

## Lesson 3-6

## Example 1

Determine whether  $-5$  is a solution of  $x = 6$ ,  $x < 6$ , or  $x > 6$ .

## Solution

Substitute  $-5$  for  $x$  in each equation and inequality.

$x = 6$	$-5 = 6$	false
$x < 6$	$-5 < 6$	true
$x > 6$	$-5 > 6$	false

So  $-5$  is a solution of  $x < 6$ .

## Example 2

Graph the solution of each inequality on a number line.

a.  $x < 4$

b.  $x \geq -2$

## Solution

- a. Place an open circle on  $4$  to indicate that  $4$  is not a solution. Then shade to the left of  $4$  to show that all real numbers less than  $4$  are solutions of the inequality.



- b. Place a solid circle on  $-2$  to indicate that  $-2$  is a solution of the inequality. Then shade to the right of  $-2$  to show that all real numbers greater than or equal to  $-2$  are solutions of the inequality.



**Example 3**

**RESTAURANT** In order to eat free at Vinnie’s Diner, a customer must be 10 years of age or younger.

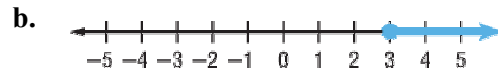
- Write an inequality that describes the age in years of customers who eat for free at the diner.
- Graph the solution of the inequality on a number line.

**Solution**

- Let  $a$  = the age of customers who eat for free at the diner. The inequality  $a \leq 10$  represents the ages.
- Place a solid circle on 10 to indicate that it is a solution of the inequality. Shade to the left to show that all ages less than or equal to 10 are solutions of the inequality.

**Example 4**

State the inequality that is represented on each number line.

**Solution**

- Since the circle on 2 is open, 2 is not a solution. The line is shaded to the left; therefore, all real numbers less than 2 are solutions of the inequality. So  $x < 2$ .
- Since the circle on 3 is closed, 3 is a solution. The line is shaded to the right; therefore, all real numbers greater than or equal to 3 are solutions of the inequality. So  $x \geq 3$ .