REVIEW: Properties of Inequality

Name _____

Key Concept and Vocabulary

Addition Properties of Inequality:

If $a > b$, then $a + c > b + c$.

If $a < b$, then $a + c < b + c$.

Subtraction Properties of Inequality:

If $a > b$, then $a - c > b - c$.

If $a < b$, then $a - c < b - c$.

**Multiplication and Division
Properties of Inequality when $c > 0$:**

If $a > b$, then $a \cdot c > b \cdot c$.

If $a < b$, then $a \cdot c < b \cdot c$.

If $a > b$, then $\dfrac{a}{c} > \dfrac{b}{c}$.

If $a < b$, then $\dfrac{a}{c} < \dfrac{b}{c}$.

**Multiplication and Division
Properties of Inequality when $c < 0$:**

If $a > b$, then $a \cdot c < b \cdot c$.

If $a < b$, then $a \cdot c > b \cdot c$.

If $a > b$, then $\dfrac{a}{c} < \dfrac{b}{c}$.

If $a < b$, then $\dfrac{a}{c} > \dfrac{b}{c}$.

Inequalities

Skill Examples

1. Solve $\dfrac{x}{4} + 2 > 12$.

$\dfrac{x}{4} + 2 > 12$	Write the equation.
$\underline{-2 \quad -2}$	Subtraction Property of Inequality
$\dfrac{x}{4} > 10$	Simplify.
$\dfrac{x}{4} \cdot 4 > 10 \cdot 4$	Multiplication Property of Inequality
$x > 40$	Simplify.

2. Solve $-7v - 21 \le 28$.

$-7v - 21 \le 28$	Write the equation.
$\underline{+21 \quad +21}$	Addition Property of Inequality
$-7v \le 49$	Simplify.
$\dfrac{-7v}{-7} \ge \dfrac{49}{-7}$	Division Property of Inequality. Reverse the inequality symbol.
$v \ge -7$	Simplify.

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Solve the inequality. Identify the properties used.

3. $3x - 5 \ge 4$

$3x \boxed{\ge} \quad 9 \quad$ Add. Prop. of Ineq.

$x \boxed{\ge} \quad 3 \quad$ Div. Prop. of Ineq.

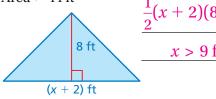**4.** $1 - \dfrac{m}{2} < 3$

$-\dfrac{m}{2} \boxed{<} \quad 2 \quad$ Subt. Prop. of Ineq.

$m \boxed{>} \quad -4 \quad$ Mult. Prop. of Ineq.

Write and solve an inequality that represents the value of x.

5. Area > 44 ft²

8 ft

(x + 2) ft

$\dfrac{1}{2}(x + 2)(8) > 44$

$x > 9$ feet

6. Area ≤ 64 m²

(5 − x) m

16 m

$16(5 - x) \le 64$

$x \ge 1$ meter