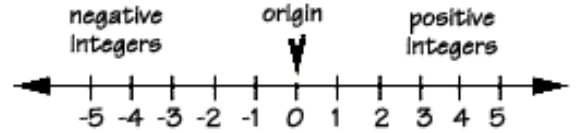
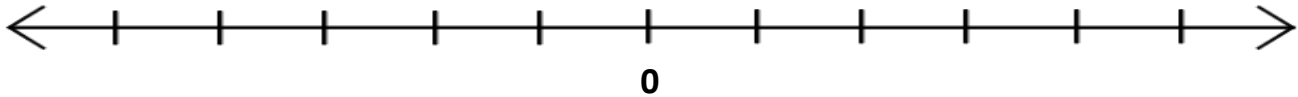


# Integers (SOL 6.3 a & b)

- An integer is any number from the set  $\{\dots, -4, -3, -2, -1, 0, 1, 2, 3, 4, \dots\}$  where ... means continues without end.
- Negative integers are integers \_\_\_\_\_ than zero.
- Positive integers are integers \_\_\_\_\_ than zero.
- \_\_\_\_\_ is neither negative nor positive. We call it the origin.



Number the number line from -5 to 5.



These numbers are **Integers**: 0; 3; -100; 432; 987,654,321;  $\frac{10}{2}$ ;  $-\frac{6}{3}$ ;  $\frac{99}{9}$

These numbers are **not Integers**: 7.2,  $\frac{10}{4}$ ,  $-\frac{5}{8}$ , -3.7

## Write Integers for Real-Life Situations

a gain of 5 yards on the first down.

6 feet below sea level

a temperature of 10 degrees below zero.

a \$35 withdrawal

**You Try! Underline key words**

a. Lost 6 points

h. 5000 feet above sea level

b. 3 strokes below par

i. 7 inches below normal

c. \$5 deposit

j. \$5 off the original price

d. A loss of \$30

k. ascend 100 meters

e. descend 20 meters

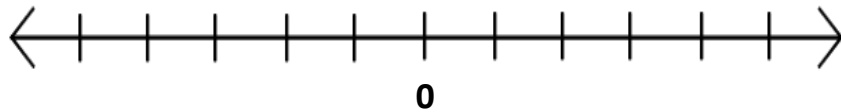
l. 10 strokes above par

f. 12 centimeters longer

m. 6 yard loss

## Graph an Integer on a Number Line

Graph  $-4$  on a number line. Then graph  $\frac{8}{2}$  on a number line. Which one is greater????



## Compare Integers

Use the  $>$ ,  $<$ , or  $=$  to make a true sentence.

$$-6 \bigcirc -4$$



$$\text{a. } 3 \bigcirc -5$$

$$\text{b. } -5 \bigcirc 0$$

$$\text{c. } 6 \bigcirc \frac{6}{2}$$

$$\text{d. } -3 \bigcirc -\frac{9}{3}$$

**Positive** numbers are always \_\_\_\_\_ than **negative** numbers

**Zero** is always \_\_\_\_\_ than a positive number, but \_\_\_\_\_ than a negative number.

When comparing **two negative** numbers, first imagine them on a number line.

Whichever negative number is closer to the zero is always \_\_\_\_\_.

## Order Integers

**SCIENCE** The average surface temperatures of Jupiter, Mars, Earth, and the Moon are shown in the table. Order the temperatures from least to greatest (in ascending order).

Name	Average Surface Temperature ( $^{\circ}\text{F}$ )
Jupiter	$-162$
Moon	$-10$
Mars	$-81$
Earth	$59$

Write the following integers in descending order.

$$-5, \frac{20}{4}, 3, -12, 8, -\frac{12}{3}$$

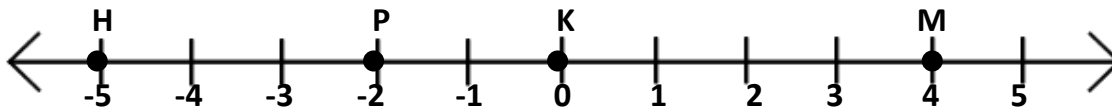
\_\_\_\_\_

??? Why is it better to have a positive bank account rather than a negative bank account?

Write an integer to represent the situation below:

- 1) sea level \_\_\_\_\_                      2) a withdraw of 42 dollars \_\_\_\_\_
- 3) 14 degrees below 0 \_\_\_\_\_                      4) an increase in height of 3 inches \_\_\_\_\_

Write the letter value represented by the point for each letter. Then find its opposite value.



- 5) K \_\_\_\_\_                      6) H \_\_\_\_\_                      7) M \_\_\_\_\_                      8) P \_\_\_\_\_

Compare using  $>$ ,  $<$ , or  $=$

- 9)  $-32 \bigcirc 14$                       10)  $11 \bigcirc -4$                       11)  $-9 \bigcirc \frac{27}{3}$                       12)  $-10 \bigcirc -12$

Order the following from least to greatest (ascending order).

13)  $-8, \frac{20}{2}, 2, -13, -5, \frac{6}{2}$  \_\_\_\_\_

14)  $-22, -11, \frac{44}{4}, 0, -14, 22, -\frac{30}{3}$  \_\_\_\_\_

Order the following from greatest to least (descending order).

15)  $-\frac{81}{9}, -19, 19, 99, -99, \frac{18}{2}$  \_\_\_\_\_

# 8-1 Practice: Word Problems

## Integers

1. **MONEY** Katryn owes her father \$25. Write this number as an integer.

2. **GEOGRAPHY** Mt. Whitney in California is 14,494 feet above sea level. Write this number as an integer.

3. **GEOGRAPHY** Badwater in Death Valley is 282 feet below sea level. Write this number as an integer.

4. **SCHOOL** Dick forgot to put his name on his homework. His teacher deducts 5 points for papers turned in without names on them. So, Dick lost 5 points from his score. Write this number as an integer.

5. **GEOGRAPHY** Multnomah Falls in Oregon drops 620 feet from the top to the bottom. Suppose a log is carried by the water from the top to the bottom of the falls. Write the integer to describe the location of the log now.

6. **TRAVEL** The train left the station and traveled ahead on the tracks for 30 miles. Write an integer to describe the new location of the train from the station.

7. **WEATHER** The table shows the average normal January temperature of four cities in Alaska. Compare the temperatures of Barrow and Fairbanks, using  $<$ ,  $>$ , or  $=$ . Then compare the temperatures of Barrow and Anchorage.

City	Temperature (°F)
Anchorage	15
Barrow	-13
Fairbanks	-10
Juneau	24

8. **WEATHER** Use the table from Exercise 7. Write the temperatures of the four cities in order from highest to lowest temperature.

# 8-1

# Study Guide and Intervention

## Integers

An **integer** is any number from the set  $\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$  where  $\dots$  means *continues without end*. You can use a number line to compare integers. On a number line, the number on the left is always less than the number on the right. **Opposite integers** are the same distance from zero on opposite sides of the number line.

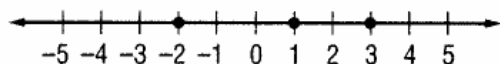
**EXAMPLE 1** Write an integer to show 3 degrees below zero.

Numbers *below zero* are negative numbers.

The integer is  $-3$ .

**EXAMPLE 2** Order the integers 1,  $-2$ , and 3 from least to greatest.

Graph each integer on a number line. Then compare.



The order from least to greatest is  $-2$ , 1, and 3.

### EXERCISES

Write an integer to describe each situation.

1. 4 degrees below zero

2. a gain of 2 points

Replace each  $\circ$  with  $<$ ,  $>$ , or  $=$  to make a true sentence.

3.  $-2 \circ 0$

4.  $3 \circ -3$

5.  $-9 \circ -9$

Write the opposite of each integer.

6. 3

7.  $-2$

8. 1

9.  $-4$

Order each set of integers from least to greatest.

10.  $-2, 3, 0, -1, 1$

11.  $3, -3, -2, 1, -1$

12.  $5, -7, -2, 1, 9$

13.  $-2, 1, 5, -5, 0$

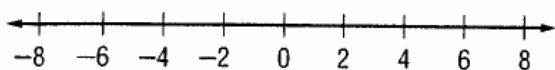
# 8-1 Practice: Skills

## Integers

Write an integer to describe each situation.

1. a loss of 8 yards
2. an increase of 2 inches
3. 5 feet above sea level
4. a decrease of 6 members
5. scored 10 fewer points
6. earned 7 dollars interest
7. a gain of 5 pounds
8. 4 degrees below normal

Graph each integer on the number line.



9. 0
10. -3
11. 4
12. +6
13. -5
14. 1
15. -8
16. 7

Replace each  $\square$  with  $<$ ,  $>$ , or  $=$  to make a true sentence.

17.  $-9 \square 8$
18.  $0 \square -1$
19.  $+6 \square 6$
20.  $-3 \square 3$
21.  $12 \square -21$
22.  $-12 \square -10$
23.  $5 \square -5$
24.  $-83 \square -80$
25.  $-9 \square -9$
26.  $-57 \square -75$
27.  $-56 \square 56$
28.  $0 \square 0$

Write the opposite of each integer.

29. -2
30. +6
31. -9
32. +8
33. -7
34. +10
35. +14
36. +12

Order each set of integers from least to greatest.

37. 2, -6, -2, 0
38. 9, -8, 4, -9
39. 5, -3, -11, 9
40. -3, 2, -4, -17