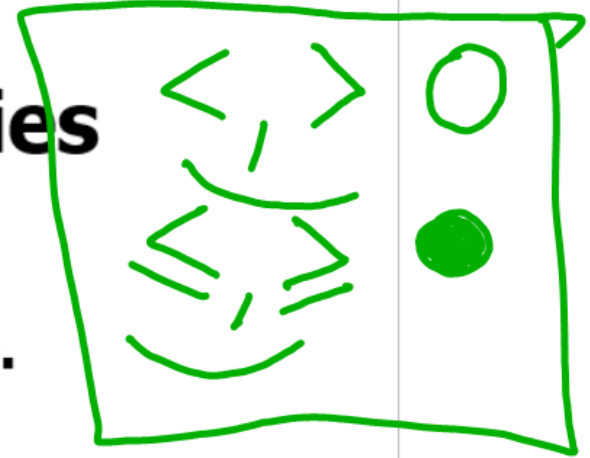


Notes: Solving Linear Inequalities

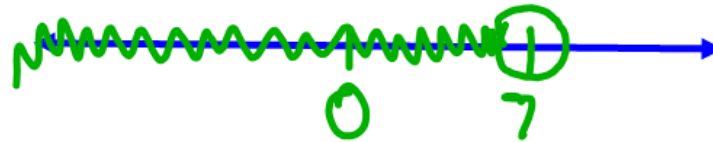


①

②

Solve and graph each solution using a number line.

$$\begin{array}{r}
 1. \quad 3x - 15 < 6 \\
 \quad \quad +15 \quad +15 \\
 \hline
 \quad \quad 3x < 21 \\
 \quad \quad \frac{3x}{3} < \frac{21}{3} \\
 \quad \quad \boxed{x < 7}
 \end{array}$$



2.

$$-2x - 3 \geq -11 + 2x$$

$$\begin{array}{r} +3 \quad +3 \\ \hline -2x \geq -8 + 2x \\ -2x \quad -2x \end{array}$$

$$\begin{array}{r} -4x \geq -8 \\ \hline -4 \quad -4 \end{array}$$

$$x \leq 2$$



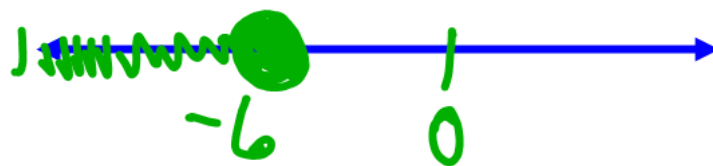
Divide by
a negative,
flip sign

$$3. \quad 17 - 3x \geq 35$$

$$\begin{array}{r} -17 \qquad \qquad -17 \\ \hline -3x \geq 18 \\ \hline -3 \qquad \qquad -3 \end{array}$$

$$\boxed{x \leq -6}$$

"FLIP!"



$$4. \quad 1 + 5(x - 8) \leq 2 - 1(x + 5)$$

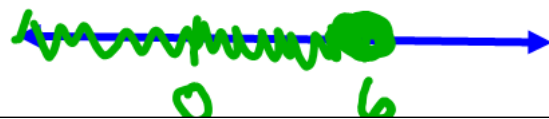
$$1 + 5x - 40 \leq 2 - x - 5$$

$$5x - 39 \leq -x - 3$$

$$5x \leq -x + 36$$

$$6x \leq 36$$

$$x \leq 6$$



5. $6(5x - 7) \geq 18$

$$\begin{array}{r} 30x - 42 \geq 18 \\ +42 \quad +42 \\ \hline \end{array}$$

$$\begin{array}{r} 30x \geq 60 \\ \hline \end{array}$$

$$\boxed{x \geq 2}$$



Define the variables. Write and solve a linear inequality.

6. Mrs. Adams rented a truck to move some furniture. The rental charge is \$120 per day plus \$0.20 per mile. She wants to spend no more than \$200, not including tax. What is the maximum number of miles that she can drive the truck?

$$\begin{array}{r} 120 + 0.20m \leq 200 \\ -120 \qquad \qquad -120 \\ \hline 0.20m \leq 80 \\ \hline 0.20 \qquad \qquad 0.20 \\ m \leq \boxed{400 \text{ miles}} \end{array}$$

7. Ron's scores on the first three of four 100-point chemistry tests were 90, 96, and 86. What score must he receive on the fourth test to have an average of at least 92 for all the tests?

$$\frac{90 + 96 + 86 + x}{4} \geq 92$$

$$~~4 \cdot \frac{272 + x}{4} \geq 92 \cdot 4~~$$

$$\begin{array}{r} 272 + x \geq 368 \\ -272 \quad \quad -272 \\ \hline x \geq 96 \end{array}$$

8. Jane works at a store where she earns a base salary of \$84 per week plus a commission of 5% of her sales. If Jane needs to make at least \$324 per week to meet her bills, what is the minimum amount of sales she needs to make?

$$\begin{array}{r} 84 + .05s \geq 324 \\ -84 \qquad \qquad -84 \\ \hline .05s \geq 240 \\ \hline .05 \qquad \qquad .05 \\ \hline s \geq \$4,800 \end{array}$$