

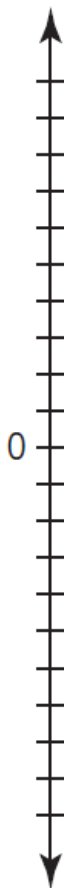
Warm-Up



Plot each set of numbers on the number line and describe the relationship between the numbers.

1. 3 and -3

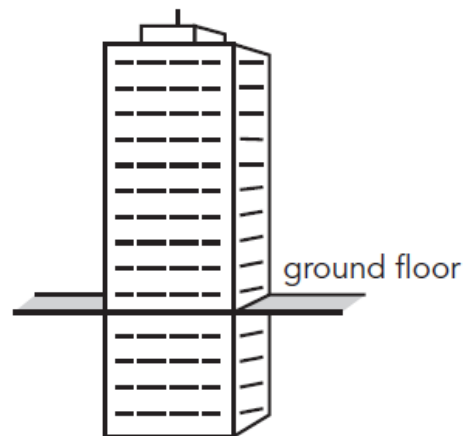
2. 6.6 and -6.6



Once you have completed the warm-up continue with the lesson, Do Not wait



1. In many buildings, particularly outside of the United States, the ground floor of a building is labeled as G or Lobby. The first floor of the building is one floor above the ground floor. The building pictured has a lobby, 10 floors of offices, and 4 floors of garage below the lobby.



a. Melanie has an office on the 9th floor and parks on the 3rd floor below the ground floor. Taylor and Cecelia are determining how many floors Melanie must go up from her car to reach her office.

Taylor represents the 9th floor as 9 and the 3rd floor below ground as -3 . Therefore, since $9 - 3 = 6$, Melanie traveled 6 floors to get from her car to her office.

Cecelia says that the ground floor to the 9th floor is 9 floors, and from the ground floor to the 3rd garage level is 3 floors. Melanie traveled $|9| + |-3| = 9 + 3 = 12$ floors.

Who is correct? Explain your reasoning.

Write a numeric expression using absolute values that would represent each situation. Then calculate the answer.

b. Caleb parks his car on the 2nd floor below ground and works on the 7th floor. How many floors must he go up from his car to reach his office?

c. Lucinda is working on the 8th floor. At lunch, she goes to her car on the 4th floor below ground, and then back up to the lobby. How many total floors does Lucinda travel?

d. If Damon goes from his office on the 10th floor to a meeting on the 5th floor, how many floors does he travel and in which direction?

2. The Top Notch company's bank balances are shown. The table represents the first 10 weeks of operation. Overdrafts are represented by amounts within parentheses.

Week	1	2	3	4	5	6	7	8	9	10
Balance	\$159.25	(\$201.35)	\$231.57	(\$456.45)	(\$156)	(\$12.05)	\$281.34	\$175	\$192.34	\$213

a. Use estimation to determine the gains/losses between consecutive weeks.

b. Between which two weeks did Top Notch have the largest gain in money? What was the actual gain?

c. Between which two weeks did Top Notch have the largest loss in money? What was the actual loss?

d. What was the difference between the company's lowest balance and its highest balance?

e. Order the estimated gains and losses that you determined in part (a) from least to greatest. Use a negative sign to indicate losses.

f. Order the estimated gains and losses that you determined in part (a) from least to greatest according to their absolute values. What does the absolute value mean in the context of this problem?

g. Why are the orders different in parts (e) and (f)?

3. As part of a long-term science experiment, two rulers were connected at zero and used to measure the water level in a pond. The connected rulers were placed in the pond so that the water level aligned at zero. The water level was measured each week for 10 weeks.

Week	1	2	3	4	5	6	7	8	9	10
Water level	$2\frac{3}{4}$	$-2\frac{1}{8}$	$1\frac{7}{8}$	$-\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{8}$	$-\frac{7}{8}$	$1\frac{1}{4}$	-2	$-\frac{3}{16}$

a. What do the positive numbers represent? What do the negative numbers represent?

b. Between which two weeks did the water level change the most? What was the change?

c. Between which two weeks did the water level change the least? What was the change?

d. How much did the water level change between Weeks 4 and 5? What was the change?



Show You KNOW

You Absolutely MUST Compare These!

Insert a $>$, $<$, or $=$ symbol to make each statement true. Justify each answer in terms of the definition of absolute value and number lines.

1. $|-4.67|$ _____ $|3|$

2. $|-15|$ _____ $|15|$

3. $|25\frac{9}{10}|$ _____ $|-33\frac{2}{3}|$

4. $|13.45|$ _____ $|-27|$

5. $|-15.34|$ _____ $|-1\frac{11}{12}|$

6. $|-19\frac{1}{2}|$ _____ $|5.5|$



LESSON 10.2b Magnificent Magnitude



Objective

Absolute Value

Practice

1. Julio is a wrestler for his high school wrestling team in the winter. Julio needs to stay around 140 pounds in the off-season. He charted his weight over the summer by listing the differences his weight was from 140 pounds. He uses negative numbers when his weight was under 140 pounds and positive numbers when his weight was above 140 pounds.

Week	1	2	3	4	5	6	7	8	9	10	11	12
Weight Difference	+4.5	+2.1	-1.5	-0.5	-2.5	+1.5	-3.75	-2.8	0	+1.3	-1.5	-5

a. Was the amount his weight varied from 140 pounds in week 4 more or less than the amount it varied from 140 pounds in week 8?

Insert a $>$, $<$, or $=$ symbol to make the statement true. Explain your answer.

$$|-0.5| \bigcirc |-2.8|$$

b. Was the amount his weight varied from 140 pounds in week 6 more or less than the amount it varied from 140 pounds in week 11?

Insert a $>$, $<$, or $=$ symbol to make the statement true. Explain your answer.

$$|+1.5| \bigcirc |-1.5|$$

c. Use absolute values to determine the difference in Julio's weight from week 7 to week 10.

d. Use absolute values to determine the difference in Julio's weight from week 8 to week 12.