

Warm up

Solve the inequality and graph.

1. $-\frac{b}{5} \geq 12$

3. $24 < -3x$

2. $x + 11 \leq -7$

4. $-x \geq 16$

Warm Up

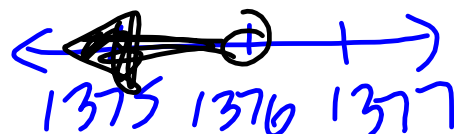
p.338 #62-65

62. **SCIENCE CONNECTION** Mercury is the metallic element with the lowest melting point, -38.87°C . Write an inequality that describes the melting point p (in degrees Celsius) of any other metallic element.

$$P > -38.87$$

63. **LARGEST MARLIN** The world record for the largest Pacific blue marlin is 1376 pounds. It was caught in Kaaiwi Point, Kona, Hawaii. Let M represent the weight of a Pacific blue marlin that has been caught. Write an inequality for M . Graph the inequality. ▶ Source: International Game Fish Association

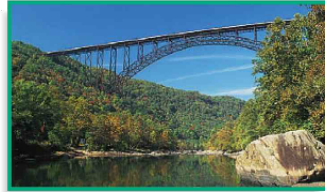
$$M < 1376$$



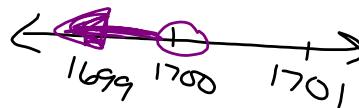
64. **BOWLING TOURNAMENT** After two games of bowling, Brenda has a total score of 475. To win the tournament, she needs a total score of 684 or higher. Let x represent the score she needs for her third game to win the tournament. Write an inequality for x . What is the lowest score she can get for her third game and win the tournament?

$$\begin{array}{r} x + 475 \geq 684 \\ -475 \quad -475 \\ \hline x \geq 209 \end{array}$$

65. **STEEL ARCH BRIDGE** The longest steel arch bridge in the world is the New River Gorge Bridge near Fayetteville, West Virginia, at 1700 feet. Write an inequality that describes the length l (in feet) of any other steel arch bridge. Graph the inequality.

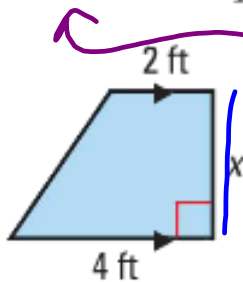


$$l < 1700$$



Homework Questions?

45. Area < 30 square feet



$$\frac{3x < 30}{3} \quad \frac{30}{3}$$

$$x < 10 \text{ ft}$$

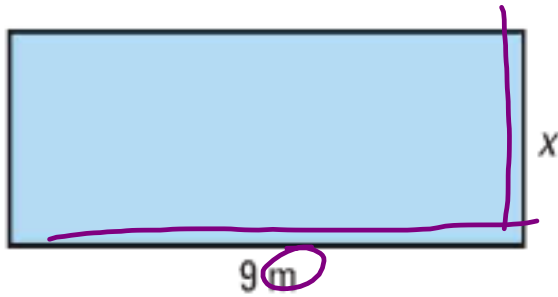
$$A = \frac{1}{2} h (b_1 + b_2)$$

$$= \frac{1}{2} (x)(2+4)$$

$$= \frac{1}{2} (x)(6)$$

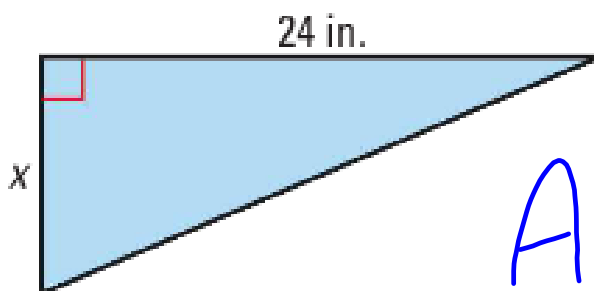
$$= 3x$$

43. Area $>$ 36 square meters



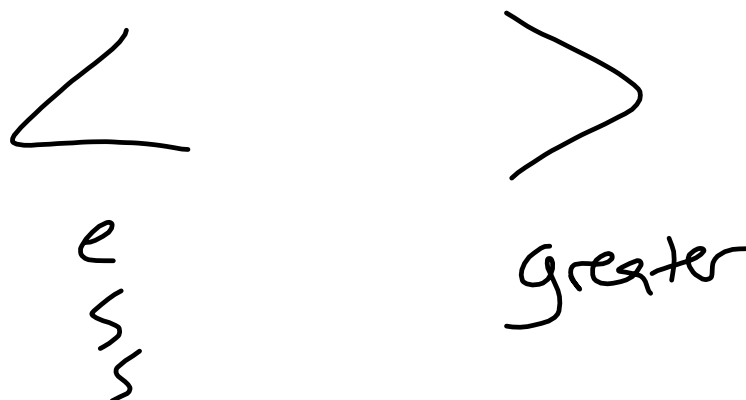
$$\begin{aligned} 9x &> 36 \\ \frac{9x}{9} &> \frac{36}{9} \\ x &> 4 \text{ m} \end{aligned}$$

46. Area $<$ 144 square inches



$$12x < 144$$

$$\begin{aligned} A &= \frac{1}{2}bh \\ &= \frac{1}{2}(24)(x) \\ &= 12x \end{aligned}$$



Self Scoring Scale

4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

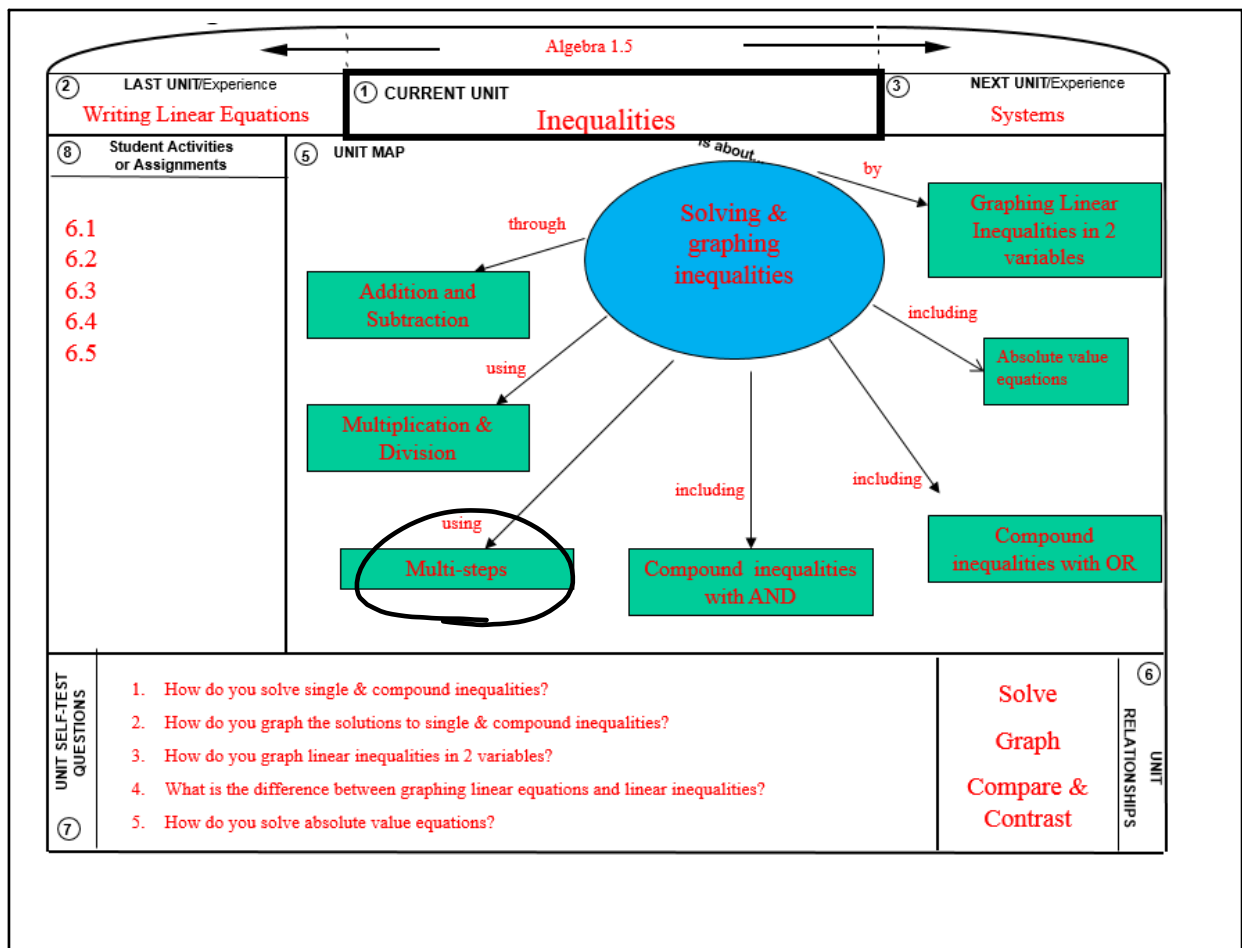
1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.

6.2 Solving Multi-Step Linear Inequalities

- Goals:**
- Solve multi-step linear inequalities.
 - Use linear inequalities to model and solve real-life problems.

EQ: What is the difference between solving multi-step equations vs. inequalities?



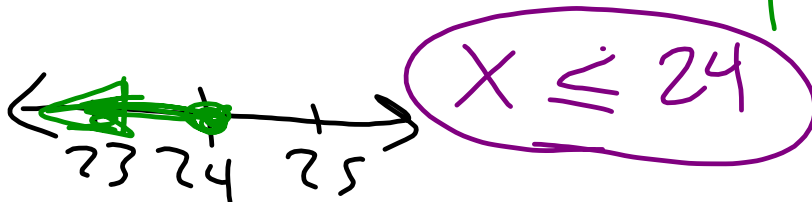
Example 1: Using More than One Step

Solve $\frac{5}{6}x - 2 \leq 18$.

$$\frac{5}{6}x - 2 \leq 18$$

+2 +2

$$\frac{5}{5} \cdot \frac{5}{6}x \leq \frac{20}{1} \cdot \frac{6}{5}$$



Example 2: Multiplying or Dividing by a Negative Number

Solve $9 - 3t < 7 + 2t$

$$9 - 3t < 7 + 2t$$

+3t +3t

$$9 < 7 + 5t$$

-7 -7

$$\frac{2}{5} < \frac{5t}{5}$$

$\frac{2}{5} < t$

$$9 - 5t < 7$$

-9 -9

$$\frac{-5t}{-5} < \frac{-2}{-5}$$

$t > \frac{2}{5}$

$t > \frac{2}{5}$



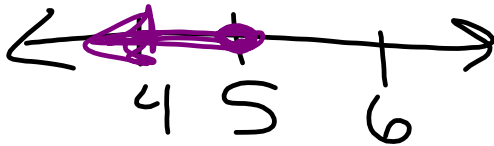
Try It Solve the inequality.

$$1) \quad 17 - x \geq 12$$

$$\quad -17 \quad -17$$

$$\frac{-x}{-1} \geq \frac{-5}{-1}$$

$$x \leq 5$$



$$2) \quad 3x + 2 > x - 8$$

$$\quad -x \quad -x$$

$$2x + 2 > -8$$

$$\frac{2x}{2} > \frac{-10}{2}$$

$$x > -5$$



Example 3: Writing and Using a Linear Model

Long Distance Calls - You pay \$0.045 per minute for long distance calls, and a monthly fee of \$5. How many minutes of long distance can you use to keep within your monthly long distance budget of \$20?

Verbal Model	Cost per minute	×	Number of minutes	+	Monthly fee	≤	Monthly budget
--------------	-----------------	---	-------------------	---	-------------	---	----------------

$$0.045x + 5 \leq 20$$

$$\frac{0.045x}{0.045} \leq \frac{15}{0.045}$$

$$x \leq 333.\overline{33}$$

$$x \leq 333 \text{ min}$$

Try It

- 3) Your school carnival charges \$2 for admission and \$0.50 for each game. You go to the carnival with \$5.50. Write and solve an inequality that represents the possible number of games you can play. What is the maximum number of games you can play?

$$0.5x + 2 \leq 5.50$$

$$\begin{array}{r} -2 \\ \hline 0.5x \leq 3.5 \\ \hline \cdot 5 \end{array}$$

$$x \leq 7 \text{ games}$$

Summary

EQ: What is the difference between solving multi-step equations vs. inequalities?

=
one soln.

< >
Range of solns
* Be careful w/
the sign

6.2 Homework

6.2 p.343 #16-34even, {36*}
(GRAPH) \leq

$$16) \quad \begin{array}{r} 15 - x < 7 \\ -15 \quad -15 \end{array}$$

$$\begin{array}{r} -x < -8 \\ \hline \cdot -1 \end{array}$$

$$x > 8$$

