InsightMath

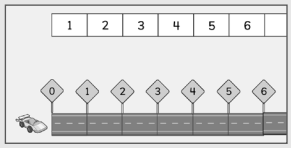
Discovering Addition and Subtraction on the Number Line

Family Guide | Grade 2 | Unit 2

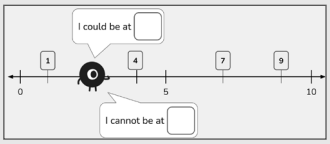
Your student is exploring how the number line is a powerful tool that can show magnitudes of numbers and relationships between them.

Key Math Ideas

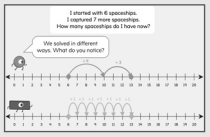
In first grade, your student had experience with adding and subtracting using various strategies including count on and counting back on a number path. In this unit, students will transition to using a number line to add and subtract. A number line is similar to a number path, but the number line focuses on the space between the numbers. First, your student will be introduced to the number line by identifying numbers and placing them on the number line. Next, they will add and subtract on the number line and compare how to show their thinking by drawing "jumps" on the number line. Students also learn that number lines can be used flexibly to add and subtract, exploring how jumping by ones compares to jumping by greater numbers. In the example below, one critter shows a jump of 4 then 3 and the other critter shows 7 jumps by ones.



number path



placing numbers on the number line

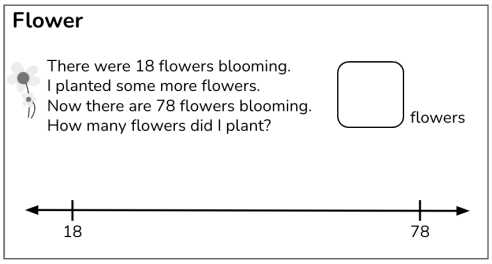

showing "jumps" to add on the number line

→ In the first half of the unit your student will learn to

- identify given points and use estimation to plot points on a number line from 0–20;
- label tick marks on a number line up to 20 and describe the number line;
- use a number line to model and solve addition and subtraction situations and word problems with numbers up to 20;
- describe that numbers decrease as you go to the left on the number line and increase as you go to the right.

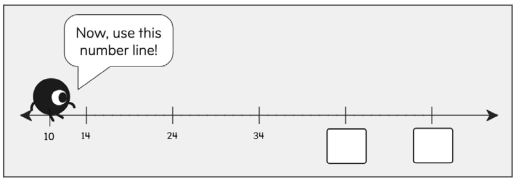
→ By the second half of the unit your student will learn to

- use a number line to model and solve word problems with numbers up to 20;
- describe that the space between two numbers on a number line shows their difference;
- identify given points and use estimation to plot points on a number line from 0–100;
- estimate sums and differences on a number line within 100;
- use number lines flexibly and efficiently to solve word problems with numbers up to 100.



Helpful Hint

In this unit, students pay particular attention to the relative spacing of tick marks on the number line. In the example to the left, it is clear that the space between 10 and 14 is less than the space between 14 and 24. Proportional spacing supports student understanding that the space between two numbers on a number line shows their difference.



Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ At the beginning of the unit:

- How is a number path different from a number line?
- How do tick marks help you?
- How can you use a number line to add and subtract?
- How can you write an equation to represent the jumps on a number line?

→ Later in the unit:

- How can you use a number line to find the difference between two numbers?
- How can you use a number line to compare two numbers?
- How can you represent an addition or subtraction equation on a number line?
- How can you use skip counting to help you label a number line and solve problems?
- How can a number line help you find the missing number in an equation

If...	Try...
your student does not know which way to move on the number line or how many jumps to make when solving an addition or subtraction problem . . .	asking them what is happening in the problem ("Do we need to add or subtract? How do you know?"). Support them to identify what numbers they know and what they are solving for.

Student Strengths Spotlight

We start by observing what is happening in the problem.

Determining whether they should add or subtract to solve helps students determine whether to move left or right on the number line.

We explain our thinking.

Students share their thinking to tell what they observe about the number line and how they used it to add or subtract. Explaining their thinking allows students to reflect on their own understanding and learn from each other.

Try This Together!

- **Chalk Number Line.** Go outside and make a number line with chalk on the sidewalk. Have your student draw the number line using tick marks and number labels. Work together to come up with addition and subtraction problems with numbers up to 20 or with a multiple of 10. Show jumps as they solve the equations. For example, you can have your student draw a number line and have them skip count by 10s to label the tick marks. Then you can ask them to model 24 + 30 by starting on the twenty and making three jumps of 10 each. If your number line is large enough, you can have your student actually jump forward or backwards on it to help them solve!

Number Hunt. On notecards or sticky notes, write one number from 0 to 20 on each and then hide them around the room. Draw a number line for your student and label the tick marks from 0 to 20. Have your student find 2 numbers and label them on the number line. Then ask your student to share an addition equation to tell how to jump from the smaller number to the larger number. For example, if they find the numbers 6 and 15, they would label those on the number line and then show with jumps how they need to add 9 to 6 to get to 15.