

# 6.1 SOLVING INEQUALITIES IN ONE VARIABLE



Graph linear inequalities in one variable  
Solve linear inequalities in one variable

# REVIEW INEQUALITIES:

- Less than  $<$   $x < 5$
- Greater than  $>$   $x > -2$
- Less than or equal to  $\leq$   $x \leq 3$
- Greater than or equal to  $\geq$   $x \geq 0$



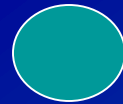
# TO GRAPH INEQUALITIES:

Use an open circle for  $<$  or  $>$  for which direction it will go.



then shade the line in

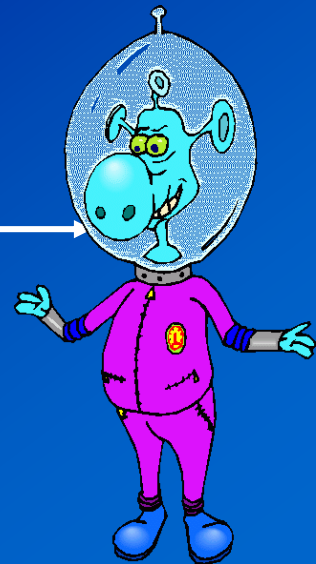
Use a closed circle for  $\leq$  or  $\geq$  for which direction it will go.



then shade the line in

Example:

$$x < 4$$



# WRITE AND GRAPH EACH OF THE FOLLOWING INEQUALITIES.

- The summer temperature  $T$ , in Phoenix is greater than or equal to 80 degrees.

$T \geq 80$  degrees



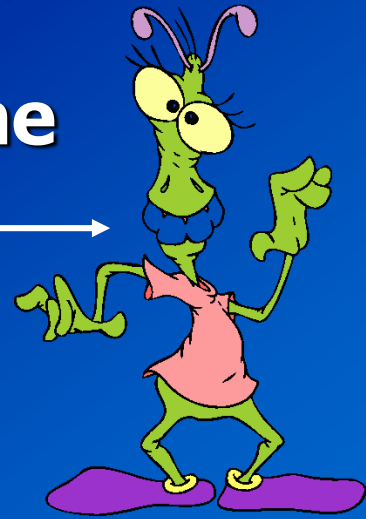
- The average snow fall is less than one inch.

$S < 1$  inch



- The class average is greater than or equal to 85%.

$A \geq 85\%$



# TIPS TO SOLVING LINEAR INEQUALITIES:

- Solve just like an equation
- Get the variable alone on one side
- Remember if you multiply or divide by a **negative number** to get the variable alone, reverse (change) the inequality symbol!



# Example: $2x + 3 > 4$

■ As an equation

$$\blacksquare 2x + 3 = 4$$

$$\quad -3 \quad -3$$

$$\blacksquare \underline{2x} = \underline{1}$$

$$\quad 2 \quad 2$$

$$x = \frac{1}{2}$$



■ As an inequality

$$\blacksquare 2x + 3 > 4$$

$$\quad -3 \quad -3$$

$$\blacksquare \underline{2x} > \underline{1}$$

$$\quad 2 \quad 2$$

$$x > \frac{1}{2}$$

Notice the x value is the same. Now graph your answer.

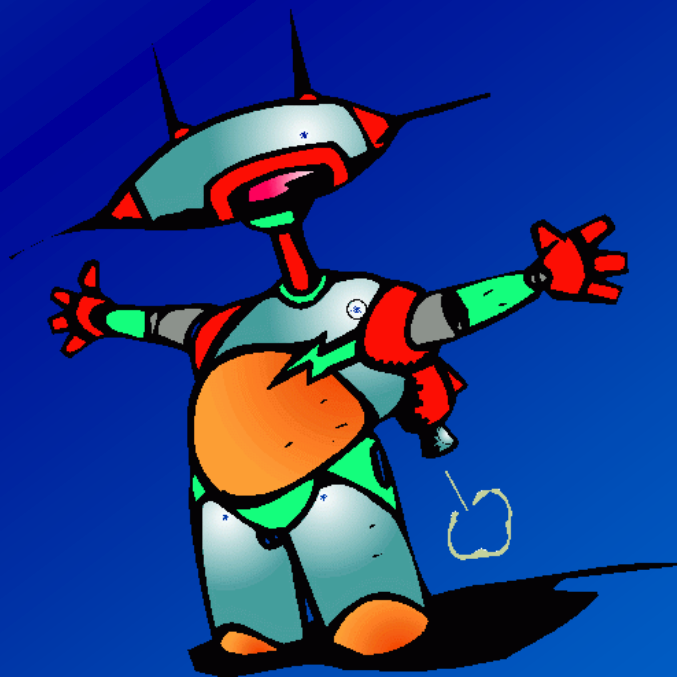


# Practice: solve and graph

■  $3 - x \geq 9$

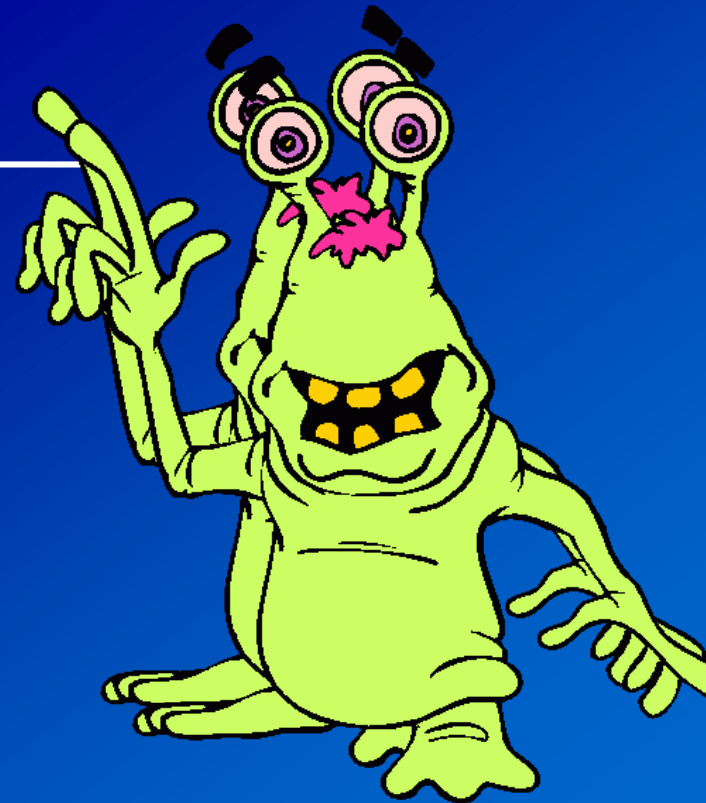
$$-x \geq 6$$

$$x \leq -6$$



$$\blacksquare x - 8 < -10$$

$$x < -2$$





$$\blacksquare x + 3 \leq 2(x-4)$$

$$\blacksquare x + 3 \leq 2x - 8$$

$$\blacksquare \frac{-x}{-x} \quad \frac{-x}{-x}$$

$$\blacksquare 3 \leq x - 8$$

$$\frac{\quad +8}{\quad +8}$$

$$\blacksquare 11 \leq x$$



In Owego, NY, the temperature in January may not exceed 0 degrees C. Write an inequality that describes temperature  $T$  for the month and graph it.

$$T \leq 0$$

