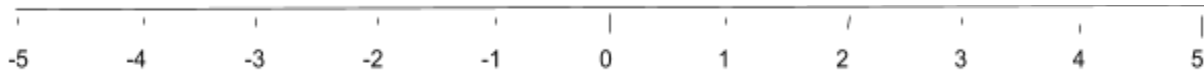


## Positive and Negative Numbers

Imagine a number line, where every number is chained together in order. In the very center you have zero, and the numbers that are closest to zero have small digits (1) and further away ones have bigger digits (4, 5..). This is, basically, their distance from zero, and plus or minus tells you which direction. Let's take a walk.



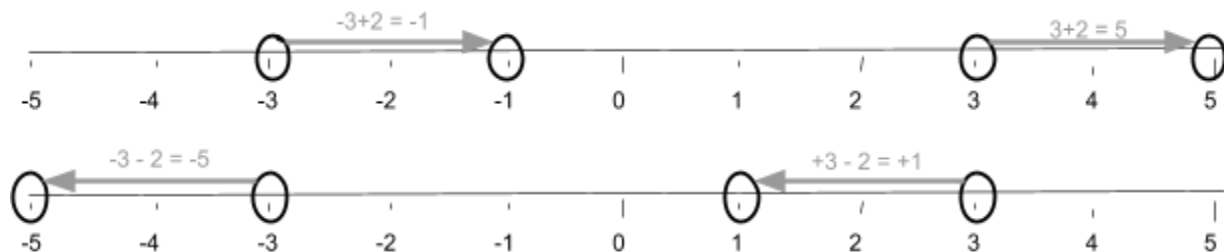
If I start at zero, and move two units to the right, I end up at positive two (+2). If I start at zero and move three units to the right, I end up at positive three(+3). If I start at zero and move two to the right (+2), then three more (2+3), I end up five steps right from zero (2+3 = +5).

**Adding a positive number is when you move right.**

The same logic holds in the other direction. If I start at zero and move two steps left(-2), I end up at negative two ( $0 - 2 = -2$ ). If I move three steps left from there(-3), I end up at negative five ( $0 - 2 - 3 = -5$ ).

**Subtracting a positive number is when you move left.**

So, what happens when your starting point is less than zero? The same thing that happens everywhere else. Plus moves you right, and minus moves you left. Numbers look bigger when you move away from zero, and smaller when you move closer to it.



This definition makes addition and subtraction exactly opposite from each other. So, if positive is right and negative is left, and plus is putting things together, and minus is either taking them away or going in the opposite direction...

Let's say I'm at zero, and want to move two steps to the left. I will end up at -2. This is the same whether I took away two rightward steps (subtracted a positive), or added two leftward steps (add a negative).

Subtracting +2 from zero is the same as adding -2 to zero :  $0 + (-2) = 0 - 2$

**Adding a negative number is the same as subtracting a positive. Move that far Left.**

Let's say I'm at -5, five steps to the left. I decide to take back two of those steps to the left --  $-5 - 2 = -3$ . I decide to subtract three more negative steps, to go from -3 to 0. By getting rid of negative steps, I ended up moving to the right.

**Subtracting a negative number is the same as adding a positive. Move that far Right.**

### **In short:**

++, or --	move right	+	Note that, although proving it involves a lot of multiplying by negative one instead of talking about number lines, this chart works to figure out the sign when <u>multiplying and dividing</u> negative numbers too.
+-, or -+	move left	-	