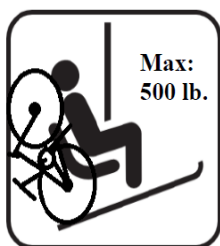


warm up: page 42- Example 4**Example 4: Application**

The maximum safe load of a chairlift is 500 lb. A cyclist rides the chairlift with his bicycle. The cyclist weighs 160 lb, and the bicycle weighs 30 lb. Which inequality best describes how much additional weight (w) the chairlift could safely carry?



$$\text{cyclist} + \text{bike} + w \leq 500$$

$$160 + 30 + w \leq 500$$

$$190 + w \leq 500$$

$$w \leq 310$$

✓ Understanding Check:

To help out a homeless shelter, your class brought in 52 blankets on Monday and 61 blankets on Wednesday. Write an inequality to describe how many blankets the class must donate on Friday to make or exceed their goal of at least 150 blankets.

Let x = # blankets on Fri.

$$52 + 61 + x \geq 150$$

$$113 + x \geq 150$$

$$x \geq 37$$

answers HW page 28Identify all solutions to each inequality:

1. $x < 11$

a. -3 b. 0 c. 11 d. 16

yes yes no no

2. $x > 5$

a. -7 b. 0 c. 5 d. 9

3. $x \leq -6$

a. -10 b. -3 c. -6 d. 0

no
yes

4. $x \geq 2$

a. -7 b. 0 c. 2 d. 8

5. $2x > 7$

a. -9 b. 0 c. 4 d. 9

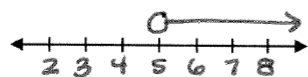
6. $x + 3 < -2$

a. -7 b. -5 c. -4 d. 4

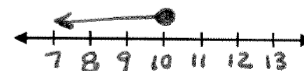
answers HW page 28

Graph each inequality below: (watch out for open or closed point)

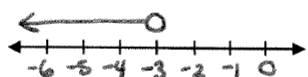
7. $x > 5$



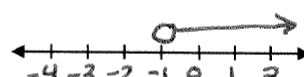
8. $x \leq 10$



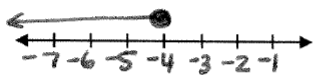
9. $x < -3$



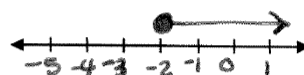
10. $x > -1$



11. $x \leq -4$



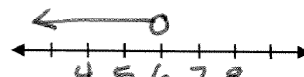
12. $x \geq -2$



13. $x \geq 6$



14. $x < 6$



answers HW page 29

1. The winner of the tournament will win at least \$5,000 in cash and prizes.

Let x = dollars Inequality: $x \geq 5000$

2. To train for the marathon, Julia ran over 30 miles each week.

Let x = miles Inequality: $x > 30$

3. To lose weight, most people need to eat at most 1,600 calories a day.

Let x = calories Inequality: $x < 1600$

answers HW page 29

4. The average car on the road today has less than 42,000 miles on it.

Let x = miles Inequality: $x < 42,000$

5. Top tweeters, average over 130 tweets a day.

Let x = tweets Inequality: $x > 130$

Review:

$$\begin{array}{r} 4x - 2 = 10 \\ \quad \quad \quad \rightarrow +2 \\ \hline 4x = 12 \\ \quad \quad \quad \div 4 \\ \hline x = 3 \end{array}$$

$$\begin{array}{r} 2. -6x + 3 = 2x - 21 \\ -2x \quad \leftarrow \quad -3 \\ \hline -8x = -24 \\ \frac{-8}{-8} = \frac{-24}{-8} \\ \boxed{x = 3} \end{array}$$

$$\begin{array}{r} 3. 6|x| - 2 = 22 \\ +2 \quad +2 \\ \hline 6|x| = 24 \\ \hline \cancel{6} \quad \quad \quad \cancel{6} \\ |x| = 4 \\ \hline \boxed{x = 4 \text{ or } -4} \end{array}$$

answers HW page 30

With Addition Property of Inequality

Date _____ Per _____

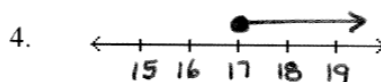
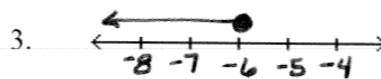
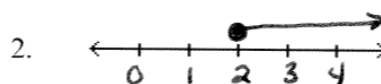
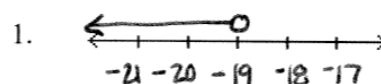
Problems Set:

$$1. \begin{array}{r} k + 20 < 1 \\ -20 \quad -20 \\ \hline k < -19 \end{array}$$

$$2. \begin{array}{r} k - 7 \geq -1 \\ +3 \quad +3 \\ \hline k \geq 2 \end{array}$$

$$3. \begin{array}{r} a + 16 \leq 10 \\ -16 \quad -16 \\ \hline a \leq -6 \end{array}$$

$$4. \begin{array}{r} 24 \leq p + 7 \\ -7 \quad -7 \\ \hline 17 \leq p \\ p \geq 17 \end{array}$$

Number Lines:

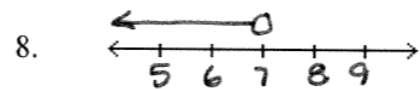
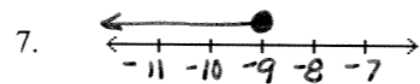
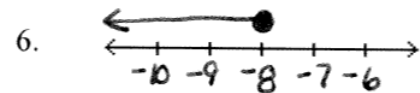
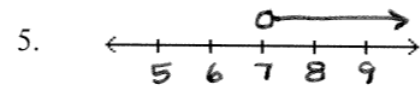
answers HW page 30

$$\begin{array}{r}
 5. \quad -9 + x > -2 \\
 +9 \quad +9 \\
 \hline
 x > 7
 \end{array}$$

$$\begin{array}{r}
 6. \quad -3 \geq x + 5 \\
 -5 \quad -5 \\
 \hline
 -8 \geq x \\
 x \leq -8
 \end{array}$$

$$\begin{array}{r}
 7. \quad -13 \geq n - 4 \\
 +4 \quad +4 \\
 \hline
 -9 \geq n \\
 n \leq -9
 \end{array}$$

$$\begin{array}{r}
 8. \quad -5 + x < 2 \\
 +5 \quad +5 \\
 \hline
 x < 7
 \end{array}$$



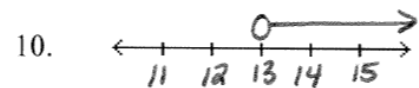
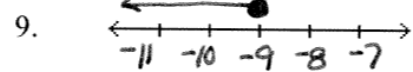
answers HW page 30

9. $\underline{6x} + 2 - \underline{5x} \leq -7$

$$\begin{array}{r} x + 2 \leq -7 \\ -2 \quad -2 \\ \hline x \leq -9 \end{array}$$

10. $\underline{-3x} - 5 + \underline{4x} > 8$

$$\begin{array}{r} x - 5 > 8 \\ +5 \quad +5 \\ \hline x > 13 \end{array}$$



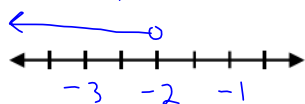
page 44

Example 1: Multiplying by a Positive Number

Solve and graph:

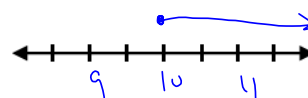
$$\text{a. } 2\left(\frac{x}{2}\right) < -1 \cdot 2$$

$$x < -2$$

Step 1: multiply
http://www.youtube.com/watch?feature=player_detailpage&v=sWrNyRaHzmc

$$\text{b. } \frac{5}{2}\left(\frac{2}{5}n\right) \geq 4 \cdot \frac{5}{2}$$

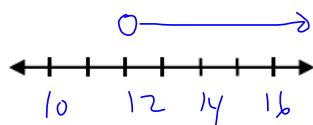
$$n \geq 10$$

Example 2: Multiplying by a Negative Number

Solve and graph:

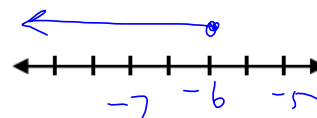
$$\text{a. } -3\left(-\frac{x}{3}\right) < -4 \cdot -3$$

$$x > 12$$

 Step 1: mult.
 Step 2: flip


$$\text{b. } \frac{-3}{2}\left(-\frac{2}{3}n\right) \geq 4 \cdot \frac{-3}{2}$$

$$n \leq -6$$



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3-4 Solving Multi-Step Inequalities

Example 1: Using More Than One Step

Solve and graph:

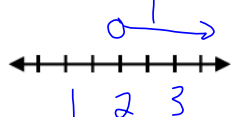
a. $7 + 6a > 19$

$6a > 12$

$a > 2$

Step 1: Solve

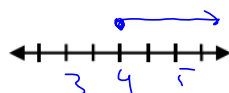
Step 2: _____



b. $-5x - 3 \leq -23$

$-5x \leq -20$

$x \geq 4$

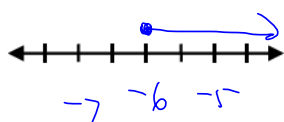
Step 1: add 3Step 2: div by -5Step 3: flip**Understanding Check:**

Solve each inequality and graph the solution:

a. $-3x - 4 \leq 14$

$-3x \leq 18$

$x \geq -6$

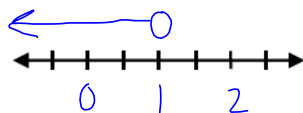


b. $5 < -2t + 7$

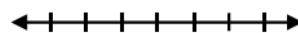
$-2 < -2t$

$1 > t$

$t < 1$



c. $5n + 22 < -8$

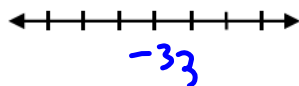
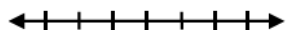


d. $-x + 22 \leq 14$

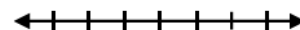
e. $\frac{x}{3} + 9 > -2$

$\frac{x}{3} > -11$

$x > -33$



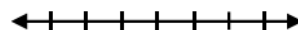
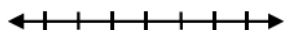
f. $-\frac{x}{4} + 5 > -1$



g. $-42 < -n + 6$

h. $2x + 8 \leq 8$

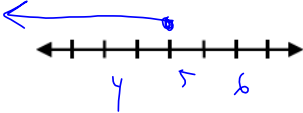
i. $-\frac{1}{4}x - 5 > -2$



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Example 3: Using the Distributive Property in Inequalities

Solve: $2(t+2) - 3t \geq -1$

$$\begin{array}{rcl}
 2t + 4 - 3t & \geq & -1 \\
 -1t + 4 & \geq & -1 \\
 -1t & \geq & -5 \\
 t & \leq & 5
 \end{array}$$


- Step 1: dist.
 Step 2: c.l.t.
 Step 3: SOLVE
 Step 4: flip
 Step 5: graph
 Step 6:

✓ Understanding Check:

Solve each inequality and check your solution mentally:

a. $4p + 2(p + 7) < 8$

b. $15 \leq 5 - 2(4m + 7)$

c. $8 > 3(5 - g) + 2$

$$\begin{array}{rcl}
 15 & \leq & 5 - 8m - 14 \\
 15 & \leq & -8m - 9 \\
 24 & \leq & -8m \\
 -3 & \geq & m
 \end{array}$$

