

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:

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

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

concretely, pictorially and symbolically, where $a, b, c, d, e, \text{ and } f$ are rational numbers

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

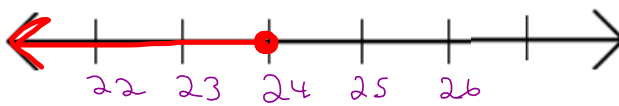


Warm Up

$$1. \quad 11 \geq \boxed{x} - 13$$

$$24 \geq x$$

$$x \leq 24$$



$$2. \quad \boxed{5y} - 8 < \boxed{-2y} + 6$$

$$\boxed{7y} - 8 < 6$$

$$\cancel{7}y < \frac{14}{\cancel{7}}$$

$$\boxed{y < 2}$$



Match each inequality with the graph of its solution:

a) $x - 3 > 5$

$x > 8$

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

$-6 \geq p$

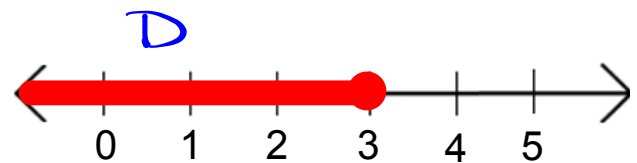
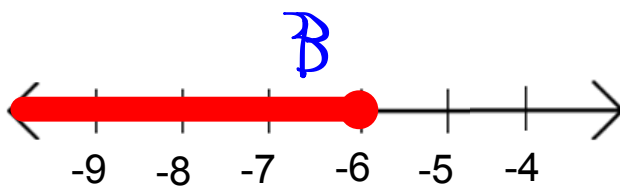
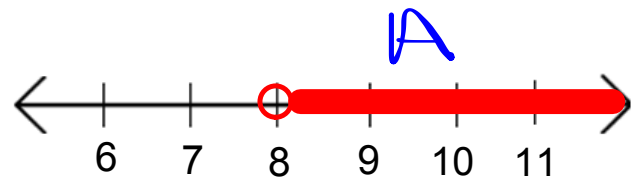
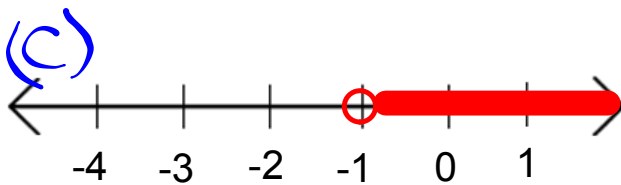
$p \leq -6$

c) $7 < r + 8$

$r > -1$

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

$w \leq 3$



Solving Problems Using Inequalities:

Alison plans to rent a hall for her grad party.

- The Douglastown Rec Centre charges \$90 plus \$20 an hour.
- The Chatham Head Rec Centre charges \$100 plus \$19 an hour.

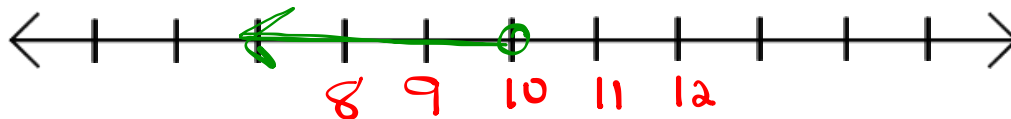
For how many hours must she rent the hall in Douglastown in order for it to be less expensive than the hall in Chatham Head?

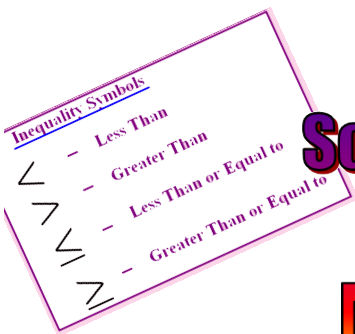
$$D < C$$

$$90 + \boxed{20h} < 100 + \boxed{19h}$$

$$\cancel{90} + \boxed{h} < 100$$

$$\boxed{h < 10}$$



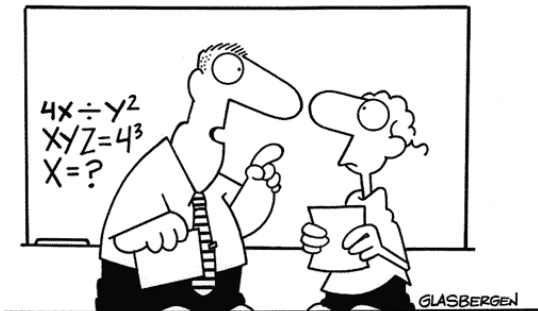


Section 6.5

Solving Linear Inequalities by Using Multiplication & Division



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“Algebra class will be important to you later in life because there’s going to be a test a few days from now.”



Let's Have A Look

Place a $>$ or $<$ sign that makes the statement true.



$$5 \quad \boxed{>} \quad -7$$

Now lets multiply each side by (-1)

$$-5 \quad < \quad 7$$

What do you notice???

Let's Have A Look

Place a $>$ or $<$ sign that makes the statement true.



$$\begin{array}{c} \div (-6) \quad -6 \quad \boxed{>} \quad -18 \\ \downarrow \qquad \qquad \qquad \downarrow \\ \text{Now lets divide each side by } (-6) \qquad \div (-6) \qquad \text{What do you notice???} \\ 1 \quad < \quad 3 \end{array}$$

Properties of Inequalities

- 1) When you multiply or divide a inequality by a positive number the inequality remains the same.

$$\begin{array}{l} \text{Example) } \quad 5 > -1 \\ \quad \quad 5(3) > (-1)(3) \\ \quad \quad 15 > -3 \end{array}$$

- 2) When you multiply or divide a inequality by a "negative number" the inequality must be reversed(swapped) in order to remain true.

$$12 > -10$$

$$12 \div (-2) \quad -10 \div (-2)$$

Switch inequality
since divided by a
negative

$$12 \div (-2) < -10 \div (-2)$$

$$-6 < 5$$

FIX

NOTE:

When solving an inequality, we use the same strategy as for solving an equation

BUT

Remember when we divide or multiply by a negative number, we reverse the inequality sign.

**Switch the inequality sign ONLY
when you divide or multiple by a
negative**

Solving a Multi-Step Inequality

What if you solve for a negative "variable"

$$1) \frac{-2n}{-2} > \frac{12}{-2}$$

$$n < -6$$

$$2) \frac{n}{4} > 2$$

$$n < -8$$

$$1 < 8$$

$$\times (-2) \left(\begin{array}{l} -2 > -16 \end{array} \right) \times (-2)$$

Solving a Multi-Step Inequality

What if you solve for a negative "variable"

$$2) -2n - 5 > 6n + 7$$

Classwork / Homework:

[p. 298 Questions:
4ace, 6ac, 7, 9acef, 12,13

[p. 305 Questions:
7abd,9ace,10,11ac,12ac,
13,16ac,17a,18

