Lesson 14: Solving Inequalities

Classwork

Exercise 1

Consider the inequality

* 1. Sift through some possible values to assign to that make this inequality a true statement. Find at least two positive values that work and at least two negative values that work.

**For the following identify a property that gives the reason why**.

|  |  |
| --- | --- |
| Should your four values also be solutions to the inequality ? Explain why or why not. | Should your four values also be solutions to the inequality ? Explain why or why not. |
| Should your four values also be solutions to the inequality ? Explain why or why not. | Should your four values also be solutions to the inequality ? Explain why or why not. |

**Example 1**

What is the solution set to the inequality ? Express the solution set in words, in set notation, and graphically on the number line.

WORDS:

SET NOTATION:

GRAPHICALLY:

|  |
| --- |
| Remember:  A closed circle means that the endpoint **IS** a solution (use for ≥, ≤)  An open circle means that the endpoint **IS NOT** a solution (use for >, |

Exercise 2

Find the solution set to each inequality. Express the solution in set notation and graphically on the number line.

|  |  |
| --- | --- |
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|  |  |

Exercise 3

|  |  |
| --- | --- |
| *Multiplying through by a negative number*:  Do and have the same solution set? If not, give an example of a number that is in one solution set but not the other. | *Multiplying through by a negative number*:  Do and have the same solution set? If not, give an example of a number that is in one solution set but not the other. |

All the rules of solving equations are true for solving inequalities.

BUT if you **DIVIDE** or **MULTIPLY** by a **NEGATIVE NUMBER** you must **SWITCH** the symbol.

Find the solution set to each inequality.

a. b. c. d.

Exercise 4

Solve , for in two different ways.

Problem Set

1. Find the solution set to each inequality. Express the solution in set notation and graphically on the number line.
   1. b.

c. d.

e. f. 5m – 8 > 12

g. 12 – 3a > 18 h.

1. Find the mistake in the following set of steps in a student’s attempt to solve , for . What is the correct solution set?

(factoring out a 5 on the left side)

(dividing by )

So the solution set is the empty set.

1. Solve , solve by multiplying through by .
2. Lisa brought half of her savings to the bakery and bought croissants for . The amount of money she brings home with her is more than . Use an inequality to find how much money she had in her savings before going to the bakery. (Write the inequalities that represents the situation and solve it.)