

Algebra 1            5.3

Solve multi-step linear inequalities

Use the distributive property to solve linear inequalities

distributive property

inequality

empty set

all real numbers

Whiteboards

1)  $6 \cdot 10 - 10 \geq 32$   
 $60 - 10 \geq 32$

3)  $6h - 10 \geq 32$

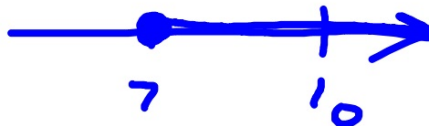
$+10 \quad +10$

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$$\frac{6h}{6} \geq \frac{42}{6}$$

$$h \geq 7$$

Solve, graph, check



$$n > 14$$

$$4. \quad -3 \leq \frac{2}{3}r + 9$$

$$\frac{3}{2} \cdot \frac{-12}{1} \leq \frac{2}{3}r \cdot \frac{3}{2}$$

$$\frac{-36}{2} \leq r$$

$$-18 \leq r \quad r \geq -18$$

$$6. 4m - 17 < 6m + 25$$

$$\begin{array}{r} -4m \quad -4m \\ \hline -17 < 2m + 25 \\ -25 \quad -25 \end{array}$$

$$\frac{-42}{2} < \frac{2m}{2}$$

$$-21 < m$$

$$m > -21$$

9.  $-6 \leq 3(5v + 2)$

$$\begin{array}{r} -6 \leq 15v + -6 \\ +6 \qquad \qquad \qquad +6 \end{array}$$

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$$\boxed{\frac{0}{15}} \leq \frac{15v}{15}$$

$$0 \leq v \qquad v \geq 0$$

10.  $-5(g + 4) > 3(g - 4)$

$$-5g + 20 > 3g + -12$$

$$+5g + 12 \quad +5g + 12$$

$$\frac{-8}{8} > \frac{8}{8}$$

$$-1 > g$$

$$g < -1$$



What is the letter you are using?  
 What is the relationship? (< > =?)  
 Write the inequality and solve.

$$4r + 12r$$

$$16r$$

$n =$  a number

Define a variable, write an inequality and solve each problem. Then check your solution.

7. Four times a number minus 6 is greater than eight plus two times the number.

$$4 \cdot 8 - 6 > 8 + 2 \cdot 8$$

$$4n - 6 > 8 + 2n$$


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$$\begin{array}{r} 4n - 6 > 8 + 2n \\ -2n + 6 > 8 + 2n - 2n \\ \hline 2n + 6 > 8 \\ \hline 2n > 2 \\ \hline n > 1 \end{array}$$

$$n < 7$$

$$4 \cdot 3 - 6 > 8 + 2 \cdot 3$$

$$12 - 6 > 8 + 6$$

$$6 > 14$$

$$4n - 6 > 8 + 2n$$

$$4 \cdot 42 - 6 > 8 + 2 \cdot 42$$

$$168 - 6 > 8 + 84$$

$$162 > 92$$



8. Negative three times a number plus 4 is less than five times the number plus 8.

$$\begin{array}{r} -3 \cdot n + 4 \\ + 3n - 8 \end{array} < \begin{array}{r} 5n + 8 \\ + 3n - 8 \end{array}$$

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$$\begin{array}{r} -3 \cdot 2 + 4 < 5 \cdot 2 + 8 \\ -6 + 4 < 10 + 8 \\ -2 < 18 \end{array} \quad \begin{array}{r} -4 \\ 8 \\ -\frac{1}{2} < n \end{array} < \begin{array}{r} 8n \\ 8n \end{array}$$



WB 5.3 prac  
p. 66

$$1) \frac{8x > 5x - 12}{8} \cdot 8$$

mult  
by 8

$$\begin{array}{r} 8x > 5x - 12 \\ -5x \quad -5x \\ \hline \end{array}$$

subtr.  
5x

$$\begin{array}{r} \frac{3x}{3} > -\frac{12}{3} \\ x > -4 \end{array}$$

divide  
by 3