Lesson 5-5: Solve Inequalities Using Multiplication or Division

1. Sample answer: You use the inverse relationship between multiplication and division to isolate the variable when solving both equations and inequalities. However, when multiplying or dividing by negative values to solve inequalities, the inequality symbol reverses.

2. Sample answer: If you divide both sides of the inequality -x < 3 by -1, which is a negative value, you will need to reverse the inequality symbol. Since -x ÷ -1 is x, and 3 ÷ -1 is -3, the result will be x > -3.

3. No; for example if a = 5, b = 4, and c is -2, then -10 > -8 is not true. The statement is true only when *c* is positive.

4. a. x > 3
   b. x ≤ -48
   c. x < -3

5. a. 3c > 298.17
   b. c > 99.39; The daily cost is more than $99.39.

6. 8; 8
   7

7. $-\frac{3}{4}$; > ; $-\frac{3}{4}$
   > 6

8. <
   -7; -7
   < -8

9. -5; ≤; -5
   ≤ -10

10. x ≤ 18; No more than 18

11. x > 6; More than 6

12. a. 3f ≤ 15
    b. She can buy at most 5 fish.

13. n ≥ 108

14. a. x > -4
    b. Sample answer: The variable has a negative coefficient, so you know you have to reverse the symbol when you divide both sides by the same number.

15. a. Sample answer: $\frac{n}{30} > \frac{15}{24}$,
    n > $\frac{15}{24}$ · 30

    b. n > 18.75; They buy more than 18.75 cases, or at least 19 full cases. So, they spend at least $66.50.

16. x < 6.2

17. a. $\frac{1}{3}$x ≥ 13; x ≥ 39

    b. Sample answer: Andrew's tree house is larger because Cynthia's tree house is a fraction of his house.