

## Lesson 6: Subtracting Rational Numbers

Let's bring addition and subtraction together.

### 6.1: Number Talk: Missing Addend

Solve each equation mentally. Rewrite each addition equation as a subtraction equation.

$$247 + c = 458$$

$$c + 43.87 = 58.92$$

$$\frac{15}{8} + c = \frac{51}{8}$$

### 6.2: Expressions with Altitude

A mountaineer is changing elevations. Write an expression that represents the difference between the final elevation and beginning elevation. Then write the value of the change. The first one is done for you.

beginning elevation (feet)	final elevation (feet)	difference between final and beginning	change
+400	+900	$900 - 400$	+500
+400	+50		
+400	-120		
-200	+610		
-200	-50		
-200	-500		
-200	0		



### Are you ready for more?

Fill in the table so that every row and every column sums to 0. Can you find another way to solve this puzzle?

	-12	0		5
0			-18	25
25		-18	5	-12
-12				-18
	-18	25	-12	

	-12	0		5
0			-18	25
25		-18	5	-12
-12				-18
	-18	25	-12	

### 6.3: Does the Order Matter?

1. Find the value of each subtraction expression.

A
$3 - 2$
$5 - (-9)$
$(-11) - 2$
$(-6) - (-3)$
$(-1.2) - (-3.6)$
$(-2\frac{1}{2}) - (-3\frac{1}{2})$

B
$2 - 3$
$(-9) - 5$
$2 - (-11)$
$(-3) - (-6)$
$(-3.6) - (-1.2)$
$(-3\frac{1}{2}) - (-2\frac{1}{2})$

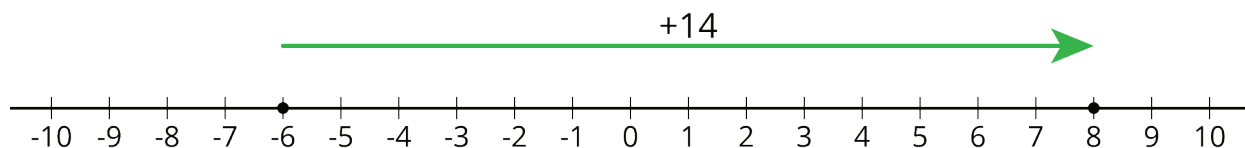
2. What do you notice about the expressions in Column A compared to Column B?

3. What do you notice about their values?

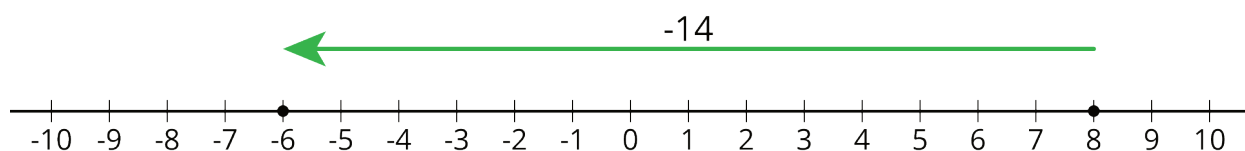
## Lesson 6 Summary

When we talk about the difference of two numbers, we mean, “subtract them.” Usually, we subtract them in the order they are named. For example, the difference of +8 and -6 is  $8 - (-6)$ .

The difference of two numbers tells you how far apart they are on the number line. 8 and -6 are 14 units apart, because  $8 - (-6) = 14$ :



Notice that if you subtract them in the opposite order, you get the opposite number:



$$(-6) - 8 = -14$$

In general, the distance between two numbers  $a$  and  $b$  on the number line is  $|a - b|$ . Note that the *distance* between two numbers is always positive, no matter the order. But the *difference* can be positive or negative, depending on the order.