

associative ✓
 commutative ✓
 distributive ✓
 identity ✓
 inverse

Name the property.

1.) $b + 0 = b$ identity

2.) $3(x + 2y) = 3x + 6y$ distributive

3.) $s + t = t + s$ commutative

4.) $a * \frac{1}{a} = 1$ inverse

5.) $2 + (a + b) = (2 + a) + b$ associative

$$3x^2 + 6y^3$$

$$x = -4 \quad y = 2$$

$$3(-4)^2 + 6(2)^3$$

$$3(16) + 6(8)$$

$$48 + 48 = \boxed{96}$$

$$\S 3(a^2 - 4b) - 2(5a^2 + 8b)$$

$$a = -2$$

$$b = 3$$

$$3a^2 - 12b - 10a^2 - 16b$$

$$-7a^2 - 28b$$

$$-7(-2)^2 - 28(3)$$

$$-7(4) - 28(3)$$

$$-28 - 84 = \boxed{-112}$$

$$V = \frac{\pi}{3} r^2 h$$

$$h = \frac{3V}{\pi r^2}$$

$$\frac{3}{\pi r^2} (V) = \left(\frac{\pi r^2 h}{3} \right) \frac{3}{\pi r^2}$$

$$1.) \quad \frac{S}{L} = \frac{L^*(1-r)}{L}$$

$r =$

$$r = -\frac{S}{L} + 1$$

$$\frac{S}{L} = \frac{1-r}{-1}$$

$$-1\left(\frac{S}{L} - 1\right) = (-r)(-1) \quad \text{opposite}$$

change signs

$$2.) \quad S = 2LW + 2HW + 2LH$$

\downarrow
-2LH

$w =$

$$① \quad S - 2LH = 2LW + 2HW$$

$$② \quad \frac{S - 2LH}{2L + 2H} = \frac{W(2L + 2H)}{2L + 2H}$$

$$③ \quad W = \frac{S - 2LH}{2L + 2H}$$

1.) Get all non-"w" terms on opposite side of equal sign

2.) Factor out w

3.) Divide both sides by factored out quantity

$$3.) \left(\frac{\boxed{x+3}}{t} \right) = \left(t^2 \right) t$$

$x =$

$$x+3 = t^3$$

$-3 \quad -3$

$$\boxed{x = t^3 - 3}$$

$$4.) a(\boxed{x+c}) = b(\boxed{x-c})$$

$x =$

$$ax+ac = bx-bc$$

$-bx \quad -bx$

$$ax-bx+ac = -bc$$

$-ac \quad -ac$

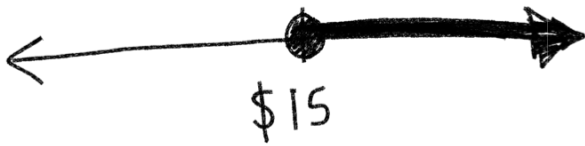
$$ax-bx = -ac-bc$$

$$\frac{x(a-b)}{a-b} = \frac{-ac-bc}{a-b}$$

$$\boxed{x = \frac{-ac-bc}{a-b}}$$

Inequalities

$$x \geq \$15$$



$$2t + 30 \leq 40$$

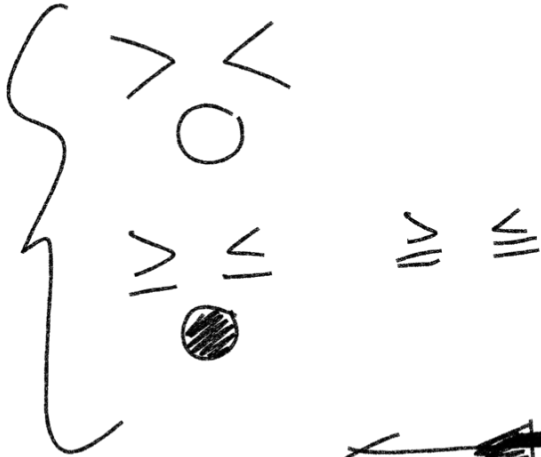
Think: " $2t + 30 = 40$ "

$$2t + 30 \leq 40$$

$-30 \quad -30$

$$\frac{2t}{2} \leq \frac{10}{2}$$

$$t \leq 5$$



$$2(m+3)+1 > 23$$

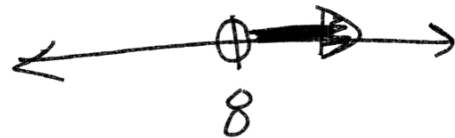
$$2m + 6 + 1 > 23$$

$$2m + 7 > 23$$

$$-7 \quad -7$$

$$\frac{2m}{2} > \frac{16}{2}$$

$$m > 8$$



$$5(1-2m) \geq 85$$

$$\begin{array}{r} 5 - 10m \geq 85 \\ -5 \qquad -5 \end{array}$$

$$m \leq -8$$

$$\frac{-10m}{-10} \geq \frac{80}{-10}$$



$$-5(-8)(8+7n) > -181$$

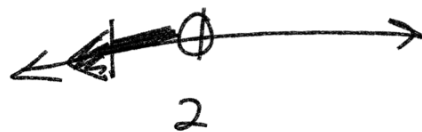
$$-5 - 64 - 56n > -181$$

$$\begin{array}{r} -69 - 56n > -181 \\ +69 \qquad +69 \end{array}$$

flip when
divide by
a negative

$$\frac{-56n}{-56} > \frac{-112}{-56}$$

$$n < 2$$



Compound Inequalities

Converge

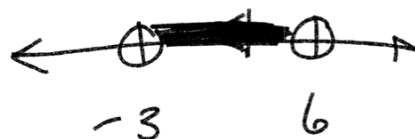
$$\frac{9x}{9} < \frac{54}{9}$$

$$x < 6$$

and

$$\frac{-4x}{-4} < \frac{12}{-4}$$

$$x > -3$$



$$\frac{16x}{16} \leq \frac{32}{16}$$

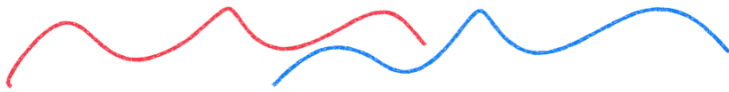
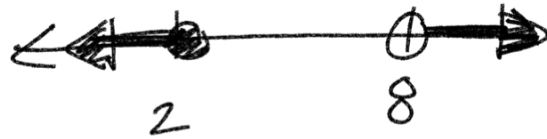
$$x \leq 2$$

or

$$\frac{-5x}{-5} < \frac{-40}{-5}$$

$$x > 8$$

"divergent"



$$14 > 3x - 1 \geq -10$$

$$+1 \quad \quad \quad +1 \quad \quad \quad +1$$

$$\frac{15}{3} > \frac{3x}{3} \geq \frac{-9}{3}$$

$$5 > x \geq -3$$

$$5 > x \quad \quad x \geq -3$$

or
 $x < 5$

