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What, Me Negative?
Introduction to Negative Integers

Vocabulary

Choose the term or terms from the box that best complete each statement.

| positive sign | negative numbers | negative sign | infinity | integers |

1. Numbers to the left of zero on the number line are called _____
   and are labeled with a _____.

2. You can write a positive number with a _____ or without any sign.

3. The symbol ∞ means _____, which means a quantity without bound or end.

4. Attaching a _____ to a number means reflecting the number across
   zero on the number line.

5. The _____ are the set of whole numbers with their opposites.
   They can be represented by the set {. . . −5, −4, −3, −2, −1, 0, 1, 2, 3, 4 . . .}.

Problem Set

Write the negative or positive number for each description.

1. You park on the fifth level down in an underground parking lot.

   −5

2. You take the elevator to the fourteenth floor.

3. The company posted a yearly profit of one million dollars.

4. The temperature is seven degrees below zero Fahrenheit.

5. The submarine dove five hundred feet under water.

6. The plane flew at an elevation of thirty thousand feet.

7. The investment account lost eight hundred forty-five dollars.

8. The temperature dropped fifteen degrees.

10

9. The football team gained twenty-three yards on the play.

10. Your body temperature is ninety-nine degrees Fahrenheit.

Order the integers in each from least to greatest.

11. 45, 26, −120, 5, −12, −45

−120, −45, −12, 5, 26, 45

12. −23, 325, −235, −7, 67, −57

13. 14, −25, 25, −14, 37, −37

14. 0, 115, −35, 32, −116, 92

15. −12, 4, −26, 1, −4, 56

16. −2, 31, −5, 27, 0, 90

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Label each number as a positive integer, a negative integer, or not an integer.

17. +26

positive integer

18. $\frac{1}{8}$

19. −4

20. 15.8

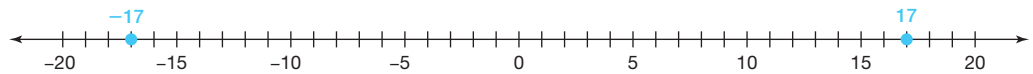**21.** $-\frac{3}{4}$

22. −39

23. 81

24. −2.7
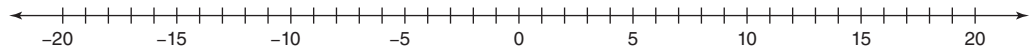
Determine the opposite of each integer. Then graph the integer and its opposite on the number line.
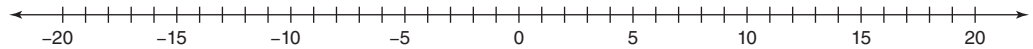
25. 17

−17

26. 6

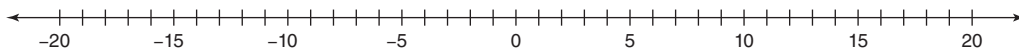
27. −14

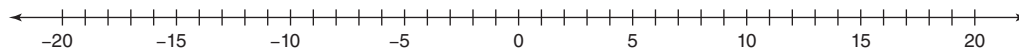**28.** −11

29. 8

30. −3
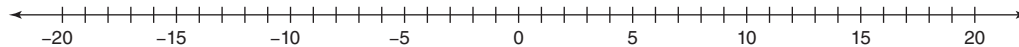
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Number Sets
Number Systems

Vocabulary

Define each term in your own words.

1. Density Property

2. fractional numbers

3. rational numbers

Problem Set

Rewrite each number as a rational number $\left(\dfrac{a}{b}\right)$. Then identify the values of a and b.

1. 7

$\dfrac{7}{1}$; $a = 7$ and $b = 1$

2. -23

3. -4.9

4. $-\dfrac{2}{3}$

5. $-6\dfrac{11}{12}$

6. -0.058

Write all of the number sets to which each number belongs.

| natural numbers   whole numbers   integers   rational numbers |

7. 7   **8.** 4.98

natural numbers, whole numbers, integers,
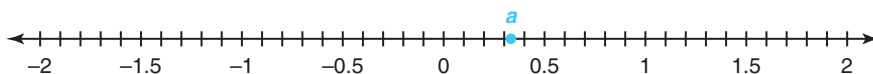rational numbers

9. −5   **10.** $\frac{3}{4}$

11. 0.549   **12.** −6.2

13. 0   **14.** $-\frac{5}{8}$

15. −4,698,820   **16.** 1

Plot each number on the number line.

17. $a = \frac{1}{3}$ **18.** $b = -0.28$ **19.** $c = -\frac{7}{10}$

20. $d = 1.67$ **21.** $e = 0.09$ **22.** $f = 1.005$
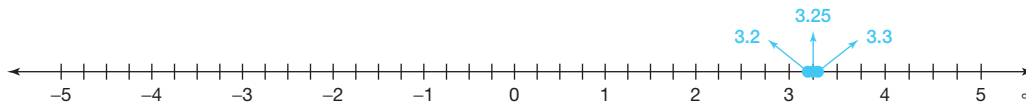
23. $g = -1.98$ **24.** $h = 1\frac{4}{5}$
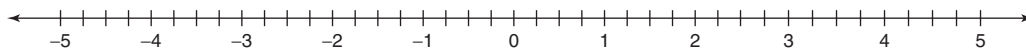
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Graph the rational numbers in each pair. Then determine a rational number that lies between the given pair of rational numbers.
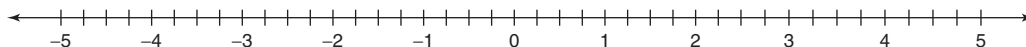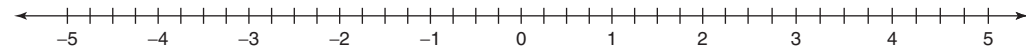
25. 3.2 and 3.3

Answers will vary. 3.25
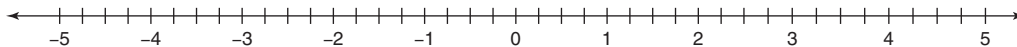
26. $1\frac{1}{4}$ and $1\frac{1}{2}$

27. -0.7 and -0.8

28. $-4\frac{2}{3}$ and -5

29. −2.6 and −2.7

30. 0.3 and 0.4
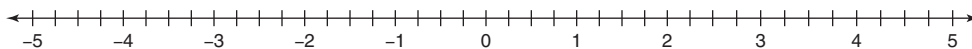
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Ordering and Absolute Value
Ordering the Rational Numbers

Vocabulary

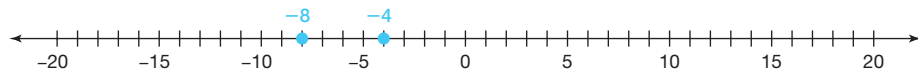**1.** Write a definition for *absolute value* in your own words.
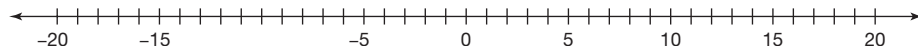
Problem Set

Plot each integer on the number line. Then, insert a $>$, $<$, or $=$ symbol to make the number sentence true.
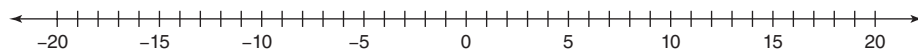
1. $-4 \boxed{>} -8$

2. $6 \boxed{} -10$

3. $-16 \boxed{} -16$

4. $-18 \boxed{} -11$

5. $-3 \boxed{} -14$

6. $-9 \boxed{} 2$
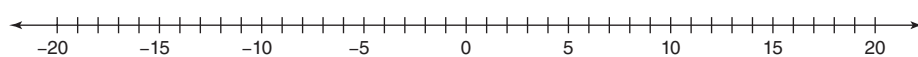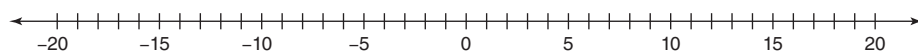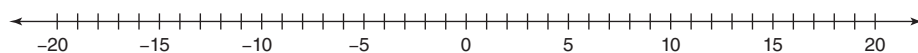
Order the rational numbers in each set from least to greatest.

7. 4.2, 3.10, $4\frac{1}{8}$, 3.01, 2.3, $2\frac{4}{5}$, 3.017

2.3, $2\frac{4}{5}$, 3.01, 3.017, 3.10, $4\frac{1}{8}$, 4.2

8. 6.84, $8\frac{5}{7}$, 6.34, $6\frac{1}{4}$, $8\frac{3}{10}$, 8.15

9. 1.98, 0.23, 0, 1.89, $1\frac{3}{5}$, 1.02, $\frac{3}{2}$

10. −2.35, 2.35, 2.54, −2.54, 2.01, −2.01

11. 9.3, $-5\frac{3}{5}$, 9.90, $9\frac{8}{11}$, 3.78, 3.9, $-5\frac{1}{6}$

12. −0.02, 0, −6.98, $2\frac{1}{16}$, 2.2, −6.89, 2.01

Determine the absolute value of each integer to complete the number sentence.

13. $|-9|$ = ___9___

14. $|4|$ = _____

15. $|35|$ = _____

16. $|-12|$ = _____

17. $|-28|$ = _____

18. $|72|$ = _____

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Insert a >, <, or = symbol to make each number sentence true.

19. $|-6|$ [>] $|2|$

$|-6|$ [?] $|2|$

6 [?] 2

6 [>] 2

20. $|36|$ [ ] $|-51|$

21. $|42|$ [ ] $|-42|$

22. $|-28|$ [ ] $|19|$

23. $|-13|$ [ ] $|24|$

24. $|-67|$ [ ] $|-35|$

Simplify each number sentence.

25. $|-5| + |3| = $ ___8___

$|-5| + |3| = 5 + 3 = 8$

26. $|-35| - |-11| = $ _____

27. $|-52| - |0| = $ _____

28. $|-12| + |-9| = $ _____

29. $|24| + |-16| = $ _____

30. $|-16| - |-8| = $ _____

Write the absolute value statement and the negative or positive number for each situation.

31. You entered a below-ground parking garage at street level and parked on the fifth level down.

You drove down 5 levels; −5

32. You entered an office building on the second floor and took the elevator to the fourteenth floor.

33. The company posted a yearly profit of two million dollars. Last year their profits were half as much.

34. The temperature went from two degrees Fahrenheit below zero to nine degrees below zero.

35. The submarine dove from the surface to five hundred feet under water.

36. The plane took off from the ground and flew to an elevation of thirty thousand feet.

37. The investment account went from fifty thousand dollars to forty-nine thousand one hundred fifty-five dollars.

38. The water level in the pond went from twenty-three feet six inches to twenty-three feet one inch.

39. The quarterback threw the ball from the twenty-three yard line to the forty-six yard line.

40. Your temperature changed from ninety-eight degrees Fahrenheit to one hundred two degrees Fahrenheit.

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Elevators, Making Money Redux, and Water Level
Solving Problems with Rational Numbers

Problem Set

Carla lives on the 21st floor of her apartment building. Her assigned parking spot is on the 6th level below ground. Her friend Nicole lives on the 14th floor and the building's gym is on the 3rd floor. Write an expression using absolute value for each situation, and then calculate the answer.

1. How many floors does Carla travel to get home after she parks her car?

$$|-6| + |21| = 6 + 21$$
$$= 27$$

Carla travels up 27 floors.

2. How many floors would Carla travel if she leaves the gym and goes straight to her car?

3. How many floors does Carla travel if she leaves her apartment to visit Nicole?

4. If Nicole's parking space is one level up from Carla's, how many floors up does Nicole travel to get from her car to her apartment?

5. How many floors does Carla travel if she leaves her apartment and goes to the gym?

6. If Nicole meets Carla at the gym in the mornings, how many floors down do both women travel altogether to get from their apartments to the gym?

10

The table shows the gains and losses of an investment account. The account was opened with an initial amount of $1000. Use an absolute value expression to answer each question.

Month	1	2	3	4	5	6	7	8
Gain or Loss	($356.94)	$2304.37	$1450.76	($200.40)	($10.13)	$725.15	($509.28)	$162.23
	−356.94							

7. Rewrite the loss amounts in the table as negative numbers.

8. Between which two months did the account post the greatest gain? What was this gain?

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9. Between which two months did the account see the worst loss? What was this loss?

10. What is the difference between the account's best and worst months?

10

11. What was the difference between the account's performance between months 2 and 3? Is the difference a decline or an increase in profits? Express the difference as a positive or negative integer.

12. What was the value of the account at the end of the first month?

Tyler measured the rainfall and evaporation using a rain gauge in his backyard for 8 days. Tyler marked his rain gauge with values from −6 inches to +6 inches and filled the gauge with water to the zero mark. For each question, write an expression using absolute value and then calculate the answer.

Days	1	2	3	4	5	6	7	8
Gauge Reading	0.5	−1.3	3.7	4.2	2.1	−0.9	−2.4	5.6

13. On how many days out of the eight did it rain?

It rained on five days: 1, 3, 4, 5, 8.

10

14. Between which two readings did it rain the most? How many inches of rain were recorded?

15. Between which two readings was evaporation the greatest? How many inches of water evaporated?

16. Calculate the gain or loss of water in the rain gauge between days 1 and 2. Express the change in the water level in the gauge as a positive or negative number.

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17. Calculate the gain or loss of water in the rain gauge between days 2 and 3. Express the change in the water level in the gauge as a positive or negative number.

18. Calculate the gain or loss of water in the rain gauge between days 3 and 4. Express the change in the water level in the gauge as a positive or negative number.

19. Calculate the gain or loss of water in the rain gauge between days 6 and 7. Express the change in the water level in the gauge as a positive or negative number.

10