

Warm up

Solve the inequality.

1. $-5 \geq x - 2$

3. $24 < -3 + x$

2. $x + 11 \leq -7$

4. $x + 2 \geq 16$

Warm Up

1) $\frac{3x}{4} = -24$

$$\frac{4}{3} \cdot \frac{3}{4} x = -24 \cdot \frac{4}{3}$$

$$x = -32$$

2) $-\frac{x}{3} = \frac{4}{9}$

$$-3 \cdot \frac{x}{-3} = \frac{4}{9} \cdot \frac{-3}{1}$$

$$x = \frac{-12 \div 3}{9 \div 3}$$

$$x = \frac{-4}{3}$$

Homework Questions?

$$\begin{array}{l} \underline{36} \} \\ x - 3 > 2 \\ \quad + 3 \quad + 3 \end{array}$$

$$x > 5 \quad \textcircled{C}$$

$$\begin{array}{l} \underline{42} \} \\ -5 < 4 + f \\ \quad -4 \quad -4 \\ -9 < f \end{array}$$

$$f > -9$$

$$\begin{array}{r} -2 > b - 5 \\ +5 \quad \quad +5 \end{array}$$

$$3 > b$$

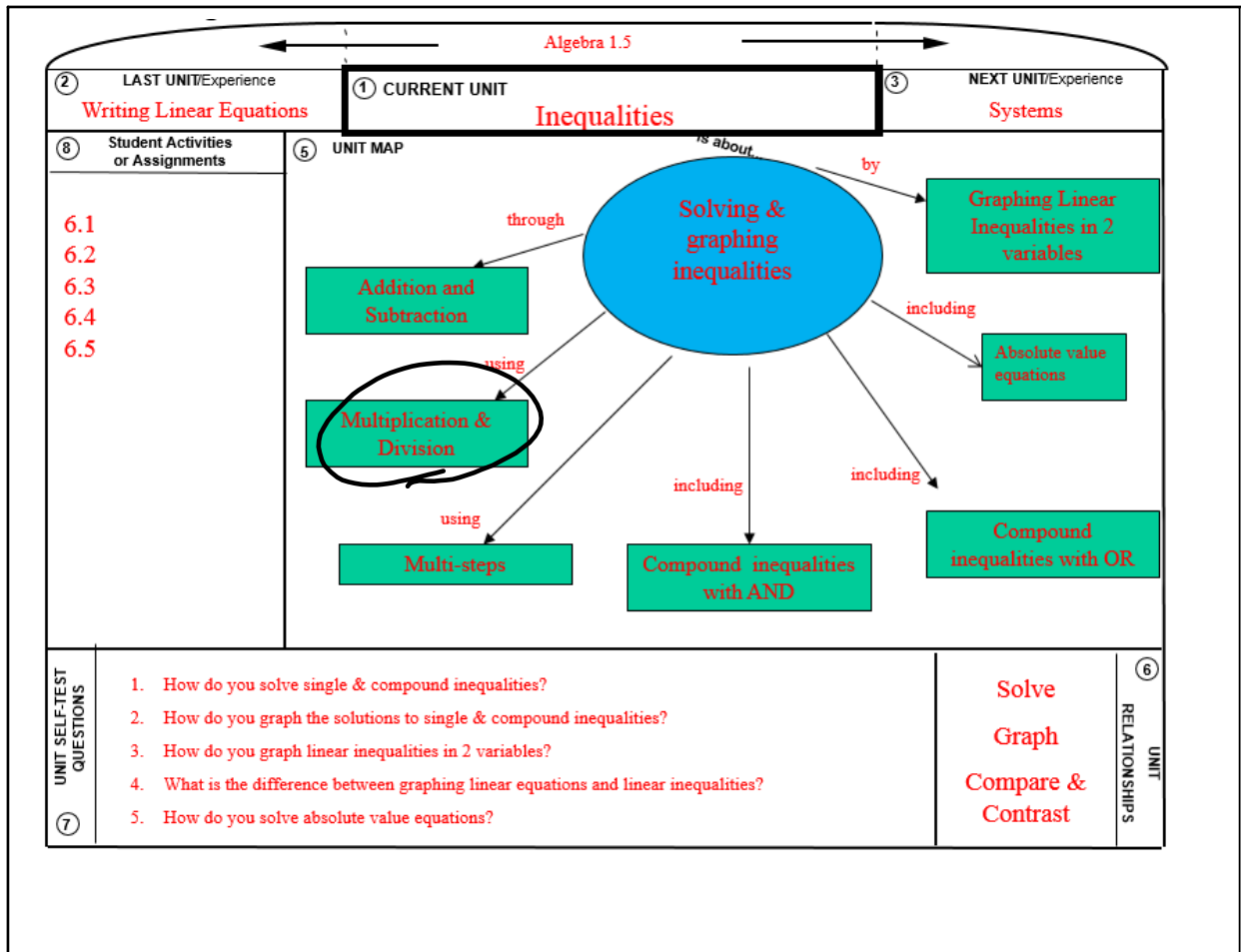
$$b < 3$$



6.2 Solving Inequalities Using Multiplication or Division

Goals: • Solve and graph one-step inequalities in one variable using multiplication or division.

EQ: What is the difference between multiplying/dividing positive vs. negative numbers?



The properties are stated for $>$ and $<$ inequalities. They are also true for \geq and \leq inequalities.

PROPERTIES OF INEQUALITY *positive #'s*

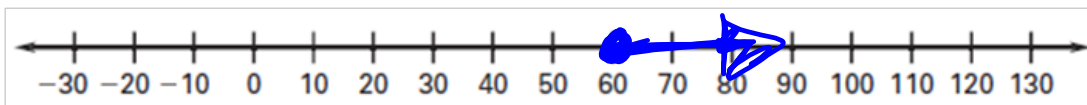
Multiplication Property of Inequality ($c > 0$)
 For all real numbers a, b , and for $c > 0$:
 \times Both sides by pos #
 If $a > b$, then _____ .
 If $a < b$, then _____ .

Division Property of Inequality ($c > 0$)
 For all real numbers a, b , and for $c > 0$:
 \div Both sides by pos #
 If $a > b$, then _____ .
 If $a < b$, then _____ .

Example 1: Multiply by a Positive Number

Solve $\frac{b}{5} \geq 12$. Then graph the solution.

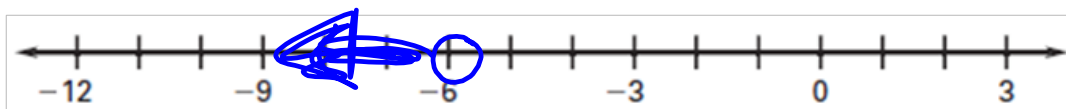
$$\begin{aligned} 5 \cdot \frac{b}{5} &\geq 12 \cdot 5 \\ b &\geq 60 \end{aligned}$$

**Example 2: Divide by a Positive Number**

Solve $-54 > 9n$. Then graph the solution.

$$\begin{aligned} -54 &> 9n \\ \frac{-54}{9} &\frac{9}{9} \\ -6 &> n \end{aligned}$$

$$n < -6$$

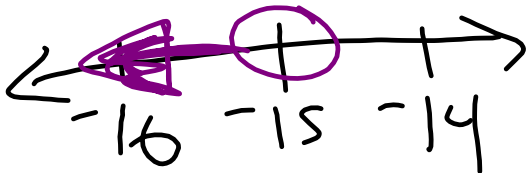


Try It Solve the inequality. Then graph the solution.

1. $\frac{x}{5} < -3$

$5 \cdot \frac{x}{5} < -3 \cdot 5$

$x < -15$



2. $\frac{8y}{8} \geq \frac{48}{8}$

$y \geq 6$



Remember when multiplying or dividing by a negative number you must reverse the inequality symbol.

PROPERTIES OF INEQUALITY

Negative #'s

Multiplication Property of Inequality ($c < 0$)

For all real numbers a, b , and for $c < 0$:
 If $a > b$, then _____.
 If $a < b$, then _____.
x neg # and FLIP

Division Property of Inequality ($c < 0$)

For all real numbers a, b , and for $c < 0$:
 If $a > b$, then _____.
 If $a < b$, then _____.
÷ neg # and FLIP

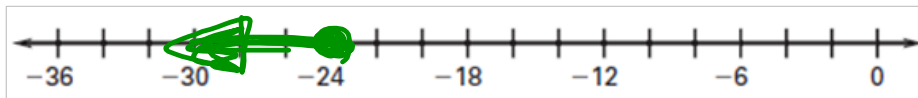
$\frac{16}{-2} < \frac{20}{-2}$ T

$-8 > -10$ (T)

Example 3: Multiply by a Negative Number

Solve and graph $-\frac{m}{6} \geq 4$

$m \leq -24$



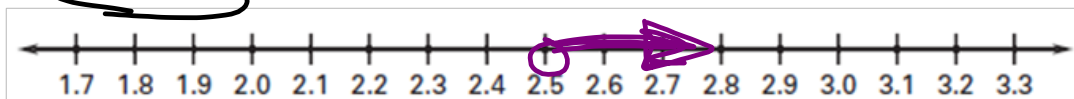
Example 4: Divide by a Negative Number

Solve and graph $-18n < -45$

$n > 2.5$

$\frac{5n}{5} < \frac{10}{5}$

$n < 2$



Try It Solve the inequality. Then graph the solution.

$$3. \quad \frac{-10y}{-10} \geq \frac{50}{-10}$$

$$y \leq -5$$



$$4. \quad -6 > -\frac{d}{3} \quad +3$$

$$18 < d$$

$$d > 18$$



Summary

EQ: What is the difference between multiplying/dividing positive vs. negative numbers?

↳ FLIP sign

6.2 Homework

3-7 Practice wkst

