work with students on fact fluency and spiral review through a variety of methods.</p>
Mini-lesson	<p>15 minutes</p> <p>This is where you make a connection to the previous lesson and briefly introduce your teaching point for the lesson. It must be kept short; therefore, it should be explicit.</p>
Active Engagement	<p>10 minutes</p> <p>This is where you have the students briefly try out what you just taught during the mini-lesson. This is your opportunity to verify who may or may not need additional assistance.</p>
Link and Independent Practice	<p>25 minutes</p> <p>This is where you link what we did during the mini-lesson to what students will do independently. Then students begin working independently while you circulate and assist or pull small groups.</p>
Closing	<p>5 minutes</p> <p>During the last five minutes of workshop, it is crucial to wrap things up with a closing. This is typically sharing something learned or completed related to the mini-lesson.</p>

Lesson 7: Measuring Lengths to the Nearest $\frac{1}{4}$ of an Inch

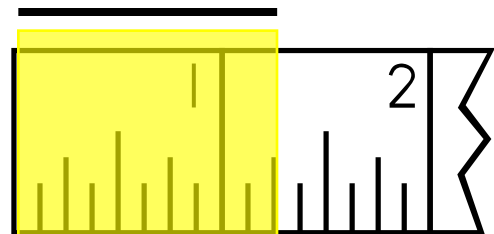
I Can Statement I can measure to the nearest quarter inch and half inch.	CCSS 3.MD.4 3.G.2
Vocabulary length, inch, measure,	
Warm Up Choose an Elapsed Time Card.	
<div style="display: flex; justify-content: space-between;"> <div> Mini-lesson <i>Boys and girls, do you remember when we were doing fractions, we talked about the fractions $\frac{1}{4}$ and $\frac{1}{2}$? If you remember, we drew them on a number line like this. (Draw on a piece of chart paper a number line and partition it. Then label it with $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, and $\frac{4}{4}$. Depending on your students, you may want to refresh their memory a bit.) Well, before we can move on to the next type of graph, we have to practice measuring lines to the nearest half inch and quarter inch. Today, I'm going to show you how to do that. I have here a ruler. Between the zero and the one is one total inch. That is just like our number lines in fractions. If you notice, it is partitioned into four pieces and are labeled with the appropriate fractions. (Continue modeling for students how to measure and read a ruler. Be sure to think aloud as you are demonstrating and reminding students to ignore the eighths. I put the eighths on the anchor chart because most students will come in contact with a ruler that has the eighths on it. It's best for students to learn to ignore the eighths for now.)</i> </div> <div> Materials: Anchor Chart </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> Active Engagement <i>Now it is your turn to give it a try. I have here for you these small half sheets that already come with a ruler on it for you. You are going to see if you can measure the item next to the ruler to the approximate quarter inch. Then you are going to write it on the line. When you are done, we will check it. (Give students a few minutes to determine the approximate lengths of each item. Remind them frequently to refer back to the anchor chart or their notes. Take note of who needs additional assistance. When everyone is ready, check the answers together. The answers are approximate and are as follows: Pencil $2\frac{1}{4}$; Chain $1\frac{1}{2}$; Rose $\frac{3}{4}$; Bone $2\frac{1}{2}$; Thermometer $1\frac{3}{4}$.)</i> </div> <div> Materials: Ruler Accordion Sheet </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> Link and Independent Practice <i>Boys and girls, all that fraction work a while back is definitely paying off. I'm glad that you remember all that hard work! Today we are going to continue practicing using rulers to measure to the nearest quarter inch. I have here for you a pom pom and a medicine dropper. You are going to take a piece of masking tape and create a starting line. Then place your pom pom down on it and squeeze your medicine dropper to blow it forward. After the pom pom rolls forward, you will measure the distance using your ruler. You will record four different trials. After you measured these and answered the questions, you will turn it in and get this practice sheet called "Measuring Up" to continue practicing independently.</i> </div> <div> Materials: "Blowing Away the Inches;" Small Pom Poms; Masking Tape; Rulers; Medicine Droppers; "Measuring Up" </div> </div>	
Intervention To help students with measuring, create paper rulers and label the quarters. Do not include the eighths.	Extension Have students either try the eighths or name equivalent fractions for the quarters. Another option is to have students create lines of different lengths.
<div style="display: flex; justify-content: space-between;"> <div> Closing Have students draw on a post-it note an inch and partition it with the quarters. Have them hand you the post-it note. Verify that students have them labeled correctly and are partitioned equally. </div> <div> Materials: Post-It Note </div> </div>	

Measuring with Rulers

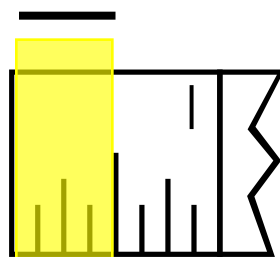


Length $\frac{1}{4}$ inch

This line is measuring to the first partition in the inch - one quarter or $\frac{1}{4}$.

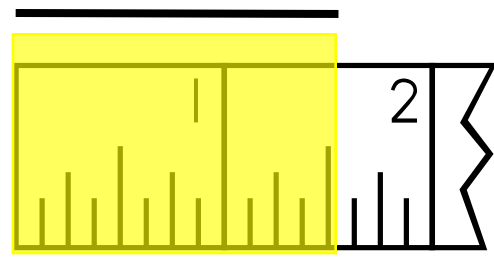


Length $1\frac{1}{4}$ inch

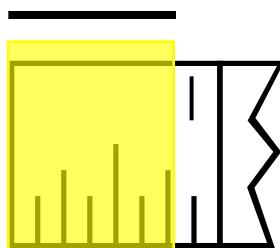


Length $\frac{1}{2}$ inch

This line is measuring to the second partition in the inch - one half or $\frac{1}{2}$.

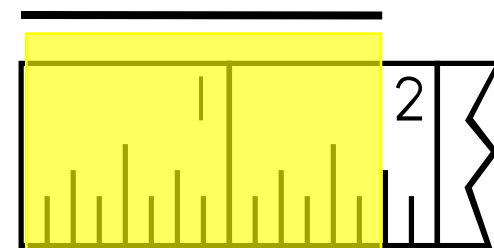


Length $1\frac{3}{4}$ inch



Length $\frac{3}{4}$ inch

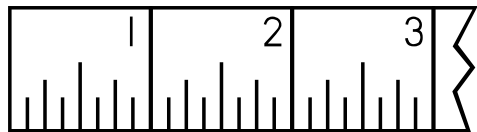
This line is measuring to the third partition in the inch - three quarters or $\frac{3}{4}$.



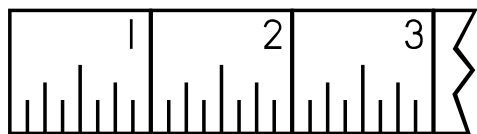
Length 1 inch

Directions: Cut on the solid, black line; fold on the dotted line. Determine the approximate length of each item and write it on the line. Be sure to measure to the nearest quarter inch.

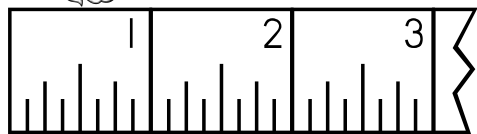
Pencil Length: _____



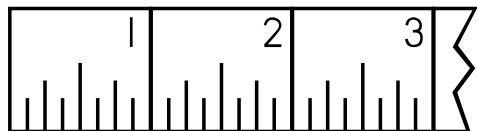
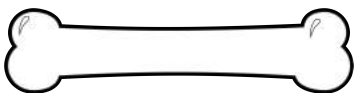
Chain Length: _____



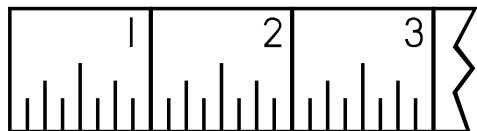
Rose Length: _____



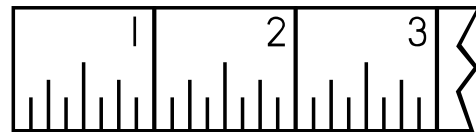
Bone Length: _____



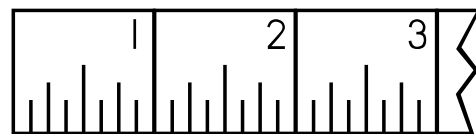
Thermometer Length: _____



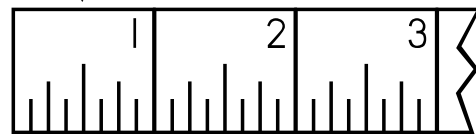
Pencil Length: _____



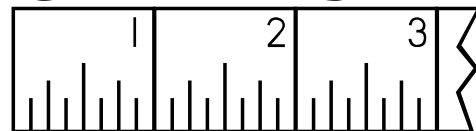
Chain Length: _____



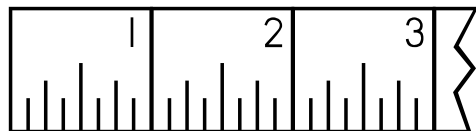
Rose Length: _____



Bone Length: _____

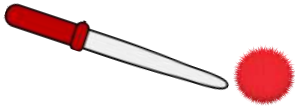


Thermometer Length: _____



Directions: Cut on the solid, black line; fold on the dotted line. Determine the approximate length of each item and write it on the line. Be sure to measure to the nearest quarter inch.

Name _____



Blowing Away the Inches



Directions: Using a piece of masking tape, create a starting line. On your starting line, place a small puff ball. Using a medicine dropper, blow the puff ball forward. Then measure the distance from the masking tape starting line to where the puff ball stopped. Write the distance to the nearest quarter inch below on the lines.

Trial 1 : _____

Which trial did the puff ball travel the least amount of distance?

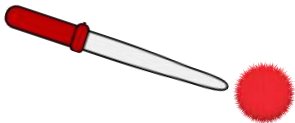
Trial 2 : _____

Trial 3 : _____

Which trial did the puff ball travel the farthest distance?

Trial 4 : _____

Name _____



Blowing Away the Inches



Directions: Using a piece of masking tape, create a starting line. On your starting line, place a small puff ball. Using a medicine dropper, blow the puff ball forward. Then measure the distance from the masking tape starting line to where the puff ball stopped. Write the distance to the nearest quarter inch below on the lines.

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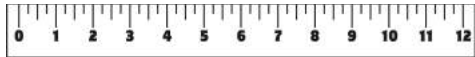
Trial 2 : _____

Trial 3 : _____

Which trial did the puff ball travel the farthest distance?

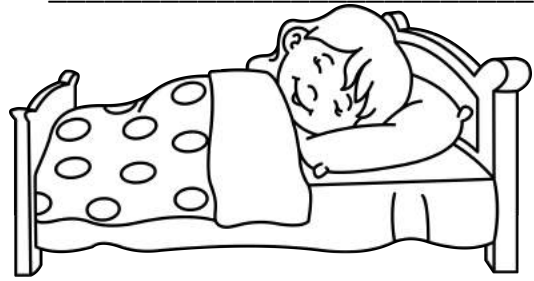
Trial 4 : _____

Measuring Up



Directions: Determine the length of each line provided to the nearest quarter inch using a ruler. Then circle the choice that matches that answer. Finally, use the words with the answer to determine the answer to the riddle.

Name _____



Q. Why did the boy keep a ruler under his pillow?

		Answer Choice A	Answer Choice B
1		$3\frac{1}{4}$ how	$3\frac{1}{2}$ boy
2		$1\frac{3}{4}$ the	2 he
3		$2\frac{3}{4}$ long	$1\frac{3}{4}$ wondered
4		$1\frac{1}{4}$ could	$1\frac{1}{2}$ dream
5		3 to	2 what
6		$1\frac{1}{4}$ boy	1 sleep
7		$2\frac{1}{4}$ about	$2\frac{1}{2}$ see

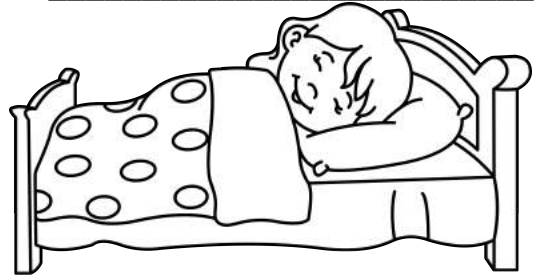
A: _____.

Measuring Up



Directions: Determine the length of each line provided to the nearest quarter inch using a ruler. Then circle the choice that matches that answer. Finally, use the words with the answer to determine the answer to the riddle.

Name _____ **KEY**



Q. Why did the boy keep a ruler under his pillow?

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5		3 to	2 what
6		$1\frac{1}{4}$ boy	1 sleep
7		$2\frac{1}{4}$ about	$2\frac{1}{2}$ see

A: _____ To see how long he could sleep _____.

A Special Thank You!

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Happy Teaching!

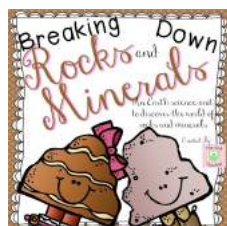


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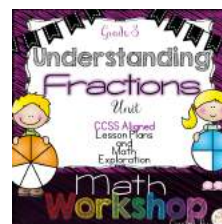
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