DIGITAL

NAME

Module 5 Solving Linear Inequalities of One Variable
Lesson 6 Solving Disjunction Inequalities

Solve and graph.

1. $x < 2$ or $x < -4$ **$x < 2$**

2. $x > 3$ or $x < 5$ **$\Re$**

3. $x \geq 5$ or $x > 0$ **$x > 0$**

4. $x \leq 3$ or $x \geq 7$ **$x \leq 3$ or $x \geq 7$**

5. $x \geq 5$ or $x \leq 2$ **$x \geq 5$ or $x \leq 2$**

6. $x < 4$ or $x \geq -5$ **$\Re$**

7. $x \geq 3$ or $x < -3$ **$x \geq 3$ or $x < -3$**

8. $x > 0$ or $x < 0$ **$x \neq 0$**

9. $x > -2$ or $x < 7$ **$\Re$**

10. $x < 3$ or $x \leq -2$ **$x < 3$**

11. $x - 2 < 2$ or $x - 5 > 0$ **$x < 4$ or $x > 5$**

12. $x < \pi$ or $-x + 5 > 2$ **$x < \pi$**

13. $4x < -8$ or $-3x < 6$ **$x \neq -2$**

14. $\frac{1}{4}x \leq 2$ or $5x < 15$ **$x \leq 8$**

15. $5x + 12 \leq -13$ or $2x - 1 \geq 1$ **$x \leq -5$ or $x \geq 1$**

16. $5 - 6x \geq 23$ or $8x - 15 \geq 9$ **$x \leq -3$ or $x \geq 3$**

17. $7x - 5 \geq 30$ or $-2x - 6 \geq -2$ **$x \geq 5$ or $x \leq -2$**

18. $14x^2 < 7x^3$ or $3x < -9$ **$x < -3$ or $x > 2$**

19. $\frac{2}{3}x - 5 \leq -3$ or $3 - \frac{1}{2}x < 3$

$\mathfrak{R}$

20. $50 - 22x > -16$ or $-3x \geq 6$

$x < 3$

Journal

1. Compare and contrast conjunctions and disjunctions. How are they alike? How are they different?
2. Do the symbols "≤" and "≥" represent conjunctions or disjunctions? Explain.
3. Is the disjunction $4 > 7$ or $2 < 5$ true? Explain.
4. What is the solution to the disjunction $x < a$ or $x < b$, where $a < b$? Use a number line to help explain your answer.
5. What is the solution to the disjunction $x > a$ or $x > b$, where $a < b$? Use a number line to help explain your answer.

Cumulative Review

Simplify.

1. $|-2|$ **2**

2. $|-y^2|$ **y^2**

3. $|-5.5|$ **5.5**

4. $\frac{(\sqrt{|-2|})^3}{2}$ **$\sqrt{2}$**

5. $|6 - 10|$ **4**

6. $|3(-2) + 5| \cdot -5 + 6$ **1**

Write an equation and solve.

7. Twelve is equal to four less than twice a number, x.

   Equation: **$12 = 2x - 4$**

   Solution: **$x = 8$**

8. The sum of eight and a number, n, is twenty-four.

   Equation: **$8 + n = 24$**

   Solution: **$n = 16$**

9. Forty decreased by the sum of half a number, x, and twenty is 10.

   Equation: **$40 - \left(\frac{1}{2}x + 20\right) = 10$**

   Solution: **$x = 20$**

10. Two less than a number, x, is the same as the difference of six and three times the number.

    Equation: **$x - 2 = 6 - 3x$**

    Solution: **$x = 2$**

Possible Journal Answers

1. **Conjunctions and disjunctions are both compound inequalities, that is, they are two inequalities joined by the words *and* or *or*. To be a solution to a conjunction, a number must satisfy both the inequalities. To be a solution to a disjunction, a number needs to satisfy at least one of the inequalities.**
2. **The symbols are read "less (greater) than or equal to" and therefore represent disjunctions. For example, to satisfy the inequality $x \leq 3$, a number can be less than three or equal to three.**
3. **Yes. The first inequality is false, but the second is true. Because at least one statement is true, the disjunction is true.**
4. 

   On the number line, you can see that all numbers to the left of b are included in at least one of the graphs. So the solution is $x < b$.

5. 

   On the number line, you can see that all numbers to the right of a are included in at least one of the graphs. So the solution is $x > a$.