Student Workbook Answers

31. a. -12 ft

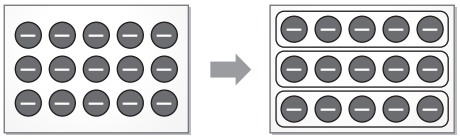
b.

Time	3 sec	6 sec	9 sec
Height	144 ft	108 ft	72 ft

c. 15 sec **d.** -48 ft

1.3 Activity

1.



-5

2. First way: 4; 4

Second way: 3; 3

3. $12 \div (-3) = -4$; $12 \div (-4) = -3$;

Sample answer: When you divide a positive integer by a negative integer, you get a negative integer.

4. $-12 \div (-4) = 3$; $-12 \div (3) = -4$;

Sample answer: When you divide a negative integer by a negative integer, you get a positive integer. When you divide a negative integer by a positive integer, you get a negative integer.

5. different signs; -5; negative

6. same sign; 3; positive

7. different signs; -4; negative

8. same sign; 3; positive

9. different signs; -3; negative

10. same sign; 3; positive

11. different signs; -5; negative

12. different signs; -2; negative

13. first integer zero; 0; zero

14. first integer zero; 0; zero

15. It could be positive, negative, or zero; positive if same signs, negative if different signs, zero if first integer is zero.

16. a. Divide the absolute values and make the quotient positive.

b. Divide the absolute values and make the quotient negative.

1.3 Practice

1. -2 **2.** 5 **3.** -2 **4.** 0

5. -5 **6.** -3 **7.** -8 **8.** -1

9. undefined **10.** -6

11. 7 **12.** -7 **13.** 4 **14.** 3

15. -5 **16.** 10 **17.** -12 **18.** 6

19. -7

20. a. -4 **b.** 15, down **c.** down

d. Between 4 seconds and 5 seconds because the sign changed.

Chapter 2

2.1 Activity

1. a. $-0.5, -\frac{1}{3}, 0.5, 1.25$

b. $-\frac{7}{4}, -1.3, -\frac{1}{2}, -\frac{1}{10}$

c. $-1.4, -\frac{3}{5}, 0.9, \frac{9}{2}$

d. $-\frac{5}{4}, -1.1, -0.8, 0.75$

2. Check students' work.

3. *Sample answer:* A number line can be used to organize rational numbers from least to greatest based on their order from left to right on the line.

Because $-\frac{1}{2}$ is to the left of 0.4 when graphed on a number line, $-\frac{1}{2} < 0.4$.

4–7. Sample answers are given.

4. $-\frac{1}{4}, \frac{3}{4}$ **5.** $-2, -\frac{3}{2}$

6. $-\frac{1}{5}, 0.1$ **7.** $-2.1, 1.1$

2.1 Practice

1. 0.375 **2.** $-0.1\overline{36}$

3. $1.\overline{2}$ **4.** -5.075

5. $-7.\overline{45}$ **6.** $4.0\overline{6}$

Student Workbook Answers

7. $-9.\overline{1}$ **8.** $-7.8\overline{3}$

9. $\frac{17}{25}$ **10.** $-\frac{1}{100}$

11. $-3\frac{99}{100}$ **12.** $8\frac{149}{200}$

13. $3\frac{1}{200}$ **14.** $-13\frac{3}{250}$

15. $-9\frac{49}{50}$ **16.** $-10\frac{113}{250}$

17. your friend **18.** $-\frac{3}{2}, -\frac{4}{9}, \frac{2}{11}, 0.7$

19. $-3, -2\frac{1}{4}, -\frac{17}{10}, -0.3$ **20.** $1\frac{2}{7}, 2.1, 230\%, \frac{13}{5}$

21. $2\frac{4}{5}$ **22.** 8.7 **23.** $\frac{13}{2}$

24. a. $-2\frac{6}{7}, -\frac{3}{2}, 2.25, 2\frac{1}{3}$

b. 10:00 A.M. and 4:00 P.M.

c. $-2\frac{6}{7}$ feet **d.** decrease

e. increase; The tide increased at 4:00 A.M. on the given day, so it will increase again in the morning.

2.2 Activity

1. a. -0.7 **b.** -0.2 **c.** -1.3 **d.** $-\frac{1}{2}$ **e.** 0

2. a. $-2\frac{1}{5}$ **b.** $-2\frac{2}{5}$ **c.** -3 **d.** -2.3 **e.** -2.9

3. a. $1.5 + (-2.3); -0.8$ **b.** $-2\frac{1}{10} + 3\frac{7}{10}; 1\frac{3}{5}$

c. $-1.1 + (-0.7); -1.8$

4. To add rational numbers, use the same rules for signs used for integers.

5. $\frac{1}{2} + \frac{2}{3} + \left(-\frac{3}{4}\right) + \frac{1}{3} = \frac{3}{4}$

6. $2.43 + (-1.09) + 3.47 + (-4.88) = -0.07$

2.2 Practice

1. $-\frac{1}{8}$ **2.** $\frac{1}{3}$ **3.** $\frac{1}{6}$

4. 4.3 **5.** -2.8 **6.** -5.61

7. The second number is negative.

$$\frac{3}{10} + \left(-\frac{1}{10}\right) = \frac{3 + (-1)}{10} = \frac{2}{10} = \frac{1}{5}$$

8. $-\frac{9}{10}$ **9.** $-\frac{3}{10}$ **10.** $\frac{1}{10}$ **11.** -4.7

12. $\frac{5}{8}$ **13.** $-\frac{1}{2}$ **14.** $-1\frac{14}{15}$ **15.** 2.4

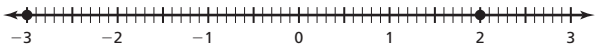
16. a. always **b.** sometimes

c. never **d.** sometimes

2.3 Activity

1. a. -2 **b.** $-\frac{7}{10}$ **c.** -3 **d.** -2.7 **e.** -0.5

2. a.



$-3 - 2 = -5$; $2 - (-3) = 5$;

The differences are opposites.

b.

$\frac{3}{4} - 1 = -\frac{1}{4}$; $1 - \frac{3}{4} = \frac{1}{4}$;

The differences are opposites.

c. *Sample answer:* 0.2 and 0.5; $0.2 - 0.5 = -0.3$; $0.5 - 0.2 = 0.3$; The absolute values of the differences are $|-0.3| = 0.3$ and $|0.3| = 0.3$.

The absolute value represents the distance between 0.2 and 0.5. Yes, it is true for any pair of rational numbers.

3. a. 1/02/13: 65.43; 1/07/13: 940.93, 1/11/13: 900.93; 1/14/13: 822.50; 1/17/13: 811.95; 1/18/13: 764.74; 1/22/13: 889.74; 1/24/13: 891.86; 1/25/13: 831.87; 1/26/13: 766.33; 1/30/13: 691.33

b. *Sample answer:* Subtract 75.00 from the previous balance of 766.33.

c. *Sample answer:* Add -75.00 to the previous balance of 766.33.

4. To subtract rational numbers, use the same rules for signs used for integers.

Student Workbook Answers

5. *Sample answers:* On a highway, you are $1\frac{1}{4}$ miles from Exit A and $3\frac{1}{2}$ from Exit B. What is the distance between the exits? Find $3\frac{1}{2} - 1\frac{1}{4}$;

Difference in monthly rainfall between two cities

2.3 Practice

1. -1 **2.** $1\frac{2}{3}$ **3.** $1\frac{11}{12}$ **4.** $-5\frac{1}{3}$

5. -2.46 **6.** -6.25 **7.** $10\frac{1}{4}$ **8.** 2.6

9. $3\frac{1}{15}$ **10.** $\frac{5}{12}$ **11.** $-\frac{7}{8}$ **12.** -2.57

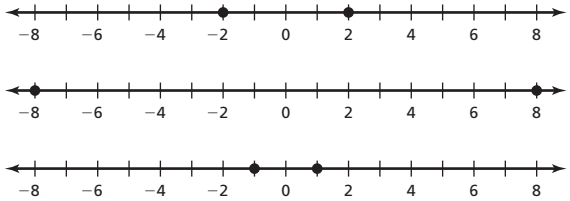
13. a. $3\frac{2}{3}$ gal **b.** $4\frac{11}{12}$ gal **c.** $1\frac{7}{12}$ gal

14. no; If the absolute value of the second number is greater than the absolute value of the first number, then the difference is negative.

2.4 Activity

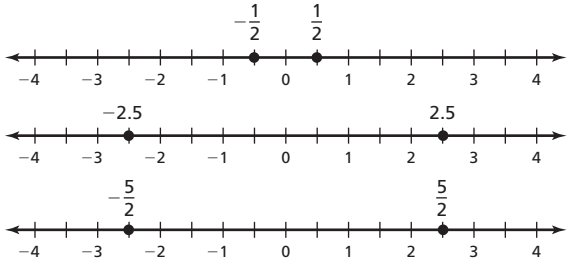
1. Multiplication Property of One; Distributive Property; Additive Inverse Property; Multiplication Property of Zero

2. a.



b. It reflects or flips the point on the other side of 0 on the number line. The number and the product are opposites.

c. It is the same result as parts (a) and (b), the point would be reflected or flipped on the other side of 0 on the number line.



d. They are the same. Multiplying by -1 is the same as taking the opposite of a number.

3. a. They represent the opposites of a and b and are negative.

b. Multiplying a by -1 and b by -1 is the same as taking the opposite of a and b; Commutative Property of Multiplication; Result of Activity 1; Multiplication Property of One

c. ab is positive

d. The products of rational numbers follow the same rules as the products of integers.

4. Check students' work.

5. Take any two negative rational numbers and rewrite them as a product using -1. When finding the product, you know that $(-1)(-1) = 1$, so your result is the product of the opposites of the two rational numbers. These are both positive, so your product is positive.

6. $\begin{aligned}(-2)(-3) &= (-1)(2)(-1)(3)\\ &= (-1)(-1)(2)(3)\\ &= 1(2)(3)\\ &= 6\end{aligned}$

7. Let a be a negative rational number and b be a positive rational number.

$\begin{aligned}(-a)(b) &= (-1)(a)(b)\\ &= -ab\end{aligned}$

2.4 Practice

1. negative **2.** negative **3.** positive **4.** positive

5. $-\frac{1}{5}$ **6.** $\frac{2}{3}$ **7.** $-\frac{1}{21}$ **8.** $-\frac{7}{10}$

9. 0.8 **10.** -1.5 **11.** $-\frac{4}{7}$ **12.** $\frac{5}{6}$

13. $-3\frac{1}{3}$ **14.** $1\frac{57}{64}$ **15.** -7.77 **16.** 11.742

17. 10 pizzas **18.** -2.45 in. **19.** -9.46

20. $\frac{6}{11}$ **21.** -14.2979 **22.** $2\frac{1}{2}$

23. *Sample answer:* $-\frac{5}{4}, -\frac{1}{2}$

24. -3.4

Student Workbook Answers

2.4 Extension Practice

1. 7 **2.** −12 **3.** −24 **4.** 26

5. −2 **6.** 89 **7.** −1 **8.** 15

9. 23 **10.** −13 **11.** −5 **12.** 1

13. −18.6 **14.** 5.15 **15.** −6.5625

16. −5.75 **17.** 56.5 **18.** 8.24

19. −5.875 **20.** −16.578125 **21.** 52.5

22. 87 **23.** −71.5 **24.** 1.75 **25.** 0.25

26. 0.5 **27.** 0.2 **28.** 0.1 **29.** 5

30. 7 **31.** 7 **32.** 8.5 **33.** 1.25

34. −1.5 **35.** 0.4 **36.** 0.6 **37.** 0.2

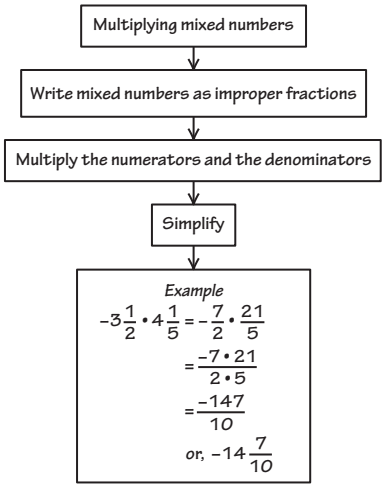
38. 0.625 **39.** −0.32 **40.** −1 **41.** 2.1

42. 9.625 **43.** 17.5 **44.** 28.5 **45.** 50.4375

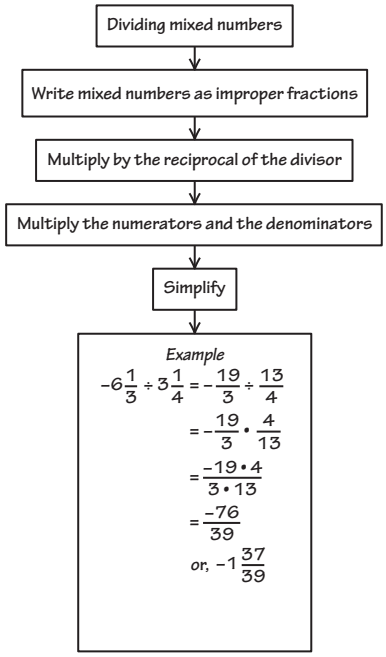
46. 61 **47.** 2.75 **48.** 0.125 **49.** 0.84

50. 18.5 **51.** 3.75 **52.** 5.3

53.



54.



Chapter 3

3.1 Activity

1. a.

		Value When	
	Expression	$x = 0$	$x = 1$
A.	$3x + 2 - x + 4$	6	8
B.	$5(x - 3) + 2$	−13	−8
C.	$x + 3 - (2x + 1)$	2	1
D.	$-4x + 2 - x + 3x$	2	0
E.	$-(1 - x) + 3$	2	3
F.	$2x + x - 3x + 4$	4	4
G.	$4 - 3 + 2(x - 1)$	−1	1
H.	$2(1 - x + 4)$	10	8
I.	$5 - (4 - x + 2x)$	1	0
J.	$5x - (2x + 4 - x)$	−4	0