1.1 Practice

1. $=$

2. $<$

3. $<$

4. **a.** $15, -6$ **b.** $15, |-6|$

5. $-|-34|, |0|, 14, |-25|, 28$

6. $-16, 10, |-16|, |25|, |-43|$

7. **a.** Phosphorus; 280 is the largest positive number, thus it is the highest boiling point.

   b. Oxygen; $|-183| < 184$; $183 < 184$

8. **a.** up   **b.** 13 ft/sec

   c. down   **d.** 17 ft/sec

9. 0

10. true; Both numbers have an absolute value of 3.

11. false; *Sample number:* Let $x = -4$. Then $|x| = 4$ and 4 is not less than -4.

1.2 Practice

1. 5

2. Use the Commutative Property to switch the positions of the terms -25 and -18. Then use the Associative Property to group the terms 18 and -18. Because they are opposites, their sum will be zero; -25

3. Use the Commutative Property to switch the positions of the terms 45 and -8. Then use the Associative Property to group the terms -22 and -8; 15

4. Use the Commutative Property to switch the positions of the terms -12 and 4. Then use the Associative Property to group the terms 28 and 4; 20

5. 18   6. 14

7. -59

8. The sum is 5 units to the right of p.

9. The sum is 2 units to the left of p.

10. The sum is $|q|$ units to the right of p if $q < 0$. The sum is q units to the left of p if $q > 0$. The sum is at p if $q = 0$.

11. $n = 25$ 12. $c = 71$

13. $k = -80$

14. *Sample answer:* $-30, 8, 2$;
    Sample answer: $8, 7, -5$

15. $-10°\text{F}$

16. *Sample answer:*

9	-6	3
-1	0	1
-8	6	2

17. a. $p = 0, q = 0$; Both absolute values will be positive or zero. The sum of two absolute values is zero when both numbers equal zero.

    b. no possible values; To get a negative sum, at least one term must be negative and the absolute value of a number cannot be negative.

    c. all values except when both p and q equal zero. The sum of two positive numbers is greater than zero. The sum of a positive number and zero is greater than zero.

1.4 Practice

1. 36 ft; $8 - (-28)$ **2.** 13

3. -44 **4.** 206

5. *Sample answer:* Write the subtraction as addition. Use the Commutative Property to switch the last two terms. Then use the Associative Property to add $-(-22)$ and -22 first; 17

6. *Sample answer:* Use the Commutative Property to switch the first two terms. Then use the Associative Property to add -15 and 15 first; -31

7. *Sample answer:* Write the subtraction as addition. Use the Associative Property to add 19 and (-19) first; -24

8. **a.** 94°F, 103°F, 114°F, 107°F, 84°F, 76°F, 64°F, 65°F, 75°F, 86°F, 105°F, 98°F

     b. 99°F, -46°F

     c. 145

9. 23   **10.** 7

11. -53

12. when $|b| > |a|$ or a and b have different signs

13. *Sample answer:* $-6, -12; -1, -7$

14. The difference is 3 units to the left of p.

15. The difference is 5 units to the right of p.

16. The difference is q units to the right of p if $q < 0$. The difference is q units to the left of p if $q > 0$. The sum is at p if $q = 0$.

17. **a.** *Sample answer:* 10, 12, -2; 5, 6, -1

     b. *Sample answer:* 10, 2, 9; 16, 1, 2

2.1 Practice

1. -384 2. -144

3. -72 4. 0

5. 18 6. -19

7. 24

8. **a.** $325

   b. yes; 9th member; *Sample answer:* The 8th member $(n = 7)$ pays $550 + (-75 \cdot 7) = \$25$. The 9th member $(n = 8)$ pays $550 + (-75 \cdot 8) = -\$50$, which is a negative amount. So, the 9th member is free.

   c. $25; 8th member; *Sample answer:* The lowest amount that a member would pay is $550 + (-75 \cdot 7) = \$25$.

9. **a.** 47 **b.** yes; $-3, 16$ **c.** 49

10. true; The product of two negative integers is positive. The product of the positive result and a negative integer is negative.

11. false; There are two groups of two negative integers, whose products are positive. The product of two positive integers is positive.

12. false; The product of two negative integers is positive. The product of the positive result and a positive integer is positive.

13. true; The product of two positive integers is positive. The product of the positive result and a negative integer is negative.

14. true; The product of each pair of negative integers is positive. The product of the positive results is positive. Then the product of the positive result and the remaining negative integer is negative.

2.2 Practice

1. 16

2. 0

3. 1

4. undefined

5. -12

6. -9

7. -52

8. -11

9. 3

10. 2

11. 28

12. 50

13. 12

14. **a.** 2 **b.** 2

   c. *Sample answer:* PI-Squared, because they correctly answered both parts of more questions.

15. **a.** 7 hours **b.** 35 hours

   c. 8 hours 10 minutes

16. $9, -3$; Divide the previous number by -3 to obtain the next number.