

DO NOW

Find Golden Sheet of Properties

Solve: $4x + 3 = 15$

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2.5 Solving Inequalities

Inequality properties on Golden Sheet

Compare: $4x + 3 = 15$ and $4x + 3 \leq 15$

$$\begin{array}{lcl} 4x = 15 - 3 & & 4x \leq 15 - 3 \\ 4x = 12 & & 4x \leq 12 \\ x = \frac{12}{4} & & x \leq \frac{12}{4} \\ x = 3 & & x \leq 3 \end{array}$$

***When solving inequalities:

Solve just like an equation EXCEPT when multiplying or dividing both sides by a negative number → reverse the direction of the inequality sign.

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Examples: Solve and graph.

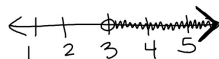
1. $3x - 1 > 8$

$$3x > 8 + 1$$

$$3x > 9$$

$$x > \frac{9}{3}$$

$$\boxed{x > 3}$$



2. $-3x + 4 \geq 16$

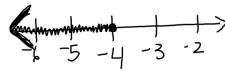
$$-3x \geq 16 - 4$$

$$-3x \geq 12$$

$$x \leq \frac{12}{-3}$$

$$\boxed{x \leq -4}$$

*Dividing both sides by -3 & change inequality sign



3. $5x - 4 < -11 - 2x$

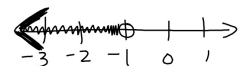
$$5x - 4 + 2x < -11$$

$$5x + 2x < -11 + 4$$

$$7x < -7$$

$$x < \frac{-7}{7}$$

$$\boxed{x < -1}$$



4. $2(2x - 8) - 8x \leq 0$

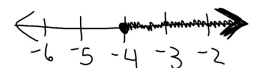
$$4x - 16 - 8x \leq 0$$

$$4x - 8x \leq 0 + 16$$

$$-4x \leq 16$$

$$x \geq \frac{16}{-4}$$

$$\boxed{x \geq -4}$$



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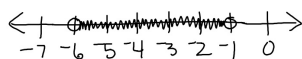
5. $-7 < 2x + 5 < 3$

$$-7 - 5 < 2x < 3 - 5$$

$$-12 < 2x < -2$$

$$\frac{-12}{2} < x < \frac{-2}{2}$$

$$\boxed{-6 < x < -1}$$



6. $\frac{2}{x+5} \geq \frac{1}{2x+3}$

$$2(2x+3) \geq 1(x+5)$$

$$4x+6 \geq x+5$$

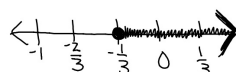
$$4x+6-x \geq 5$$

$$4x-x \geq 5-6$$

$$3x \geq -1$$

$$\boxed{x \geq \frac{-1}{3}}$$

*Must start with 1st numerator to cross multiply in an inequality.



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HOMEWORK

Worksheet - HW 2.5 Solving Inequalities

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