

Solving Inequalities

 Guided Notes**Notes:**

Anti reflexive Property	For all real numbers z , $x \not< x$ and $x \not> x$
Anti Symmetry Property	For all real numbers x and y , <ul style="list-style-type: none"> • If $x < y$, then $y \not< x$ • If $x > y$, then $y \not> x$
Transitive Property	For all real numbers x , y and z <ul style="list-style-type: none"> • If $x < y$, then $y < z$ then $x < z$ • If $x > y$, then $y > z$ then $x > z$
Addition Property	For all real numbers x, y and z , <ul style="list-style-type: none"> • If $x < y$ then $x + z < y + z$
Subtraction Property	For all real numbers x, y and z , <ul style="list-style-type: none"> • If $x < y$, then $x - z < y - z$
Multiplication Property	For all real numbers x , y and z , <ul style="list-style-type: none"> • If $x < y$ then $xz < yz$ if $z > 0$ $xz > yz$ if $z < 0$ $xz = yz$, if $z = 0$ • If $x > y$ then $xz > yz$ if $z > 0$ $xz < yz$ if $z < 0$ $xz = yz$, if $z = 0$

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Questions:

1. Solve the following equation for x

$$2x + 6 \geq 3x + 9$$

$$6 - 9 \geq 3x - 2x$$

$$x \leq -3$$

2. Solve the following equation for x

$$4(-3x + 6) \leq 2(-4x - 10)$$

$$-12x + 24 \leq -8x - 20$$

$$-12x + 8x \leq -20 - 24$$

$$-4x \leq -44$$

$$x \geq 11$$

3. Solve the following equation for x

$$\frac{-x + 4}{6} > 10$$

$$-x + 4 > 6 \times 10$$

$$-x + 4 > 60$$

$$-x > 60 - 4$$

$$-x > 56$$

$$x < -56$$

4. Solve the compound inequality

$$2x + 3 < 7 \text{ or } 5x + 5 > 25$$

Solve the first inequality

$$2x + 3 < 7$$

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$$2x < 4$$

$$x < 2$$

Solve the second inequality

$$5x + 5 > 25$$

$$5x > 20$$

$$x > 4$$

The solution is **$x < 2$ or $x > 4$** .

Interval notation: $(-\infty, 2) \cup (4, \infty)$

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