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Unit 5, Lesson 6: Subtracting Rational Numbers

Let's bring addition and subtraction together.

6.1: Number Talk: Missing Addend

1. Solve each equation mentally.

   $247 + c = 458$

   $c + 43.87 = 58.92$

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

2. Rewrite each addition equation as a subtraction equation.

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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		

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

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

3. What do you notice about their values?

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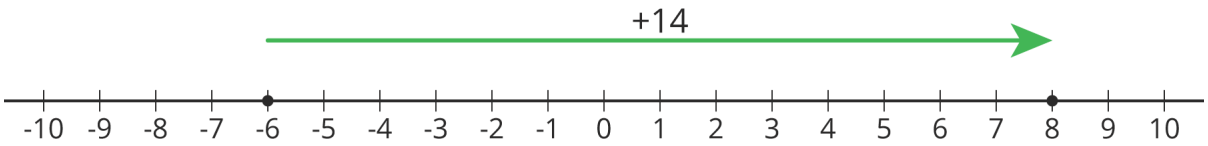
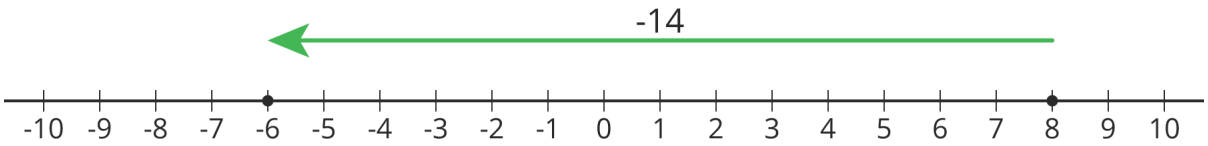
Lesson 6 Summary

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.

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Unit 5, Lesson 6: Subtracting Rational Numbers

1. Write a sentence to answer each question:

   a. How much warmer is 82 than 40?

   b. How much warmer is 82 than -40?

2. A company produces screens of different sizes. Based on the table, could there be a relationship between the number of pixels and the area of the screen? If so, write an equation representing the relationship. If not, explain your reasoning.

square inches of screen	number of pixels
6	31,104
72	373,248
105	544,320
300	1,555,200

(from Unit 2, Lesson 8)

3. a. What is the difference in height between 30 m up a cliff and 87 m up a cliff? What is the distance between these positions?

   b. What is the difference in height between an albatross flying at 100 m above the surface of the ocean and a shark swimming 30 m below the surface? What is the distance between them if the shark is right below the albatross?

4. Find each difference.

   a. $(-5) - 6$

   b. $35 - (-8)$

   c. $\frac{2}{5} - \frac{3}{5}$

   d. $-4\frac{3}{8} - (-1\frac{1}{4})$

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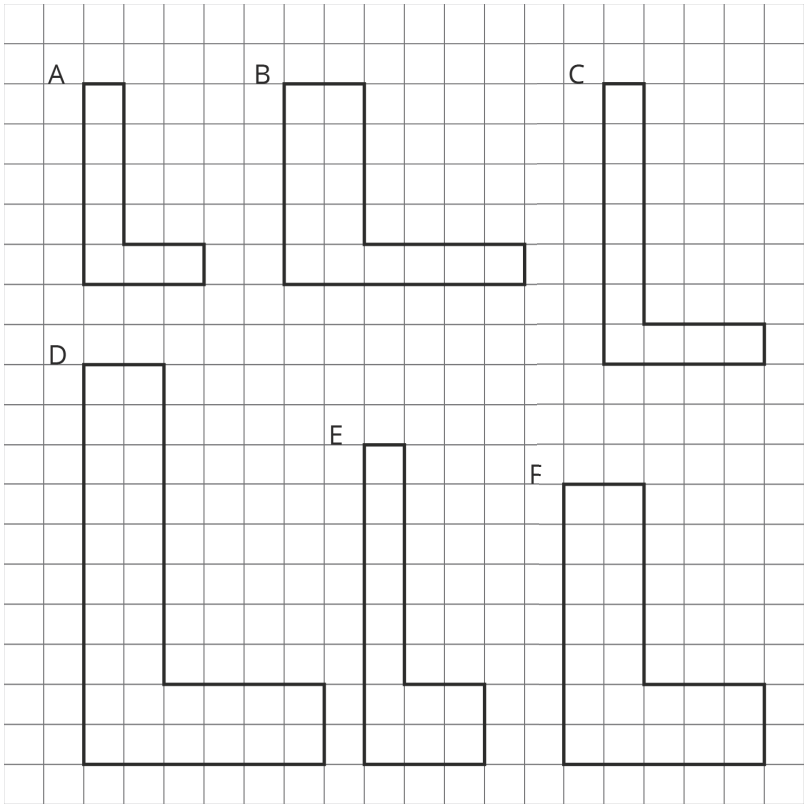
5. A family goes to a restaurant. When the bill comes, this is printed at the bottom of it:

Gratuity Guide For Your Convenience:
15% would be $4.89
18% would be $5.87
20% would be $6.52

How much was the price of the meal? Explain your reasoning.

(from Unit 4, Lesson 10)

6. Which is a scaled copy of Polygon A? Identify a pair of corresponding sides and a pair of corresponding angles. Compare the areas of the scaled copies.



(from Unit 1, Lesson 2)