INTRO TO THE NUMBER LINE
GRADES K-2

SUMMARY

In this lesson students create a number line with whole number intervals (equal spacing), represent whole numbers on a number line, and find sums and differences within 100 using a number line.

COMMON CORE STANDARD(S)

2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

DURATION

Two 45-minute classroom periods
Engage and Explore, Explain, Elaborate page 1—one 45-minute classroom period
Elaborate page 2, Evaluate—second 45-minute classroom period

MATERIALS

Rope or clothesline
Clothes pins
Large cards numbered 1 to 10 (5” by 7” index cards or 8” by 11” cardboard paper)
Large cards lettered A to F (5” by 7” index cards or 8” by 11” cardboard paper)

ENGAGE AND EXPLORE

Engage students’ prior knowledge about relative positioning of whole numbers on a number line by having them explore a life-sized number line. The basic idea for this activity is to extend a rope or clothesline across a large, open space in the classroom. You and students can clip numbers and letters onto the clothesline to make a number line analog.
Alternatively, you may have students each hold a large number card and stand in various locations as representations of numbers on the number line, or tape a line out on the classroom floor. Focus on developing conceptual understanding while at the same time fostering student engagement and participation.

Distribute the number cards numbered 0 through 10 to students. For more experienced students or to increase participation, extend the range of the numbers on the cards.

Begin by asking students: “Where should I place zero on the number line?” It is important for them to realize that zero can go anywhere. Based on student input, pin the zero card on the number line, or have the student holding the 0 card stand where students indicate 0 should be. Next, ask students: “Where should I place 10?” Take advantage of the open number line to foster discussion about where ten could go. After an open discussion and input from students, pin the number 10 card on the number line, preferably leaving plenty of space between zero and ten.

Next ask: “If I know where zero is and I know where 10 is, do I know where to place 5?” Students should say that 5 is halfway between zero and ten. Place the 5 card (or student holding the 5 card) on the line based on student comments.

Proceed with other cards, encouraging students to justify how they know where a card might be placed. Listen for comments—and encourage discussions—such as “4 is half of 8, so we should place it halfway between zero and 8” or “6 is one more than 5, so put it one to the right of 5.” These comments can give you an indication of the developing number sense of your students.

Time permitting, clear all the numbers off the line except for the numbers zero and ten. Now, place the lettered cards on the line. Place the letter A at the midpoint between zero and 10 (where 5 should go), and the letter B card roughly where you expect to see the number 2. Ask students: “Can you tell me what numbers go at letter A and at letter B?” Vary the location of the lettered cards. For example, place zero, ten, and 8. Next, place the letter C card halfway between 8 and 10 and ask: “What number goes at letter C?”

Debrief with students about what they observed about the placement of numbers on the number line relative to other numbers. Ask questions such as “What do you notice about numbers as we move right? Left?”

Tell students that today they will learn about a mathematical tool called a number line. They can use number lines to add and subtract numbers.

**EXPLAIN**

**WATCH THE GENERATION GENIUS INTRO TO THE NUMBER LINE VIDEO AS A GROUP**
Facilitate a conversation using the Discussion Questions.

**ELABORATE**

Direct students to use their new understanding to complete the practice problem worksheets. Page 1 contains bare mathematical problems to solidify understanding of the process. Page 2 contains application problems for students to apply the process to solve real-world problems.
EVALUATE

Have students gather in groups of 2 or 4 to compare and discuss their answers to the problems. Allow students enough time to communicate with their peers about their process and their thinking. Encourage students to use correct mathematical language when discussing their process. Have each group choose two questions they want more information about, or they want to discuss as a class.

When groups are ready, take questions from students. Encourage groups to answer questions brought up by other groups.

Students can play the online Kahoot! quiz game located below the video. It provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz, or the exit ticket questions. All these resources are located below the video in the assessment section.