Curriculum Outcome

PR1: . Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution.

PR3. Model and solve problems using linear equations of the form:

$ax = b; = b , a \neq 0; ax + b = c; +b = c, a \neq 0; = b, x \neq 0$ ax ax xa

$ax+ b = cx + d; a(bx + c) = d(ex + f); a(x + b) = c; ax = b+cx$

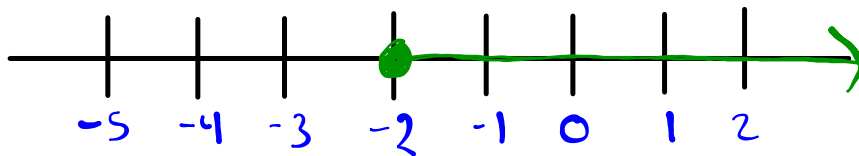concretely, pictorially and symbolically, where *a, b, c, d, e, and f* are   rational numbers

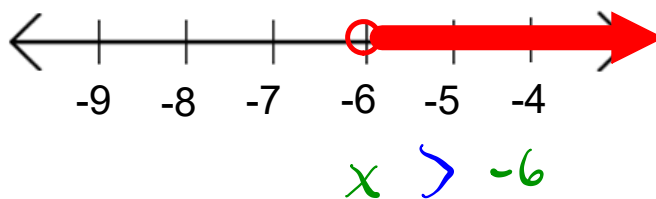Student Friendly: Replacing the equal sign with an inequality sign (ie. <, >)
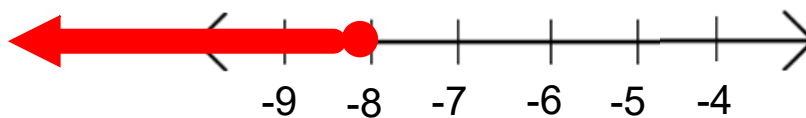
$$x + 6 < 5$$

Warm Up

Graph the following
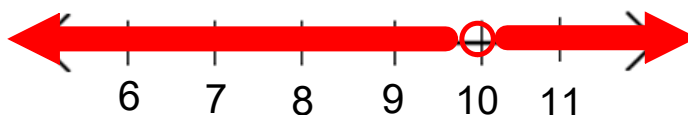
$$-2 \leq t \qquad t \geq -2$$

Write the inequality that represents the graphs

$$x > -6$$

$$x \leq -8$$

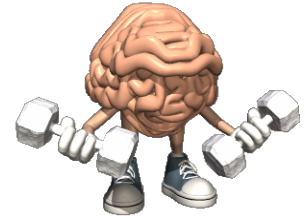$$x \neq 10$$

Mar 14-9:06 AM

Warm Up

1) $\frac{2}{3}(5 + 2r) = 4 - r$

$\frac{10}{3} + \frac{4r}{3} = 4 - r$ (3)(3) = (3)(3)

$10 \;\boxed{+ 4r}^{+3} = 12 \;\boxed{-3r}^{+3r}$

$10^{-10}\;\boxed{+7r} = 12^{-10}$

$\frac{7r}{7} = \frac{2}{7}$

$\boxed{r = \frac{2}{7}}$

2) $3u + 6 - 5u = 17 + 4u - 6$

$3u - 5u + 6 = 4u + 17 - 6$

$\boxed{-2u}^{+2u} + 6 = \boxed{4u}^{+2u} + 11$

$6^{-11} = \boxed{6u} + 11^{-11}$

$\frac{-5}{6} = \frac{6u}{6}$

$\boxed{u = \frac{-5}{6}}$

Feb 28-12:12 PM

3

Equations

$x + 6 = 10$

$$x = 4$$

There is only
one solution

Inequality

$x + 6 < 10$

$$x < 4$$

There are many solutions.
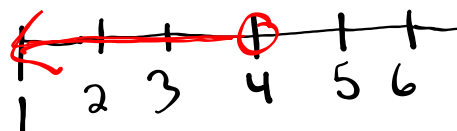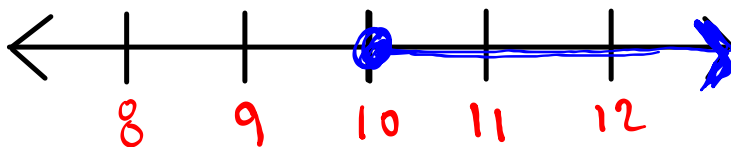
i) Solve the inequality

ii) Verify

iii)Graph on a number line

> Hint: Easier if you always solve for a positive variable

$$6 \leq \boxed{x} - 4$$

(+4 added to both sides)

$$10 \leq x$$

$$\boxed{x \geq 10}$$

Number line: points marked 8, 9, 10, 11, 12 with closed circle at 10 and arrow to the right.

Verify

LHS   RHS

$$6 \leq x - 4$$

$$11 - 4$$

$$\boxed{6 \leq 7}$$

Try These!

2. $5 > \boxed{m} + 12$ $^{-12}$ $^{-12}$

$-7 > m$

$m < -7$

$$\xleftarrow{\hspace{2cm}} \underset{-9 \quad -8 \quad -7 \quad -6 \quad -5}{\overset{\circ}{\rule{5cm}{0.4pt}}} \rightarrow$$
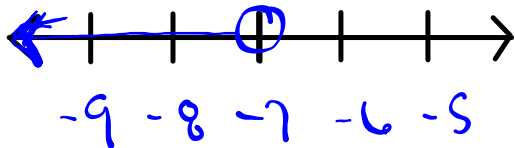
Remember:
Always move the smaller variable

3. $\boxed{-2y} \le \boxed{-3y} + 1$ $^{+3y}$ $^{+3y}$

$y \le 1$

$$\xleftarrow{\hspace{2cm}} \underset{-1 \quad 0 \quad 1 \quad 2 \quad 3}{\overset{\bullet}{\rule{5cm}{0.4pt}}} \rightarrow$$

Mar 15-3:56 PM
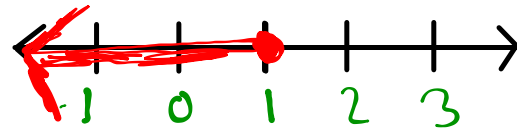
Remember:
    Always move the smaller variable

4. $\boxed{-4y} + 7 > \boxed{-5y} + 1$

$\boxed{y} + 7 > 1$

$$\boxed{y > -6}$$

Verify

LH $>$ RHS

$-4y + 7$ $-5y + 1$

$-4(0) + 7$ $-5(0) + 1$

$0 + 7$ $0 + 1$

$7 > 1$

$-8 \quad -7 \quad -6 \quad -5 \quad -4$

Mar 16-2:31 PM
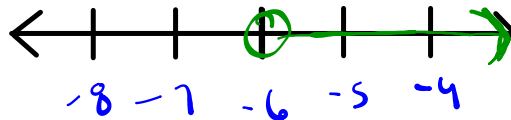
Graph the following and give 3 examples of solutions

$$\overset{(3)}{2} \overset{(3)}{x} + 4 \overset{(3)}{\geq} 6$$
$$\overline{3}$$

$$\boxed{2x} + 12^{-12} \geq 18^{-12}$$

$$\frac{2x}{2} \geq \frac{6}{2}$$

$$\boxed{x \geq 3}$$

Mar 16-2:31 PM

$$\overset{(6)}{\underset{2}{\frac{x}{2}}} + \overset{(6)}{3} \le \overset{(6)}{\underset{3}{\frac{2}{3}}}\overset{(6)}{x} - 4$$

$$\boxed{3x}^{-3x} + 18 \le \boxed{4x}^{-3x} - 24$$
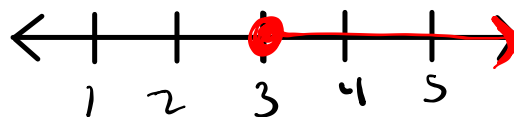
$$18 \overset{+24}{\le} \boxed{x} - 24^{\,+24}$$

$$42 \le x$$

$$\boxed{x \ge 42}$$
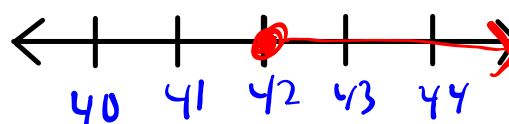
Match each inequality with the graph of its solution:

a) $x - 3 > 5$

$x > 8$

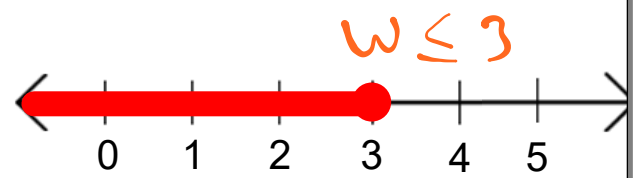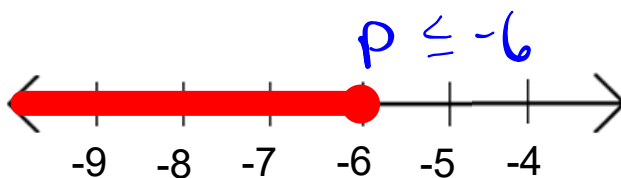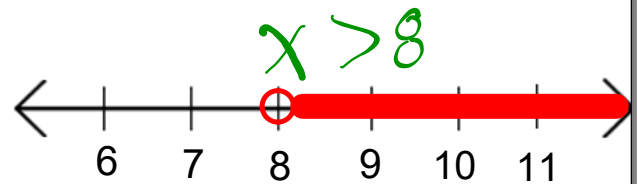b) $-10 \geq -4 + p$

$-6 \geq p$

$\boxed{p \leq -6}$

c) $7 < r + 8$
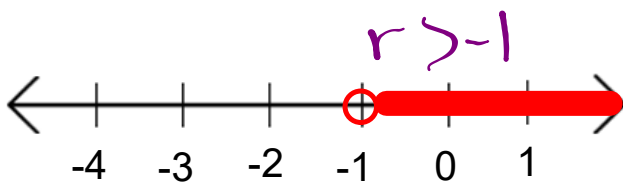
$-1 < r$

$\boxed{r > -1}$

d) $-5 + w \leq -2$

$w \leq 3$

$r > -1$

$$\longleftarrow \overset{\underset{\displaystyle -4}{|}}{} \overset{\underset{\displaystyle -3}{|}}{} \overset{\underset{\displaystyle -2}{|}}{} \overset{\underset{\displaystyle -1}{\circ}}{} \overset{\underset{\displaystyle 0}{|}}{} \overset{\underset{\displaystyle 1}{|}}{} \longrightarrow$$

$x > 8$

$$\longleftarrow \overset{\underset{\displaystyle 6}{|}}{} \overset{\underset{\displaystyle 7}{|}}{} \overset{\underset{\displaystyle 8}{\circ}}{} \overset{\underset{\displaystyle 9}{|}}{} \overset{\underset{\displaystyle 10}{|}}{} \overset{\underset{\displaystyle 11}{|}}{} \longrightarrow$$

$p \leq -6$

$$\longleftarrow \overset{\underset{\displaystyle -9}{|}}{} \overset{\underset{\displaystyle -8}{|}}{} \overset{\underset{\displaystyle -7}{|}}{} \overset{\underset{\displaystyle -6}{\bullet}}{} \overset{\underset{\displaystyle -5}{|}}{} \overset{\underset{\displaystyle -4}{|}}{} \longrightarrow$$

$w \leq 3$

$$\longleftarrow \overset{\underset{\displaystyle 0}{|}}{} \overset{\underset{\displaystyle 1}{|}}{} \overset{\underset{\displaystyle 2}{|}}{} \overset{\underset{\displaystyle 3}{\bullet}}{} \overset{\underset{\displaystyle 4}{|}}{} \overset{\underset{\displaystyle 5}{|}}{} \longrightarrow$$

Mar 15-4:24 PM

Solving Problems Using Inequalities:

Alison plans to rent a hall for her grad party. $90 + 20h$
- The Douglastown Rec Centre charges $90 plus $20 an hour.
- The Chatham Head Rec Centre charges $100 plus $19 an hour.

          $100 + 19h$

For how many hours must she rent the hall in Douglastown in order for it to be <u>less</u> expensive than the hall in Chatham Head?

<u>Write an expression that reprsents each scenario</u>

Let h = number of hours
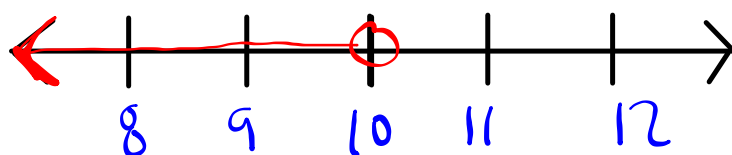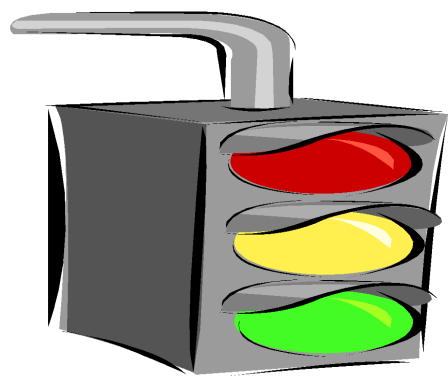Douglastown: 90 + 20h Chatham Head: 100 + 19h

Set up the inequality $D < C$
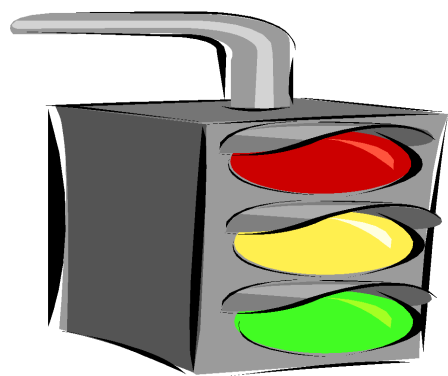
$90 + \boxed{20h} < 100 + \boxed{19h}$ $-19h \quad -19h$

$90^{-90} + \boxed{h} < 100^{-90}$

$h < 10$

Now it is time for Home Learning

Oct 27-10:41 PM

Class/Homework

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QUESTIONS

4,6,7,9,12,13

Oct 27-10:41 PM