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**

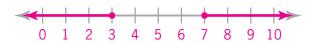
2. x > 3 or x < 5



3. $x \ge 5 \text{ or } x > 0$ **x** > **0**



4. $x \le 3 \text{ or } x \ge 7$ $x \le 3 \text{ or } x \ge 7$



5. $x \ge 5$ or $x \le 2$ $x \ge 5$ or $x \le 2$



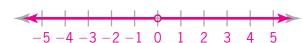
6. x < 4 or $x \ge -5$



7. $x \ge 3 \text{ or } x < -3$ $x \ge 3 \text{ or } x < -3$



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



9. x > -2 or x < 7



10. x < 3 or $x \le -2$ x < 3



11. x - 2 < 2 or x - 5 > 0 x < 4 or x > 5 12. $x < \pi$ or -x + 5 > 2 $x < \pi$



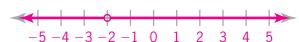


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Module 5 Lesson 6

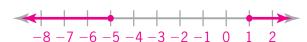
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Independent Practice



13. $4x < -8 \text{ or } -3x < 6 \text{ } \underline{x \neq -2}$ **14.** $\frac{1}{4}x \le 2 \text{ or } 5x < 15 \text{ } \underline{x \le 8}$





15. $5x + 12 \le -13$ or $2x - 1 \ge 1$ $x \le -5$ or $x \ge 1$ **16.** $5 - 6x \ge 23$ or $8x - 15 \ge 9$ $x \le -3$ or $x \ge 3$



17. $7x - 5 \ge 30 \text{ or } -2x - 6 \ge -2$ $x \ge 5 \text{ or } x \le -2$ 18. $14x^2 < 7x^3 \text{ or } 3x < -9$ x < -3 or x > 2





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

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







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

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

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

Solution: <u>x</u> = **20**

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

Equation: 8 + n = 24

Solution: $_{n} = 16$

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 $x \le 3$, 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.

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.

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.