

Negative Numbers

Addition/Subtraction:

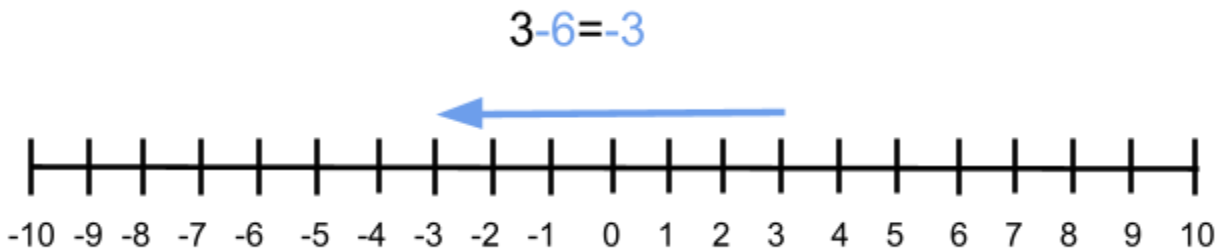
When it comes to addition and subtraction, there aren't any set rules about if the answer will be negative or positive, because it depends on the size of the two numbers.

SO it's best to just think about a number line to help you out:

Adding two positive numbers will always be positive:



Subtracting two positive numbers could be positive or negative depending on which number is "bigger":



*If I have \$6 and you borrow \$3 from me, I'll still have money left over, but I might go \$3 "in debt" if I only have \$3 and you borrow \$6 from me.

Adding two negative numbers will always be negative:

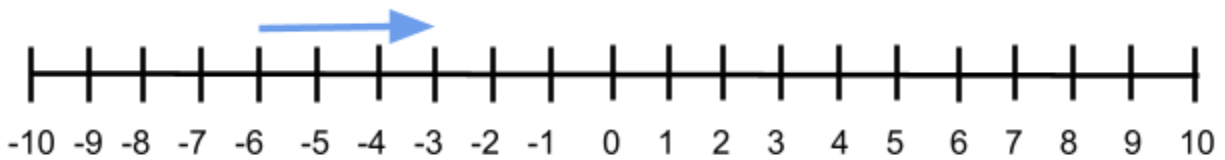
$$-2 + -3 = -5$$



*If you borrow \$2 from me, and then you borrow \$3 more from me, then you owe me \$5 all together now.

Subtracting two negative numbers could be positive or negative depending on which number is "bigger":

$$-6 - -3 = -3$$



$$-3 - -6 = 3$$



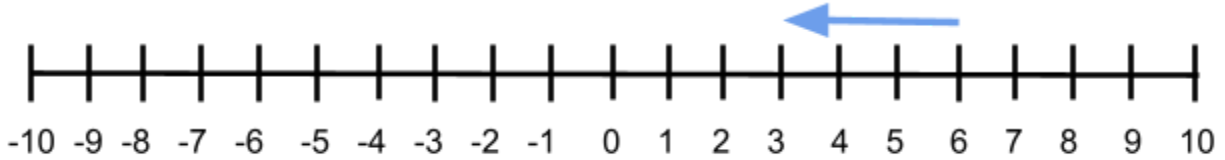
**Subtracting a negative is the same as adding a positive!

-6 - -3 is the same thing as -6+3 and

-3 - -6 is the same thing as -3+6

Adding one positive number, and one negative number could be positive or negative depending on which number is "bigger":

$$6 + -3 = 3$$



$$3 + -6 = -3$$



*Adding a negative is the same thing as subtracting $6 + -3$ is the same as $6 - 3$

Subtracting one positive number, one negative number could be positive or negative depending on which place the negative number is in and which number is "bigger":

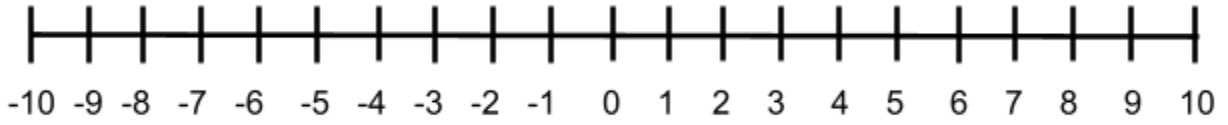
$$-3 - 2 = -5$$



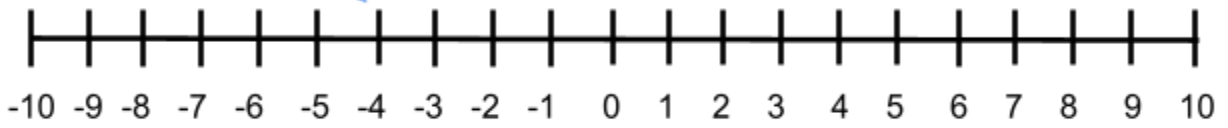
$$2 - -3 = 5$$



$$3 - -2 = 5$$



$$-2 - 3 = -5$$



Multiplication/Division:

For multiplication and division it's easier because there IS a set pattern:

$$+ \times + = +$$

$$2 \times 3 = 6$$

$$+ \times - = -$$

$$2 \times -3 = -6$$

$$- \times + = -$$

$$-2 \times 3 = -6$$

$$- \times - = +$$

$$-2 \times -3 = 6$$

So if the signs are **opposite**, then the answer will be **negative**. If the signs are the **same**, then the answer will be **positive**.

We can also remember that division is just multiplication in reverse, so instead of memorizing the division patterns, we can just remember how to flip the multiplication patterns to division:

$$\boxed{+} \times \boxed{+} = \boxed{+} \quad \rightarrow \quad \boxed{+} \div \boxed{+} = \boxed{+}$$

$$\boxed{+} \times \boxed{-} = \boxed{-} \quad \rightarrow \quad \boxed{-} \div \boxed{-} = \boxed{+}$$

$$\boxed{-} \times \boxed{+} = \boxed{-} \quad \rightarrow \quad \boxed{-} \div \boxed{+} = \boxed{-}$$

$$\boxed{-} \times \boxed{-} = \boxed{+} \quad \rightarrow \quad \boxed{+} \div \boxed{-} = \boxed{-}$$