Solve: $-15 + n = -9$

$+15$

$n = 6$

Solve and Graph: $3 + v \leq -9$

-3

$\frac{-3}{v} \leq \frac{-3}{-12}$

$-15 \ -12 \ -11 \ -9$

Warm Up

Solving Equations and Inequalities

Multi-Step

Goals aligned to common core standards:

- You will create and solve linear equations and inequalities.

Solving Equations

-Check your answer. You can always make sure you have the right answer. Make sure it makes sense!!!!!

-Isolate the variable to one side of the equation with 1 being its coefficient by using opposite operations.

More variables, More steps!!!

$$11x - 4 = 29$$
$$+4 \quad\quad +4$$
$$\frac{11x}{11} = \frac{33}{11}$$
$$x = 3$$

$$\frac{1}{3}x + 6 = -5$$
$$-6 \quad\quad -6$$
$$\frac{1}{3}x = -11 \cdot 3$$
$$x = -33$$

$$26 - 10p + 1p = -1$$

$$26 - 9p = -1$$
$$-26 \qquad -26$$

$$\frac{-9p}{-9} = \frac{-27}{-9}$$

$$\boxed{p = 3}$$

$$-2 \cdot \frac{n+1}{-2} = 15 \cdot -2$$

$$n + 1 = -30$$
$$-1 \qquad -1$$

$$\boxed{n = -31}$$

If 2x + 1 = 5, what is 3x - 4?

$$-1 \quad -1$$

$$2x = 4$$

$$\boxed{x = 2}$$

$$3 \cdot 2 - 4$$

$$6 - 4$$

$$\boxed{2}$$

$$1 + \frac{r}{9} = 4$$

$-1 \qquad\qquad -1$

$$9 \cdot \frac{r}{9} = 3 \cdot 9$$

$$r = 27$$

$$6 - b = 5b + 30$$
$$+b \qquad +b$$

$$6 = 6b + 30$$
$$-30 \qquad -30$$

$$\frac{-24}{6} = \frac{6b}{6}$$

$$\boxed{-4 = b}$$

$$4x - 9 = 7x + 12$$

$$-4x \qquad\qquad -4x$$

$$-9 = 3x + 12$$

$$-12 \qquad\qquad -12$$

$$\frac{-21}{3} = \frac{3x}{3}$$

$$\boxed{-7 = x}$$

$$5y - 2y = 3y + 2$$

$$3y = 3y + 2$$

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

$$0 = 2$$

no solutions

Solving Inequalities

-Solve the inequality the same as an equation.
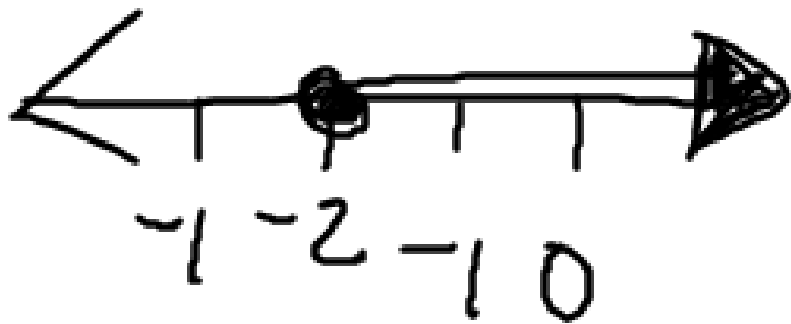
However, there is one rule!!!!!!!

When you multiply or divide both sides by a negative, you <u>FLIP</u> the inequality symbol.

$$5b - 1 \geq -11$$
$$\quad +1 \qquad\qquad +1$$
$$5b \geq -10$$
$$\frac{5b}{5} \geq \frac{-10}{5}$$
$$b \geq -2$$

$$8 - \frac{x}{3} \geq 11$$
$$-8 \qquad\qquad -8$$
$$-3 \cdot -\frac{x}{3} \geq 3 \cdot 3$$
$$x \leq -9$$

Goals aligned to common core standards:

- You can create and solve linear equations and inequalities.

*A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

*A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions