Homework Help
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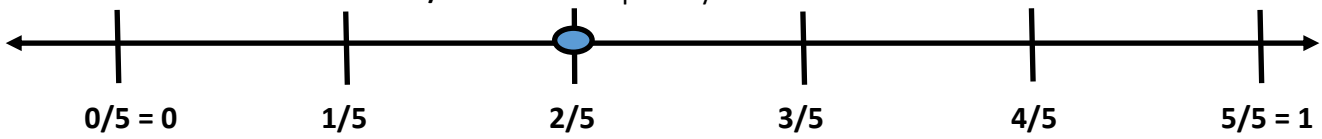
Grades 3-5: Using Number Lines to Add and Subtract Fractions

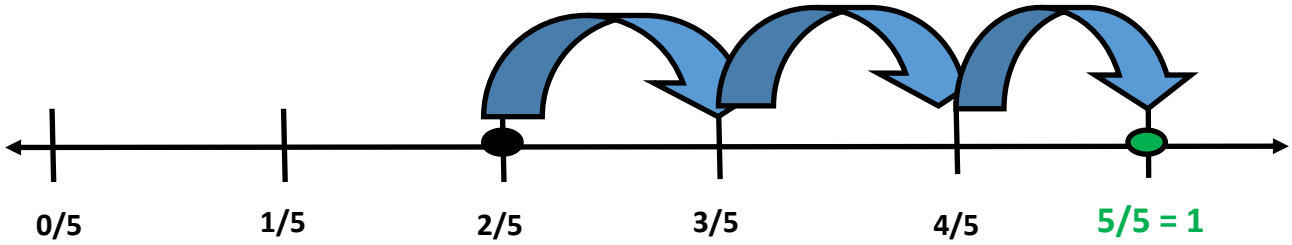
A **number line** is similar to a ruler or measuring stick. It **can be divided into pieces**, for example, to represent **fractions**. Below is an example of a **number line that represents the fraction 2/5**.

- The **first number we see on the line is 0**. Since we are going to try to show 2/5, a useful way to think about 0 is as **0/5**. If we have zero, we have no fifths.
- The other **vertical lines that intersect the number line represent fractions** (1/5, 2/5, 3/5, and so on), and the end of the line is 1, or one whole. Another way to think of **one whole is as 5/5**.
- We **draw a dot on the number line at 2/5** to show this quantity.



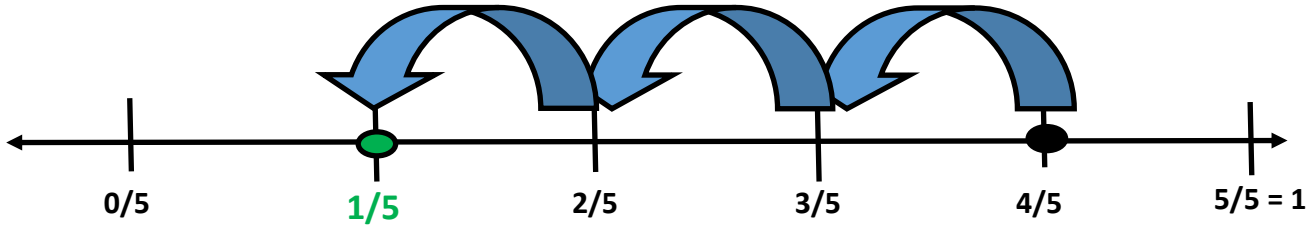
Adding Fractions With Like Denominators Using a Number Line

- We can **use a number line to help us add fractions**, especially if the two fractions have the **same denominator**. Let's show that by adding **2/5 + 3/5.**
- Our **first step** is to do what we did in the first example: **represent 2/5** on the number line.
- Then, **we show adding three fifths by jumping ahead one fifth at a time**, **as shown by the arrows** below. This works because 1/5 + 1/5 + 1/5 = 3/5! Our **final answer** is where we land after the jumps: **5/5, or 1**.



Subtracting Fractions With Like Denominators Using a Number Line

- We can **use a number line to help us subtract fractions with like denominators**, too. Let's show that by subtracting **4/5 - 3/5.**
- Notice that the **arrows still show three jumps**, but this time, they go backwards, or **down on the number line**.



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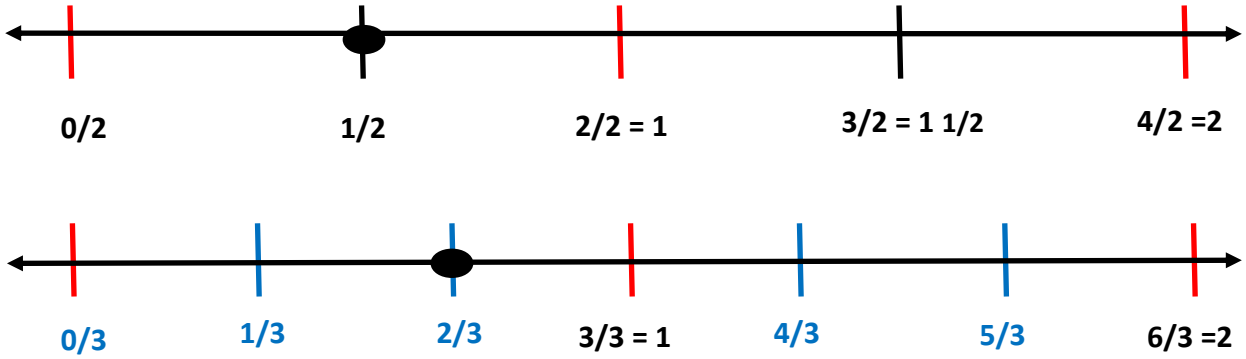
Using Number Lines to Add and Subtract Fractions: Unlike Denominators

Number lines can also be used to add fractions with unlike denominators. For example, let's say we want to add **1/2 + 2/3.**

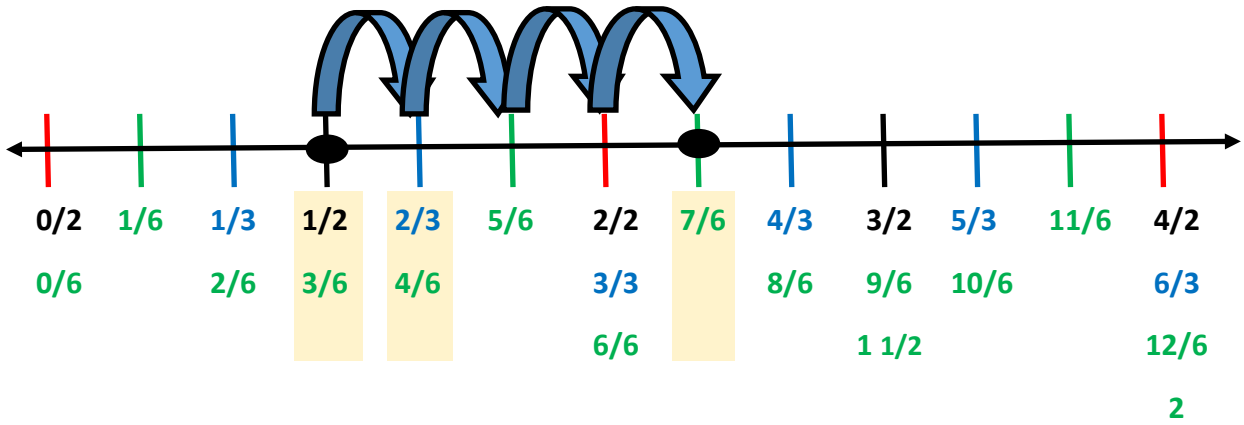
- Our **first step** is to **draw two separate number lines**, one **for 1/2 and another for 2/3.** In case our final answer turns out to be bigger than 1, let's make each of these number lines go from 0 to 2.



- **On both number lines**, the **vertical lines in red are at 0, 1, and 2**. That's why these **red lines line up in both number lines.**
- Our next step is to **figure out a common denominator** for our fractions. **One way to find a common denominator is to multiply the denominators we already have**:

  2 X 3 = 6.

- Another way to think about having a common denominator of 6 is **chopping the halves or thirds** on the number lines into pieces so that **each whole is now broken into sixths**. The **black vertical lines show the halves**, and the **blue lines show the thirds**. The **added lines in green** chop each whole **into sixths**. Now, **we can place a dot on our starting number**, **1/2, which we see is equivalent to 3/6**.
- To add 2/3, we can start by seeing that **2/3 is equivalent to 4/6**. So **1/2 + 2/3 = 3/6 + 4/6.**
- If we start at **3/6**, we can use arrows to **jump ahead 4/6**. We **land at the answer of 7/6** (which can also be expressed as **1 1/6)**.



For More on This Topic: https://www.youtube.com/watch?v=MGvqtKdaW8w