



MGSE2.MD.9 Video Transcript

00:01

[Opening Music]

00:16

This video will review the Georgia Standards of Excellence 2.MD.9 and 3.MD.4 which both focus on generating measurement data and showing the data on line plots.

00:29

Both 2.MD.9 and 3.MD.4 focus on measuring objects and showing the measurements on a line plot.

00:37

The main difference between 2nd and 3rd grades is that 2nd grade students measure to the nearest whole unit, whereas 3rd grade students focus on using rulers and measuring to the nearest quarter of an inch.

00:51

1st grade students begin measuring length with non-standard units such as paper clips or blocks with an emphasis on using same-size units with no gaps or overlaps.

01:04

A variety of tools to measure length to the nearest whole unit are then introduced in 2nd grade with an emphasis on understanding the relative size of different units.

01:14

For additional support with measurement in 2nd grade, please view the instructional videos that can be found at www.georgiastandards.org.

01:23

3rd grade students then use a ruler to measure length the nearest $\frac{1}{4}$ and $\frac{1}{2}$ of an inch.

01:28

This presentation will focus on how measurement data can be used with line plots in both 2nd and 3rd grades.

01:35

As students use rulers and other measurement tools, it is important to provide simplified rulers that help students read the measurements more accurately.

01:44

The bottom ruler is more developmentally appropriate for 2nd grade students who are measuring to the nearest inch or centimeter.

01:51

And these examples show how 3rd grade students can use their understanding of fractions to measure to the nearest quarter and half of an inch.

2:00

Paper rulers can be printed to aid students and colorband rulers can be created by using $\frac{1}{4}$ inch graph paper.

02:08

To create a colorband ruler, simply mark off one-inch sections. Alternate colors to show inch increments. Students can easily see that the pencil is about 7 inches.

02:23

Halves can then be notated and shaded as well as quarters of an inch to help measure more precisely.

02:30

The paper ruler can then be taped to a traditional ruler.

02:34

When students begin using a ruler, it important to emphasize that a ruler measures the difference or distance between two points.

02:43

Although the end point is 7, the starting point is 2, therefore, the distance is 5.

02:50

This pencil has the same length regardless of where it is positioned on the ruler.

02:54

Focusing on the starting and end points as well as the distance between these points is the key to understanding measurement.

03:03

Students often see rulers with hash marks as counting numbers instead of the units or spaces between the marks.

03:09

Placing objects on a “broken ruler” can help solidify understanding.

03:15

When collecting measurement data for line plots, it is important for students to have access to items that are similar in size such as shoes, crayons or pencils or even hand spans.

03:27

Measuring similar sized items will ensure that the range of data is reasonable.

03:32

Activities can even include collaborative projects that encourage collecting data at home.

03:37

In Unit 3 of the 2nd Grade GA Frameworks, students have the opportunity to measure lizards to the nearest centimeter and display the data on a line plot.

03:47

The lizard task provided opportunities for students to position their ruler in different ways while measuring accurately. Students then recorded their data and created a line plot.

03:59

3rd grade students should have experience partitioning number lines and locating fractions less than and greater than one on a number line before measuring to the nearest half and quarter of an inch with a ruler.

04:11

Concrete representations help students see relationships and build understanding of how the quantity increases with each increment.

04:20

As they build fractions greater than one, they begin to make connections and see how fractions can be represented in different ways. Three halves or six fourths are the same as $1\frac{1}{2}$.

04:33

A number line is like a ruler.

04:37

This number line represents inches. It is divided into fourths. The dot on the number line is at $\frac{7}{4}$. $\frac{7}{4}$ is the same as $1\frac{3}{4}$.

04:51

To provide practice reading a ruler within a specific range, graphics can simply be reduced, enlarged, and repeated.

05:00

This is especially beneficial for 3rd grade students who need to measure to the nearest $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ of an inch.

05:07

In the upcoming video, students display the lengths of firetrucks in a table before creating a corresponding line plot.

05:16 (Video)

Teacher: So, let's move the ruler to the very beginning... and what does it say?

Student: One-fourth.

Teacher: Just one-fourth? Or are there some whole inches in there?

Student: One-half.

Teacher: Let's look... We have one-whole...

Student: Two-wholes.

Teacher: And then...

Student: Three-wh... one-fourth.

Teacher (with student): So, we have two... and one fourth.

05:38

Teacher: Let's measure truck "f."

Student: It's closer to three-wholes.

05:46

Student: "H" already went over it.

Teacher: It went over a fourth. It's... What is it? Two and...

Student: Half

Teacher: Two and...

Student: Two and one...

Teacher: How do you say it?

Student: Two and... Two and a half?

Teacher: Two and a half. So how would we write two and a half?

Student: Two and then one... wait... and then a two.

Teacher: Yes. One-half.

06:15

Student: Like that?

Teacher: So, we have one at two and a fourth... One at three. What about three and one-fourth? Have you marked that one?

Student: No.

Teacher: And another at three and a fourth.

Student: Three and a fourth...

Teacher: See... we have two... [pointing to the two data points for $3\frac{1}{4}$].

06:32

Student 2: Two that are the same.

Teacher: You have two that are the same?

Student 2: Uh-huh.

Teacher: Which two are the same?

Student 2: Two and one-fourth and three and one-fourth.

Teacher: How many do they have each?

Student 2: Three.

06:47

As an extension activity, a frog hopping contest was incorporated into a family math night station.

06:55

After students measured the distance that their frogs hopped, they plotted the data on a collaborative line plot.

07:02 (Video)

[People talking in background]

Student [Sitting at table]: I got 6 and it's my highest!

07:09

Student: Ready... Set... [Plastic frog hops]

Adult [in background]: Whoa! [Reacting to the frog that landed near $3\frac{1}{2}$]

07:14

The frog hopping activity transitioned well into individualized classrooms where data was not only collected but then analyzed.

07:23

Once the line plot was created, questions were generated that complemented the data. For example, "How many frogs jumped less than 2 feet?" and "How many frogs hopped between $2\frac{1}{2}$ and 5 feet?" as well as "Which lengths had the most and least number of hops?"

07:44

Engaging line plot activities can be incorporated throughout the year to match current holidays or units of study. In the upcoming videos, students create and measure Valentine hearts.

07:56 (Video)

Teacher: How tall is your heart... in the crease?

Student: Three inches.

Teacher: Three inches exactly? Very good.

08:03

Student: My heart is one-quarter.

Teacher: Only one quarter?

Student: No [laughs] one... five inches and one-quarter.

Teacher: Very good.

08:15

Teacher: Tell us about your heart, and how tall it is.

Student: My heart is 5 and... one-fourth... two-fourths... three-fourths.

08:25

Student: Seven inches, too.

Teacher: Where is your 'x' going to go, then?

Student: [drags the 'x' to the line plot above the 7]

Teacher: So you put it above Jacob's?

Student: Yes.

Teacher: Good job.

08:35

Teacher: How long was your heart?

Student: four-third... No... four thir...

Teacher: Four and...

Student: Yeah...

Teacher: [reading student's measurement] Four and three-fourths? Four and three-fourths.

Ok. Get an 'x' to plot it on your... on the line plot... Where is four and three-fourths on the line plot?

Student: [Drags an 'x' to $4\frac{3}{4}$, with support].

09:03

Teacher: Ok, how long was your heart?

Student: Five and three-fourths.

Teacher: Five and three-fourths?

Student [Drags an 'x' to the correct place on the line plot]

09:11

After students feel comfortable collecting and recording data on a line plot, mystery line plots that allow students flexibility in what they measure and record can be incorporated.

09:22

Mystery line plots allow for engaging classroom discourse and reflection.

09:27

The teacher should set some parameters that state what type of thing is to be measured.

09:33

For example, students could measure other students in the classroom. They could measure height, the size of classmates' feet, and the length of arm spans or hand spans.

09:42

The data is then collected using an appropriate tool and unit of measurement.

09:48

Classmates then analyze the line plot and determine what the student could have measured. In this example, the student used centimeters.

09:58

Centimeters are small and the greatest length is 20 cm. This could not represent height or arm span. What could it be?

10:07

For additional support and resources for both 2nd and 3rd grades, please visit www.georgiastandards.org.

10:14

[Closing Music]