

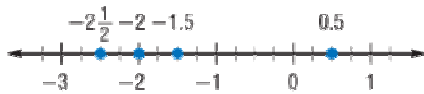
Lesson 2-1

Example 1

Graph the set of numbers $\left\{0.5, -2, -2\frac{1}{2}, -1.5\right\}$ on a number line.

Solution

Draw a number line. Use a solid dot to graph each number.



Example 2

Use a number line to compare numbers. Replace each \blacksquare with $<$, $>$, or $=$.

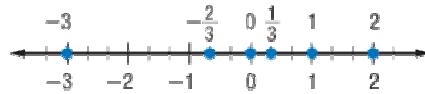
a. $-3 \blacksquare 2$

b. $1 \blacksquare 0$

c. $\frac{1}{3} \blacksquare -\frac{2}{3}$

Solution

Draw a number line and graph each number.



a. -3 is to the left of 2 , so $-3 < 2$.

b. 1 is to the right of 0 , so $1 > 0$.

c. $\frac{1}{3}$ is to the right of $-\frac{2}{3}$, so $\frac{1}{3} > -\frac{2}{3}$.

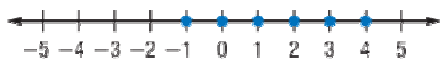
Example 3

Graph each set of numbers on a number line.

- a. the integers from -1 through 4 b. the real numbers from -1 through 4
 c. all real numbers less than or equal to 3 d. all real numbers greater than -2

Solution

- a. The set consists of $-1, 0, 1, 2, 3,$ and 4 . Put a solid dot at each of these points on the number line.



- b. The set consists of -1 and 4 and all real numbers between. Graph the set by drawing solid dots at -1 and 4 and connecting the two points.



- c. The set consists of 3 and all real numbers less than 3 . Graph the set by drawing an arrow beginning at 3 and pointing to the left. To indicate that 3 is part of the set, draw a solid dot at 3 .



- d. The set consists of -2 and all real numbers greater than -2 . Graph the set by drawing an arrow beginning at -2 and pointing to the right. To indicate that -2 is not part of the set, draw an open circle at -2 .

**Example 4**

Evaluate each expression.

- a. $-p$, when $p = 4.3$ b. $-(-m)$, when $m = -\frac{3}{4}$
 c. $|x|$, when $x = -9.9$ d. $-|-d|$, when $d = 15$

Solution

- a. Since $p = 4.3$, $-p = -4.3$.
 b. Since $m = -\frac{3}{4}$,

$$-(-m) = -\left[-\left(-\frac{3}{4}\right)\right] = -\frac{3}{4}, \text{ when } m = -\frac{3}{4}.$$

 c. Since $x = -9.9$, $|x| = |-9.9| = 9.9$.
 d. Since $d = 15$, $-|-d| = -|-15| = -15$.