

INEQUALITIES

An **equation** contains an equal sign.

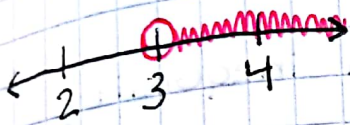
An **inequality** contains a less than ($<$, \leq) or greater than ($>$, \geq) sign.

Inequalities have more than one answer.

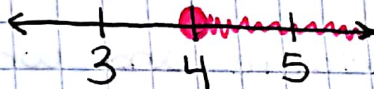
Graphing is a way of showing all the answers.

Examples: Graph the following inequalities on a number line.

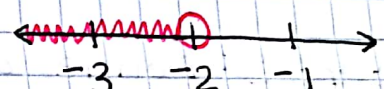
1) $x > 3$



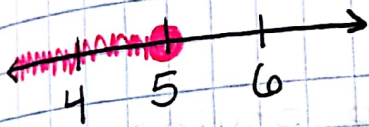
2) $x \geq 4$



3) $x < -2$



4) $x \leq 5$



5) $1 < x$



When drawing your number line, include at least one number above and one number below the number in the inequality.

● A closed circle includes the point ($=$).

○ An open circle does not include the point.

Solving inequalities is similar to solving equations. It is still important to maintain a **true** statement.

Rule

When solving inequalities, if you multiply or divide each side by a **negative** number, you must **flip** the inequality symbol.

Examples: Solve and graph your solution

$$1) 4y + 3 > 7$$

$$\frac{4y}{4} > \frac{4}{4}$$

$$y > 1$$

$$2) 3x \leq 11x + 4$$

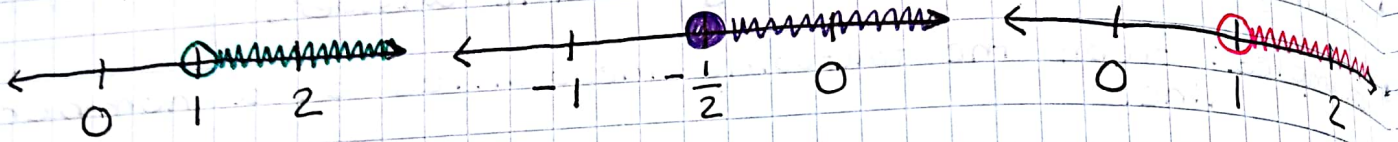
$$\frac{-8x}{-8} \leq \frac{4}{-8}$$

$$x \geq -\frac{1}{2}$$

$$3) 5 - x < 4$$

$$\frac{-x}{-1} < \frac{-1}{-1}$$

$$x > 1$$



Classwork: Solve each inequality. Graph the solution on a number line.

Examples: Define a variable and write an inequality for each situation.

1) If the speed limit on the highway is 55 mph, what speed **should** you go to avoid a ticket?

$$s \leq 55$$

2) If a help wanted sign advertises a job paying at least \$6.15 per hour, how much will you make if you get the job?

$$p \geq 6.15$$

You Try!