

**Practice**  
**4-3*****Adding Rational Numbers***

1. Find the sum of  $\frac{12}{13} + \left(-\frac{1}{13}\right)$ .
2. Find the value of the expression  $(-8.6) + 7.2$ .
3. Find the sum of  $-7.5 + (-7.6)$ .
4. Find the sum of  $\frac{2}{3} + \left(-\frac{1}{3}\right)$ .
5. In her garden Pam plants the tomato seed  $2\frac{3}{4}$  in. below the ground. After one month the tomato plant has grown a total of  $12\frac{1}{2}$  in. How many inches is the plant above the ground?
6. Greg is at his house. He gets in the car and drives north 9.6 miles and stops at the store. Then he turns around and drives south 8.4 miles to go to his friend's house. How far is the friend's house from Greg's house?

7. a) **Writing** Simplify the expression  $\left(-\frac{8}{15}\right) + \left(\frac{1}{15}\right)$ .

b) Show how to simplify in steps, using a property of operations for each step. Explain the property you use in each step.

8. a) **Reasoning** Simplify the expression  $(-13.2) + 8.1$ .

b) How are  $(-13.2) + 8.1$  and  $13.2 + (-8.1)$  related? Explain without computing.

c) Using a property of operations, what can you say about their sum?

9. a) **Error Analysis** Simplify the expression  $-2.6 + (-5.4)$ .

b) On the test, when Tom simplified the expression he got  $-2.8$ . What mistake did Tom likely make when he simplified the expression?

- A. He found the absolute value of just the second number.
- B. He found the absolute value of just the first number.
- C. He found the absolute value of both numbers, but then used the wrong sign.
- D. He did not find the absolute value of either number.

10. a) **Mental Math** Simplify the expression  $-5\frac{3}{4} + \left(\frac{-1}{4}\right)$ .

b) Describe the steps you use to simplify this expression using mental math. Tell why this expression allows you to use mental math.



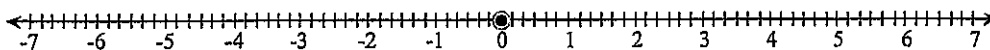
- 15. Think About the Process** The science class wants to see how far a paper airplane will travel on a windy day. The teacher throws the paper airplane and it goes forward 8.5 feet. Then the paper airplane returns 6.1 feet before it hits the ground.
- a) What should be the first step in calculating the distance the paper airplane is from the teacher?
- A. Subtract the lesser absolute value from the greater absolute value.
  - B. Use the sign of the number with the greater absolute value as the sign of the sum.
  - C. Find the absolute values of the numbers.
  - D. Decide whether each number is positive or negative.
- b) What is the distance from the teacher to where the paper airplane hit the ground?

**Practice  
4-5**

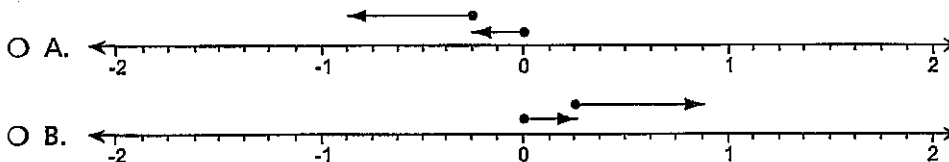
***Subtracting Rational Numbers***

1. a) Is  $3.2 - 5.7$  positive, negative, or zero?  
 A. negative                       B. zero                       C. positive
- b) Is  $3.2 - (-5.7)$  positive, negative, or zero?  
 A. negative                       B. zero                       C. positive
2. a) Is  $\frac{2}{5} - (-\frac{5}{6})$  positive, negative, or zero?  
 A. positive                       B. negative                       C. zero
- b) Is  $\frac{2}{5} - (\frac{5}{6})$  positive, negative, or zero?  
 A. zero                       B. positive                       C. negative

3. Draw a point on the number line to indicate the difference  $1\frac{1}{3} - 4\frac{5}{6}$ .



4. Which number line models  $\frac{1}{4} - (-\frac{5}{8})$  correctly?



5. Find the value of the expression  $11.0 - (-2.1)$ .
6. The temperature in a town is  $36.6^\circ\text{F}$  during the day and  $-12.6^\circ\text{F}$  at night. Find the difference in the temperatures.
7. a) **Writing** Is  $5.3 - 5.3$  positive, negative, or zero?  
 A. positive                       B. negative                       C. zero
- b) Is  $5.3 - (-5.3)$  positive, negative, or zero?  
 A. negative                       B. positive                       C. zero
- c) How can you use the answer for the first part to help you answer the second part?

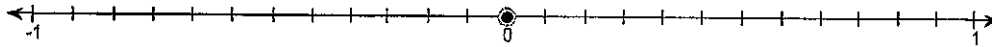
8. a) **Reasoning** Is  $-\frac{1}{3} - \frac{4}{5}$  positive, negative, or zero?  
 A. negative       B. positive       C. zero
- b) What can you say about the sign of the difference when you subtract  $-m - n$ , for any positive rational numbers  $m$  and  $n$ ?  
 A. The difference is always zero.  
 B. The difference is always negative.  
 C. The difference is always positive.  
 D. The difference is negative if  $|n| > |m|$  and positive if  $|n| < |m|$ .

9. a) **Multiple Representations** Which addition expression is equivalent to

$$-\frac{1}{3} - \left(-\frac{5}{12}\right)?$$

- A.  $\frac{1}{3} + \frac{5}{12}$        C.  $\frac{1}{3} + \left(-\frac{5}{12}\right)$   
 B.  $-\frac{1}{3} + \frac{5}{12}$        D.  $-\frac{1}{3} + \left(-\frac{5}{12}\right)$

- b) Draw the point on the number line that represents  $-\frac{1}{3} - \left(-\frac{5}{12}\right)$ .



- c) Find the value of the expression  $-\frac{1}{3} - \left(-\frac{5}{12}\right)$ .

10. a) **Error Analysis** Your friend says that the value of the expression  $27.08 - (-18.04)$  is 9.04. What is the correct value?

- b) What mistake did your friend likely make?  
 A. Your friend used the wrong sign in their answer.  
 B. Your friend added 27.08 and  $-18.04$ .  
 C. Your friend made an error when subtracting.

11. **Flying Home** A bird flies from the bottom of a canyon that is  $89\frac{3}{5}$  feet below sea level to a nest that is  $528\frac{1}{5}$  feet above sea level. What is the difference in elevation between the bottom of the canyon and the bird's nest?

12. Decide if each expression describes a difference that is positive, negative, or zero.

a) Is  $-4.5 - (-6.1)$  positive, negative, or zero?

- A. negative                       B. positive                       C. zero

b) Is  $-4.5 - 6.1$  positive, negative, or zero?

- A. positive                       B. zero                       C. negative

13. The freezing point of Chemical A is  $-70.2^{\circ}\text{C}$ . The freezing point of Chemical B is  $-164.21^{\circ}\text{C}$ . Which chemical has a higher freezing point? How much higher is it?

A. The freezing point of Chemical B is \_\_\_\_\_ $^{\circ}$  higher than Chemical A's freezing point.

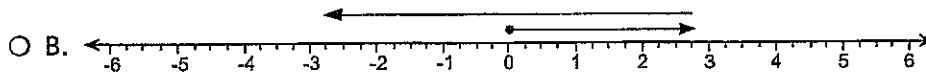
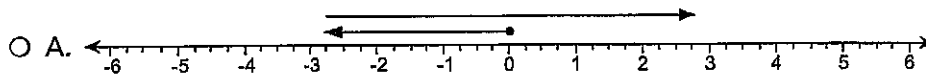
B. The freezing point of Chemical A is \_\_\_\_\_ $^{\circ}$  higher than Chemical B's freezing point.

14. Think About the Process

a) What is the first step when finding  $2\frac{3}{4} - 5\frac{1}{2}$ ?

- A. Plot  $2\frac{3}{4}$  on the number line.  
 B. Plot  $-5\frac{1}{2}$  on the number line.  
 C. Plot  $-2\frac{3}{4}$  on the number line.  
 D. Plot  $5\frac{1}{2}$  on the number line.

b) Which number line models the subtraction correctly?



c) What is the value of  $2\frac{3}{4} - 5\frac{1}{2}$ ?

15. Think About the Process Subtract  $-14.7 - (-7.1)$ .

a) What is the first step when finding the value of this expression?

- A. Find the opposite of  $-7.1$ .  
 B. Find the opposite of  $-14.7$ .

b) What is the value of  $-14.7 - (-7.1)$ ?