INEQUALITIES + THEIR GRAPHS

Additional Examples — Lesson 3-1

1 EXAMPLE **Is each number a solution of $x \geq 5$?**

a. -2 No, $-2 \geq 5$ is not true.

b. 10 Yes, $10 \geq 5$ is true.

c. $\frac{25}{5}$ Yes, $5 \geq 5$ is true.

2 EXAMPLE **Is each number a solution of $3 + 2x < 8$?**

a. -2 YES

$3 + 2x < 8$

$3 + 2(-2) < 8$ ← Substitute for x. →

$3 - 4 < 8$ ← Simplify. →

$-1 < 8$ ← Compare. →

-2 is a solution.

b. 3 NO

$3 + 2x < 8$

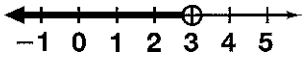
$3 + 2(3) < 8$

$3 + 6 < 8$

$9 < 8$

3 is not a solution.

3 EXAMPLE **a. Graph $d < 3$.** open circle

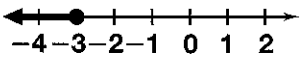


The solutions of $d < 3$ are all the points to the left of 3.

*Point arrow same way if variable is on left.

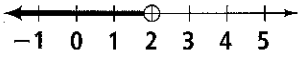
$9 \leq -3$

b. Graph $-3 \geq g$.

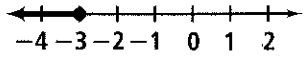


The solutions of $-3 \geq g$ are -3 and all the points to the left of -3.

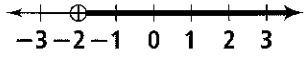
4 EXAMPLE **Write an inequality for each graph.**

a. 

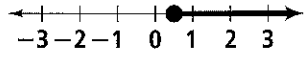
$x < 2$ — Numbers less than 2 are graphed.

b. 

$x \leq -3$ — Numbers less than or equal to -3 are graphed.

c. 

$x > -2$ — Numbers greater than -2 are graphed.

d. 

$x \geq \frac{1}{2}$ — Numbers greater than or equal to $\frac{1}{2}$ are graphed.

Pick a letter

5 EXAMPLE Define a variable and write an inequality for each situation.

a. A speed that violates the law when the speed limit is 55 miles per hour.

Let v = an illegal speed.

The speed limit is 55, so $v > 55$.

b. A job that pays at least $500 a month.

Let p = pay per month.

The job pays $500 or more, so $p \geq 500$.