Day 12 PowerPoint 1.11-1.12 Inequalities

Assignments

HW12

Unit Test 1 (Lessons 1.1 – 1.12)

1.11 Inequalities

SWBAT graph one-variable inequalities.

Assignments

HW12

Study for Unit Test 1

Inequalities

- Define *equation*.
  - 2 expressions that are said to be equal
- Definition of *inequality*:
  - a statement that 1 expression is greater than another expression.
- Solution:
  - The specific values that make the equation/inequality/statement true.

Inequality Symbols

- $>$ is greater than
- $<$ is less than
- $\geq$ is greater than or equal to
- $\leq$ is less than or equal to

Graphing on a number line

- $>$ open dot
- $<$ open dot
- $\geq$ closed dot
- $\leq$ closed dot

Translate.

1. The product of a number and 12 is less than or equal to 22
2. A number decreased by 28 is less than 26
3. A number times 5 is greater than or equal to 21
4. A number times 5 is greater than 19
5. A number cubed is greater than or equal to 8
6. 16 less than a number is greater than or equal to 14

1. $2r < 39$
2. $n - 6 > 12$
3. $\frac{n}{6} \leq 25$
4. $\frac{v}{7} \leq 6$
5. $n + 6 \geq 36$
6. $\frac{x}{2} < 8$

Graph the Inequalities on a number line

- $x < 13$
- $y \geq 25$
- $12 < x$
- $-10 \leq y$

1. $y < 14$
2. $n > 6$
3. $m \leq -2$
4. $h \geq -5$
5. $4 \leq r$
6. $t < 5.1$
7. $-3 > t$

1.12 Solving Inequalities

SWBAT solve and graph one-variable inequalities.

Solve the inequality.

With one exception (discussed later) solving an inequality is *exactly the same* as solving an equation.

- $x + 7 > 13$

- $\frac{x}{4} > 9$

1. $x - 12 < 18$
2. $7 > x - 7$
3. $n + 9 \geq 3$
4. $9 < j + 1$
5. $3 \leq 3x$
6. $2x \geq 28$
7. $\frac{x}{7} \geq 3$
8. $\frac{x}{2} \leq 12$

Solve the inequality: The One "Weird Thing"

- Summary: When you solve by multiplying or dividing by a negative number, the inequality "flips" or reverses sides
- $-3x > 12$
- $\frac{x}{-2} \leq 4$

1. $-20x < 100$
2. $-3x \geq -12$
3. $-10x \geq -150$
4. $-2x < 4$
5. $\frac{x}{-3} > 1$
6. $\frac{y}{-5} \leq 12$
7. $\frac{m}{-7} > (-2)$
8. $-\frac{1}{3}t < 0$
9. $13 - h > 10$

Solving Inequalities

- Steps to solving inequalities:
  1. Simplify Expressions
  2. Variables on both sides?
  3. SADMEP
- Remember the ONE difference:
  - When you multiply or divide by a NEGATIVE number, you must “flip” the inequality sign

Solve the inequalities and graph the solutions on a number line.

- $3x - 4 < 17$
- $-2x + 8 \geq -10$
- $18 > 3(x + 2)$

1. $3x - 4 > 5$
2. $-3x - 9 < -12$
3. $4 - 7b > 18$
4. $2 < 3n + 11$
5. $4(v + 1) < 48$
6. $-2(h - 4) \geq 34$
7. $4 < 2(x + 9)$

Solving Inequalities

- $4x - 2(x - 3) > 18$

- $-5x + 3(x + 2) \geq 40$

1. $2x - 1 + 8x < 39$
2. $2(x - 7) + 4x > 34$
3. $-2(x + 1) - 7x < -101$
4. $x - 3(2x - 5) \geq 50$
5. $34 \geq x + 2(2x + 2)$