Talk About It

- How did solving 3 + (-8) differ from solving 3 – 8?
- Discuss additive inverses. What is the additive inverse of -8?

What You Need to Know: When you subtract rational numbers, you are actually adding the additive inverse. You can use variables to express this idea as a rule.

Rule: $p - q = p + (-q)$, or subtracting a number is the same as adding its additive inverse.

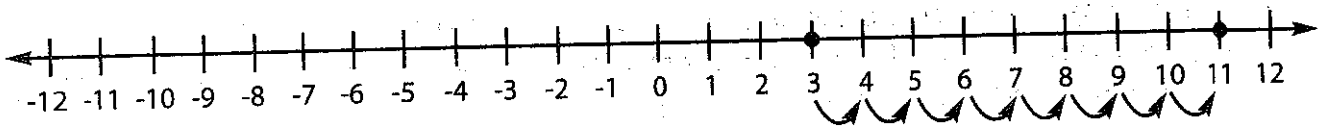
Let's apply this rule to a different kind of subtraction problem—one in which you are subtracting a *negative* number.

$$3 - (-8) = ?$$

Begin by locating 3 on the number line. Will you move to the left or to the right from 3? Use the rule you just learned.

$$3 - (-8) = ?$$
$$3 + (^{+}8) = ?$$
$$3 + 8 = ?$$

You will move 8 places to the right. (You count to the right because you are adding.)



You land on 11, the solution to the problem. So, 3 – (-8) = 11.

Try It: Solve each problem below by using a number line and the rule $p - q = p + (-q)$.

1. 10 + (-3) = _____
2. 7 – (-8) = _____
3. 6 + (-9) = _____
4. -3 – (-5) = _____

Standard 7.NS.1; 7.NS.3 (M)

Problem Solving XI

Directions: Use the $p - q = p + (-q)$ rule to rewrite and solve the problems below. The first one is completed for you.

1. 6 – 12 Equation: 6 + (-12)

   Answer: -6

2. -3 – (-8) Equation: _____

   Answer: _____

3. 2 – 10 Equation: _____

   Answer: _____

4. 4 – (-7) Equation: _____

   Answer: _____

5. -3 – 6 Equation: _____

   Answer: _____

6. -10 – 12 Equation: _____

   Answer: _____

7. Nick owes $3 to his best friend. He also owes $3 to his parents. Write a subtraction expression that represents the total amount Nick owes. Then, rewrite the subtraction expression using addition. Finally, solve the problem.

   a. Subtraction: _____

   b. Addition: _____

   c. Answer: _____

   d. What is unusual about the answer to this problem? _____

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