

General Information

Lesson Parts & Duration

Total Duration: 1 hour

- Introduction: Identifying Whole Inches, Half Inches, and Quarter Inches

Subject(s)

- Measurement & Data: Whole Inches, Half Inches, and Quarter Inches (3.MD.B.4)

Objectives

- Students will create rulers to use that identify measurement lengths in whole, half, and quarter inches.

Materials

- **Required:** printable “Measurement: Inches, Half Inches, and Quarter Inches” template of rulers (page 10) (Segment 1)
- blank paper
- pencil
- blue, orange, and red crayons, colored pencils, or markers
- document camera or whiteboard
- **Optional:** printable “Exit Slip” (page 9) (1 copy per student)
- **Optional:** printable “Break Up Your Day” brain/movement break ideas (page 11)

Instructional Setting

- Students should be seated with or near another student for partner work.

Throughout this lesson, you will find:

- ☀ **Scripted Text** indicates things that need to be said directly. Bullets starting with a “T” followed by *italicized* type indicate scripted text
- ☀ **Clarifiers** within scripted text are in orange
- ☀ **Teacher Directions** indicate things you should be doing
- ☀ **Side notes** provide helpful hints, ELL strategies, differentiation and information
- ☀ **Break Up Your Day** (Brain/Movement Breaks) are in green boxes (at the end)

Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.

Instructional Plan: 60 minutes

Pass out 1 piece of paper to each student before beginning.

Introduction

- T** Today we will be marking off on rulers to show measurements to the nearest inch, half inch, and quarter inch!
- T** Measuring down to a quarter inch allows us to get the most accurate measurement.
- T** Accurate measurements help us as we collect data and information as mathematicians.
- T** Can anyone think of a situation where it would be really important to measure correctly?
- T** Turn and tell a partner sitting near you a time that it would be very important to measure correctly.

Provide about a minute for students to share with a partner. Monitor to ensure students are on task.

- T** Who would like to share the situation you and your partner discussed? Call on several students.

Setting up the Paper

- T** Write your name and date in the top right hand corner of your paper. See example & model so students can follow.
- T** On the top center of your paper, title it "Notes."
- T** Underneath your title write our learning target, "I can create a ruler to measure lengths in inches, half inches, and quarter inches."
- T** Below this statement, write "Vocabulary".
- T** The first vocabulary word we need to know is "length."
- T** Who thinks they might know what the word "length" means and can create a definition for the word "length"?
- T** Turn and tell a partner sitting next to or near you how you would define the word "length."

Provide about 30 seconds for students to share with a partner.

Monitor to ensure students are on task.

- T** Now that you all have had the chance to try to define "length," who would like to share their definition with the class? Call on a few students to share their definitions.
- T** It sounds like many of you have a very similar definition to mine.
- T** Let's define "length" in our "Notes" as: "a measured distance from one end to another."
- T** The next vocabulary word we need to know is "half."
- T** Who thinks they might know what the word "half" means and can create a definition for the word "half"?
- T** Turn and tell a partner sitting next to or near you how you would define the word "half."

Provide about 30 seconds for students to share with a partner. Monitor to ensure students are on task.

- T** Now that you all have had the chance to try to define "half," who would like to share their definition with the class? Call on a few students to share their definitions.
- T** These are some great definitions.
- T** Let's all define this in our "Notes" also.
- T** "A half is one of two equal parts."
- T** So, we now know what the word half means; what does "halves" mean? Call on several students to answer.
Answer: Halves means more than one half.
- T** The word "halves" is the plural form of half.
- T** Plural means that I have more than one of something.

Notes	Name
I can create a ruler to measure lengths in inches, half inches, and quarter inches.	
Vocabulary:	
Length: a measured distance from one end to the other	
Half: one of two equal parts	
Quarter: one of four equal parts	

- T** So, if I told you I had 2 halves, that would really mean I had 1 whole, because 1 half plus 1 half would equal 1 whole.
- T** Our last vocabulary word is “quarter.”
- T** Who thinks they might know what the word “quarter” means and can create a definition for the word “quarter?”
- T** Turn and tell a partner sitting next to or near you how you would define the word “quarter.”

Provide about 30 seconds for students to share with a partner.

Monitor to ensure students are on task.

- T** Now that you have all had the chance to try to define “quarter,” who would like to share their definition with the class? **Call on a few students to share their definitions.**
- T** Again, many of you came up with some great definitions!
- T** Let’s define this in our “Notes” now.
- T** A quarter is one of four parts.
- T** You can think of this like money, how many quarters do I need to make 1 dollar. **Call on students. Answer: 4 quarters**
- T** How many quarters do I have, if I have 3 out of 4 parts? **Call on students. Answer: 3 quarters**
- T** How many quarters are in one full inch?
- T** Discuss with a partner near you.

Provide about 30 seconds for students to share with a partner. Monitor to ensure students are on task.

- T** Who can tell me how many quarters would be in 1 whole inch? **Call on several students to answer. Answer 4 quarters makes one whole inch**
- T** Below the definition of “Quarter” in your “notes” we are going to create our own ruler which measures in whole inches, half inches, and quarter inches.
- T** The last thing we are going to do is create illustrations below our definitions to help us to understand halves and quarters.
- T** I am going to give you a couple of minutes to draw a picture to show halves and another picture to show quarters.

While students are drawing examples of halves and quarters, pass out ruler templates to each person.

These can be found on (page 10) of this document.

- T** In front of you, you have some blank templates of six inch rulers.
- T** We are going to use these to practice our measurements.
- T** Please take out a blue, orange, and red crayon/colored pencil/marker.
- T** First, write your name in the top right hand corner.
- T** Can I have a student read the instructions? **Call on a student to read out loud.**
- T** Therefore, we are going to use our coloring utensils to show each measurement on each of the rulers.
- T** Which color do I use to indicate or show whole inches? **Call on a student to answer. Answer: Red**
- T** Which color do I use to indicate or show quarter inches? **Call on a student to answer. Answer: Orange**
- T** Which color do I use to indicate or show half inches? **Call on a student to answer. Answer: Blue**
- T** Let’s do the first one together!

Notes	Name
I can create a ruler to measure lengths in inches, half inches, and quarter inches.	
Vocabulary:	
Length: a measured distance from one end to the other	
Half: one of two equal parts	
Quarter: one of four equal parts	
Examples:	
Halves	
Quarters	

Name: _____

Measurement: Inches, Half Inches, and Quarter Inches

Directions: Use the materials below to help color your measurements. Each ruler is split into 6 inches. Use red for inches, blue for halves and orange for quarters. Label all of inch marks. Draw tick marks to identify the half and quarter inches when needed.

- Color 3 inches
- Color 2 $\frac{1}{2}$ inches
- Color 4 $\frac{1}{4}$ inches using all three colors
- Color 5 inches, by coloring 2 $\frac{1}{2}$ inches in two different ways
- Color 1 $\frac{1}{2}$ inches + 2 $\frac{1}{4}$ inches + 1 $\frac{1}{4}$ inches. How many inches did you color in total? _____

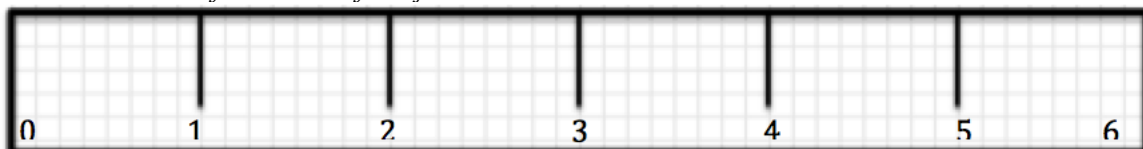
T It says color 3 inches. These are all whole parts, so I'm only going to use my red coloring utensil.

T I have to remember to label all of my parts as well.

T Count with me as I label my inches, starting with 0

T 0 inches, 1 inch, 2 inches, 3 inches, 4 inches, 5 inches and 6 inches See example & model so students can follow.

T Now I would like you to label your first ruler as well.



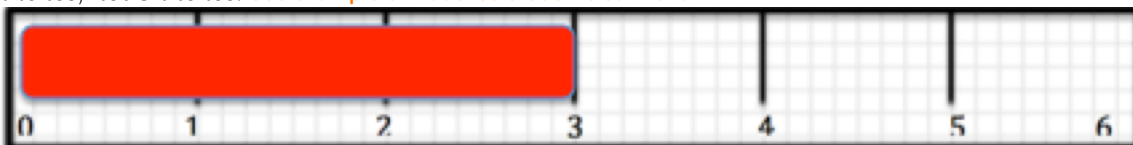
T Since I am measuring three whole inches, I don't need to draw any new tick marks.

T Tick marks are the little lines that you sometimes see in between the whole inches.

T Tick marks help to split whole parts into smaller fractional parts like halves and quarters.

T I can now color in the ruler up to the three-inch line.

T I will stop at the three-inch line because if I were to color one additional part or inch I would have 4 inches, not 3 inches. See example & model so students can follow.



Walk around and monitor student coloring. Assist any students who have/are coloring incorrectly.

T Next, we are going to complete ruler number two on our page.

T What is the length we are coloring? Call on a student to answer. Answer: $2\frac{1}{4}$ inches

T Correct, it tells us to color 2 and a quarter inches.

T First let's label our whole inches like we did on the last ruler.

T We already know how to label our inches, so let's do that now. See example & model so students can follow

T Next, I can label my half inches.

T Earlier you helped me define half as "one of two equal parts."

T So, by putting a tick mark in the middle of each inch, we are making two EQUAL PARTS. See example & model so students can follow.

T Now, let's think back to when we defined "quarter."

T A quarter is "one of 4 parts."

T Now looking at our whole inch between 0 and 1, we have already split each inch in half.

T To make quarters, I need to go from 2 pieces to 4 pieces.

T Can anyone think of how I might do that? Call on students to share their ideas of how to create quarters.

T Just like splitting my inches in half, I can do the same with my quarter inches.

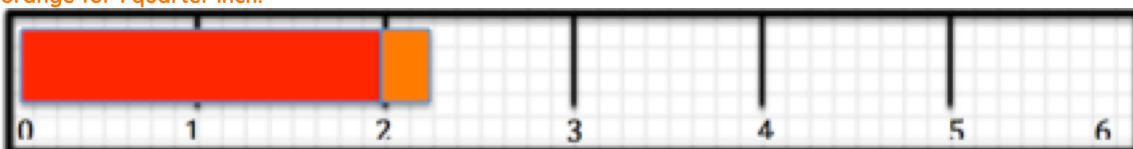
T If I split each half inch in half, it will turn my whole into how many equal parts? Call on a student to answer. Answer: 4

T Correct! Follow along as I do that! See example & model so students can follow.

T Now I would like you to do the same on your paper.

T What coloring utensils will I need? Call on a student to answer. Answer: Red and Orange

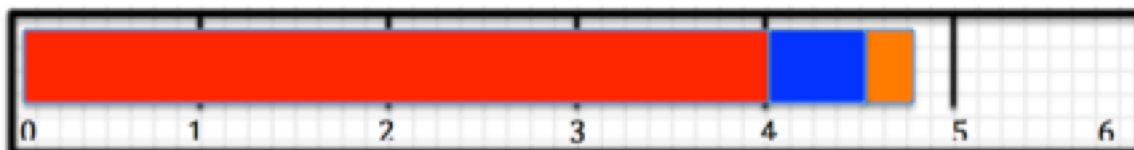
T Who can explain to me how to color this? Call on a student to answer. Answer: Color red for two inches. Color orange for 1 quarter inch.



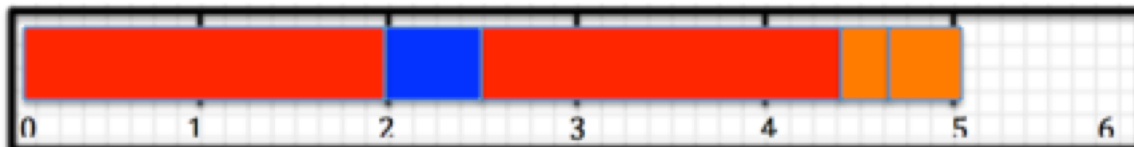
- T* Correct! Watch as I color and then color on your own sheet. See example & model so students can follow **Walk around and monitor students as they color.**
- T* Now that you all seem to be getting the hang of it, I would like you to try to complete numbers 3 and 4 with your partners.
- T* Remember that when you are working with a partner, both partners need to be doing equal work.
- T* Sometimes it is easier for you to each try by yourselves and then check to see if you got the same answer.
- T* Be sure to be cautious of all three colors.
- T* I will give you about 7 minutes.
- T* If you finish early, please raise your hand so that I can come and check your work.
- T* If both of your rulers are correct you may create some extra problems on the back of your paper for your partner to try to solve.

Walk around and monitor students as they color. See example for answers to check for understanding. If you check a pair of students and they are incorrect have them try to correct their mistakes.

- T* Let's review our answers.
- T* Who would like to come up and show what they colored for ruler number 3? Call on a student to come to the document camera or the whiteboard to demonstrate their answer for the class.
- T* After our wonderful volunteer shows his/her work I will ask them to explain what they colored and why.



- T* Explain to me how you colored your ruler and why?
- T* Give a thumbs up if you agree with indicate the student's name's answer! Wait and observe student's silent response.
- T* Who would now like to come show us what they colored for ruler number 4? Call on a student to come to the document camera or the whiteboard to demonstrate their answer for the class.
- T* Explain to me how you colored and why?
- T* Give a thumbs up if you agree with indicate the student's name's answer. Wait and observe student's silent response.



- T* Did anyone do anything different for number 4?
- T* Remember, in math there are typically several ways to solve a problem. Call on a student to share something different.
- T* Very nice!
- T* Now, number 5 is going to be an independent challenge!
- T* I want everyone to do their best work!
- T* Do this problem silently, coloring each segment! Then we will share what we have!
- T* I am going to give you about 5 minutes.
- T* Please notice there are 3 different measurements that will make up the total answer.

Differentiation:

Pair struggling students with a partner or pull a small group of students to solve ruler number 5 with your support.

- T* Before you begin, let's brainstorm some strategies you might use to solve this problem. **Call on several students.** Answers will vary: adding all of the numbers first and then coloring the answer. Coloring the whole numbers first ($1+2+1=4$) in red, then coloring the fractions second.
- T* Now that you have some ideas of how you might tackle this challenge problem you may begin.
- T* This problem is very tricky so just try your best.

Wait for most students to be finished. Bring the class back together when it appears most have attempted to solve the problem.

- T* Now let's share!
- T* What was the total number of inches you colored? **Call on several students for the answer.** Ask students to show their paper and explain their strategy. Answer: $5\frac{1}{2}$ inches.

Optional Assessment Component Exit Slip

You may use the exit slip at the end of this lesson as a quick assessment of student understanding. Either print them out (page 9), or simply have students copy the problems on a half sheet of paper. Answer Key found on next page.

- T* Last, we're going to complete a few questions independently.
- T* This is your chance to show your teacher what you have learned.
- T* Try your best.
- T* When you're done, raise your hand so that I can collect your paper.
- T* Then you may read or work on a silent coloring activity.



Make sure to "Break Up Your Day!"

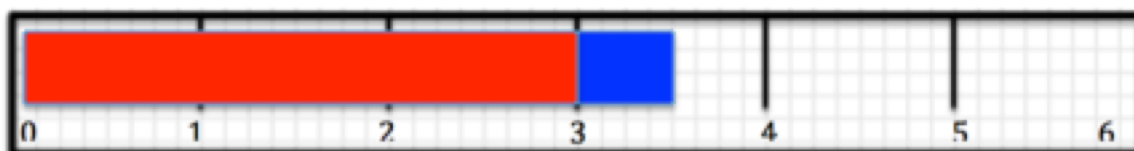


Now is a great time to take a break and get students re-energized.
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 11)

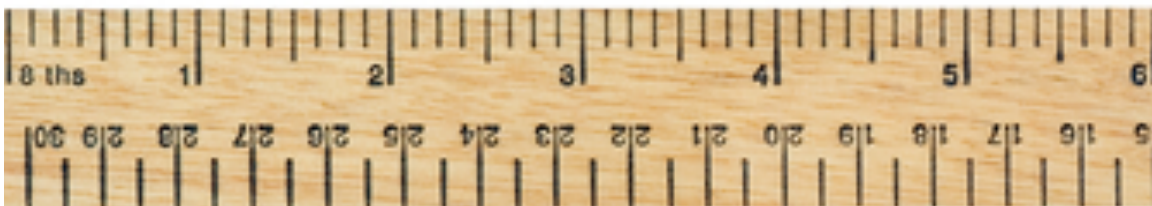
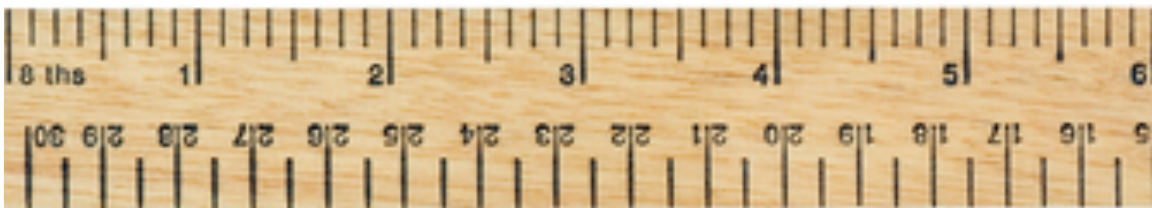
Name: **ANSWER KEY**

Exit Slip:
Measurement: Whole Inches, Half Inches, & Quarter Inches

1. How many halves are in 1 inch? **2 halves**
2. How many quarters are in 1 inch? **4 quarters**
3. How many quarters are in 2 inches? **8 quarters**
4. How many halves are in two inches? **4 halves**
5. Color and label $3\frac{1}{2}$ inches in the ruler below.



Printable Student Rulers

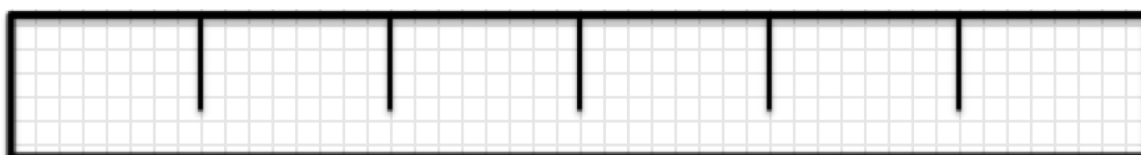


Name: _____ Date: _____

Exit Slip:

Measurement: Whole Inches, Half Inches, & Quarter Inches

1. How many halves are in 1 inch? _____
2. How many quarters are in 1 inch? _____
3. How many quarters are in 2 inches? _____
4. How many halves are in two inches? _____
5. Color and label $3\frac{1}{2}$ inches in the ruler below.

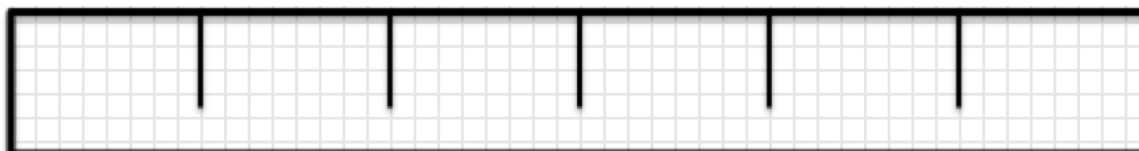


Name: _____ Date: _____

Exit Slip:

Measurement: Whole Inches, Half Inches, & Quarter Inches

1. How many halves are in 1 inch? _____
2. How many quarters are in 1 inch? _____
3. How many quarters are in 2 inches? _____
4. How many halves are in two inches? _____
5. Color and label $3\frac{1}{2}$ inches in the ruler below.



Name: _____

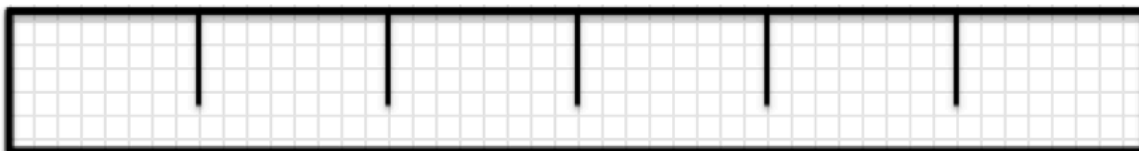
Measurement: Inches, Half Inches, and Quarter Inches

Directions: Use the materials below to help color your measurements. Each ruler is split into 6 inches. Use red for inches, blue for halves and orange for quarters. Label all of inch marks. Draw tick marks to identify the half and quarter inches when needed.

1. Color 3 inches



2. Color 2 $\frac{1}{2}$ inches



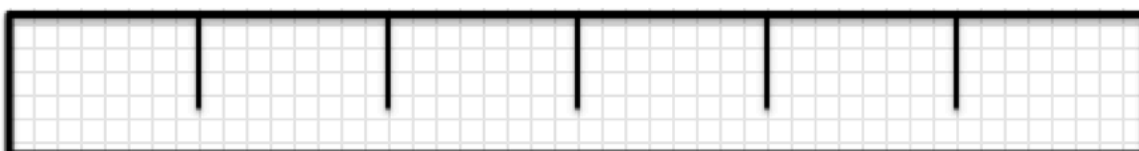
3. Color 4 $\frac{3}{4}$ inches using all three colors



4. Color 5 inches, by coloring 2 $\frac{1}{2}$ inches in two different ways



5. Color 1 $\frac{1}{2}$ inches + 2 $\frac{3}{4}$ inches + 1 $\frac{1}{4}$ inches. How many inches did you color in total? _____



Make sure to “Break Up Your Day!”

These can be used in the middle of a lesson or at the end of your lesson.

Here are a few engaging movement and brain break ideas to get your students moving and ready to refocus!



Break Up Your Day: Ball Toss Counting!



- Have students stand in a circle.
- You need a ball or small object to toss like a stuffed animal.
- Teacher stands in the middle of the circle.
- Students count by 1s starting from 1 to 120.
- As everyone counts together, the teacher tosses the ball to a student and the student tosses the ball back to the teacher.
- The teacher will only toss the ball to students who are actively counting and engaged. This will help students stay on task and count out-loud.
- To make it harder, the teacher can say “Stop!” at any number.
- Say a new number and the students have to count on from that number.
- If you stopped at 45, the teacher can say a new number like 54 and students have to pick up from there and say 55.



Break Up Your Day: Body Stretches!



10 minutes

FORMATION: Standing at desks

- Have students begin the day with a series of simple activities lasting 30 seconds or more: jumping jacks, knee lifts, flap arms like a bird, hopping, scissors (feet apart then cross in front, feet apart then cross in back)...
- Follow each activity with a basic stretching movement:
- Reach for the sky runner’s stretch
- Butterfly stretch (sit with bottom of feet together)
- Knee to chest, rotate ankles, scratch your back

Hold stretches for 10 - 30 seconds. Repeat a different simple activity followed by a new basic stretch as many times as desired.



Break Up Your Day: The Wiggles!



- Let’s get our wiggles out before we continue!
- Stand up and shake out your arms (4-5 seconds to shake) Remember! No one should get hurt! ...now FREEZE!
- Now shake the wiggles out of your right leg...FREEZE!
- Now shake the wiggles out of your left leg...FREEZE!
- Now shake all the wiggles out of your whole body...FREEZE!