

LESSON
11.3

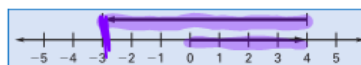
Subtracting Integers

Goal: Subtract integers.

EXAMPLE 1 Modeling Integer Subtraction

a. Find the difference $4 - 7$.

When you add a positive integer, you move to the **right** on a number line. When you subtract a positive integer, you move to the **left**.



To find $4 - 7$, move **right** 4 units then **left** 7 units.

Answer: The final position is **-3**. So, $4 - 7 = -3$.

b. Find the difference $1 - (-6)$.

When you add a negative integer, you move to the on a number line. So to subtract a negative integer, you move to the .



To find $1 - (-6)$, move 1 unit then 6 units.

Answer: The final position is **7**. So, $1 - (-6) = 7$.

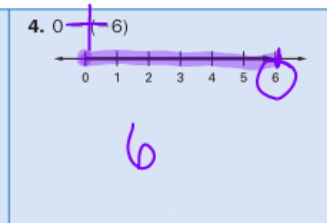
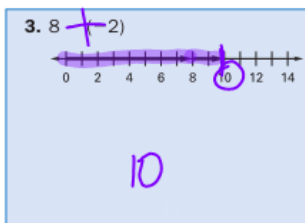
In your notes on subtracting integers, you may want to include a number line model as in Example 1 and a numerical example as in Example 2.

$4 + 7$
 $4 - 7$
 $-7 + 4$

Your turn now Use a number line to find the difference.

<p>1. $1 - 5$</p> <p style="text-align: center;">-4</p>	<p>2. $4 - 11$</p> <p style="text-align: center;">-7</p>
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$2 - (-1)$
 $1 - (-3)$



Subtracting Integers

Words To subtract an integer b from an integer a , the of b to a .

Algebra $a - b = a +$

Numbers $8 - 10 = 8 +$
 $4 - (-9) = 4 +$

EXAMPLE 2 Subtracting Integers

Find the difference.

a. $-3 - (-6) =$
 $=$

To subtract -6 , add its opposite.

Find . Use the sign of .

b. $-2 - 8 =$
 $+$

To subtract 8 , add its opposite.

Find . Use the sign.

Recall that when adding integers with different signs, you subtract the lesser absolute value from the greater absolute value, then write the sign of the number with the greater absolute value.

Your turn now Find the difference.

5. $5 - 8$ <input type="text"/>	6. $-9 - 4$ <input type="text"/>	7. $2 + 7$ <input type="text"/>	8. $-1 - 3$ <input type="text"/>
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EXAMPLE 3 Using Integers to Solve Problems

Temperatures In the state of Washington, the highest recorded temperature was 118 degrees Fahrenheit above zero and the lowest recorded temperature was 48 degrees Fahrenheit below zero. What is the difference of the highest recorded temperature and the lowest recorded temperature?

Solution

1. Use integers to represent the two temperatures.

highest: °F lowest: °F

2. Subtract the lesser temperature from the greater.

$$\begin{array}{l} \boxed{} - \boxed{} = \boxed{} + \boxed{} \\ \phantom{\boxed{} - \boxed{}} = \boxed{} \end{array}$$

To subtract , add its opposite.
Simplify.

Answer: The difference of the temperatures is degrees Fahrenheit.