

4.1 - Inequalities and Their Graphs

Vocabulary:

 $>$ \geq $<$ \leq



OBJECTIVE

1 EXAMPLE

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

a. -2

$$-2 \geq 5$$

no

b. 10

$$10 \geq 5$$

yes

c. $\frac{25}{5}$

$$5 \geq 5$$

yes

Mental Math Is each number following the inequality a solution of the given inequality?

1. $v \geq -5$; 4

$$4 \geq -5$$

yes

3. $b < 4$; -0.5

$$-0.5 < 4$$

yes

OBJECTIVE

1

2

EXAMPLE

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

a. -2

$$3 + 2(-2) < 8$$

$$3 + -4$$

$$-1 < 8$$

yes

b. 3

$$3 + 2(3) < 8$$

$$3 + 6$$

$$9 < 8$$

NO

$$x = -2$$

$$9. 3x - 7 > -1$$

$$3(-2) - 7 > -1$$

$$-6 - 7 > -1$$

$$-13 > -1$$

No

$$y = -5$$

$$11. 2y + 1 < -3$$

$$2(-5) + 1 < -3$$

$$-10 + 1 < -3$$

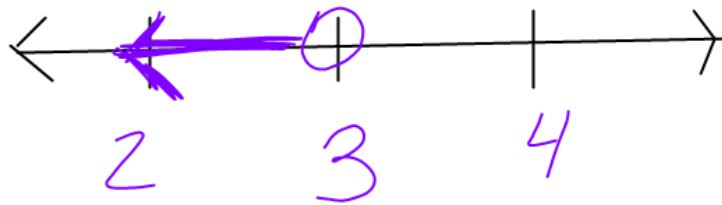
$$-9 < -3$$

Yes

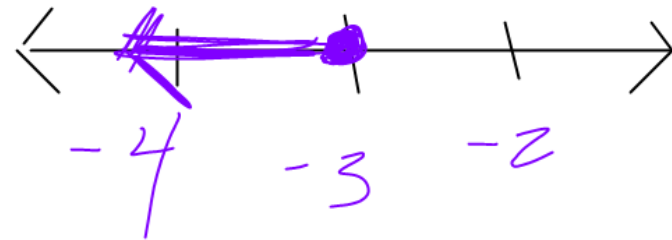
3 EXAMPLE

$<$ $>$ \rightarrow open circle
 \leq \geq \rightarrow closed circle

a. Graph $d < 3$.

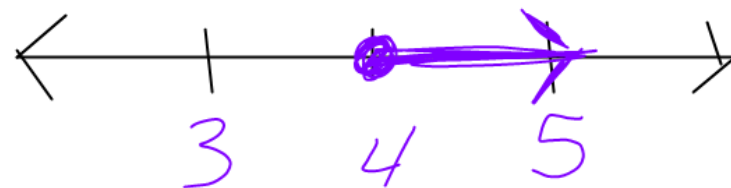


b. Graph $-3 \geq g$.



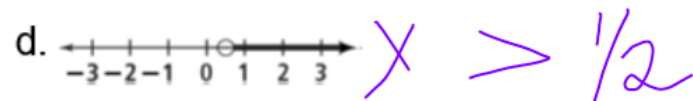
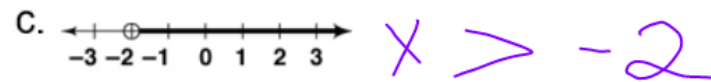
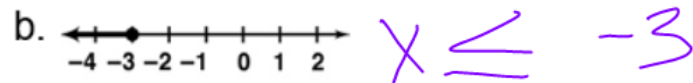
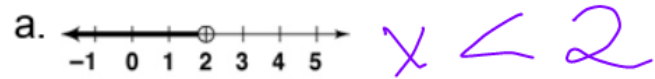
~~15. $x < 4$~~

~~16. $x \geq 4$~~

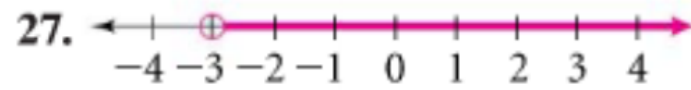


OBJECTIVE
2**4 EXAMPLE**

Write an inequality for each graph.



Write an inequality for each graph.



$$x > -3$$

OBJECTIVE

2

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 $s = \text{speed}$

$$s > 55$$

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

let $x = \text{money}$

$$x \geq 500$$

Define a variable and write an inequality to model each situation.

33. A bus can seat at most 48 students.

let b = bus seats

$$b \leq 48$$

Homework: pg.202 #10, 14, 20, 22, 28, 30, 34, 36, 44, 52, 80, 88