



TABE

MATH - D

Unit - 1

Lesson - 1

Positive and Negative  
Numbers

Revised: March 10, 2024

Nolan Tombouliau

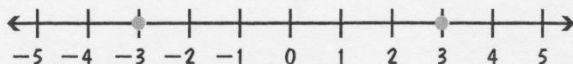
# Lesson 1

## Positive and Negative Numbers

6.NS.5 – Medium, 6.NS.6.a – Medium

You can use both **positive** and **negative** numbers to represent quantities and situations. Negative numbers have a value of less than zero and are located to the left of zero on the number line. Positive numbers have a value of greater than zero and are located to the right of zero on the number line.

In real-world problems, negative numbers are used to indicate a decrease or a value below 0 or any set point on the number line. Positive numbers are used to indicate an increase or value above zero or any set point.



**Opposites** are numbers located the same distance from zero on the number line but in opposite directions. For example, the opposite of  $-3$  is  $3$ , because both numbers are located 3 units from zero on a number line. This can be written as  $-(-3) = 3$ , because the first “ $-$ ” calls for the opposite of the number within the parentheses,  $-3$ .

**Example** Raymond made a \$40 withdrawal from his checking account after depositing his paycheck of \$279.19. Represent these situations as signed numbers.

- 1) Think about the impact of these situations on the balance of Raymond’s account. What effect do they have on the balance of Raymond’s account balance?
- 2) Determine whether the change in the account would be represented as a positive or negative number.

withdrawal      decreases account balance

deposit          increases account balance

decrease          negative number ( $-$ )

increase          positive number ( $+$ )

- 3) Write the number. Include the sign if the number is negative.

A withdrawal of \$40 is represented as  $-40$ . A deposit of \$279.19 would be represented as  $279.19$ .

### Test Example

1. What is the opposite of 55?  
A.  $\frac{1}{55}$                       B.  $-\frac{1}{55}$   
C.  $-55$                       D.  $55$

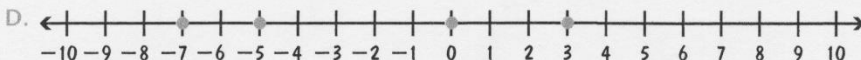
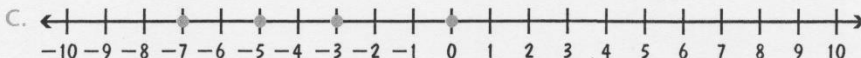
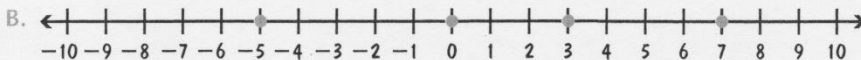
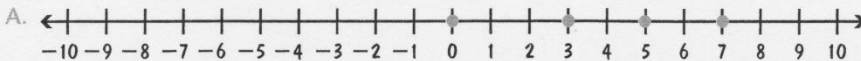
1. C The opposite of 55 has the same digits but a different sign.

### Strategy

Opposite numbers have the same digits but different signs.

Read each question. Select the correct answer.

- 1 Which number line shows the opposites of 5,  $-3$ , 0, and 7.



- 2 The highest temperature on Earth ever recorded was  $136^\circ$  Fahrenheit. The coldest temperature ever recorded was  $126^\circ$  Fahrenheit below zero. Represent these situations as signed numbers.

- A. 136, 126      B.  $-136$ , 126  
C.  $-136$ ,  $-126$       D. 136,  $-126$

- 3 Describe the location of 10 and  $-10$  with respect to 0 on a number line.

- A. 10 is to the left of 0, and  $-10$  is to the left of 0.  
B. 10 is to the right of 0, and  $-10$  is to the right of 0.  
C. 10 is to the right of 0, and  $-10$  is to the left of 0.  
D. 10 is to the left of 0, and  $-10$  is to the right of 0.

- 4 Which situation would be represented with a negative number?

- A. The average low temperature in New York City in January is  $27^\circ\text{F}$ .  
B. The height of Mount Whitney is 14,494 feet.  
C. The lowest temperature recorded in the United States was  $80^\circ\text{F}$  below zero in Prospect Creek, Alaska on January 23, 1971.  
D. The Peregrine Falcon can fly at speeds of up to 240 miles per hour.

- 5 Select the pair of numbers that lie on opposite sides of 0 on a number line.

- A. 125, 215  
B.  $-52$ , 52  
C.  $-17$ ,  $-35$   
D.  $2$ ,  $\frac{1}{2}$

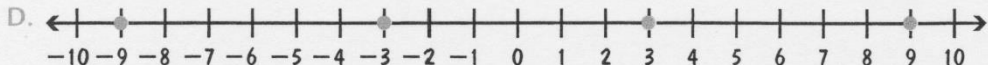
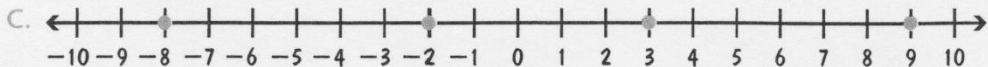
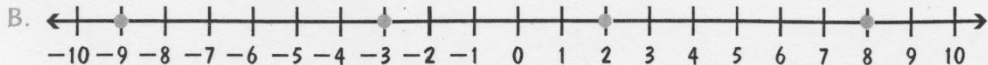
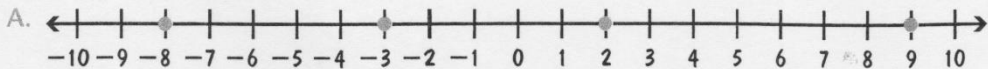
- 6 What is the value of  $-(-25)$ ?

- A.  $-25$   
B.  $\frac{1}{25}$   
C. 25  
D. 0

- 7 How would you represent a submarine depth of 1,500 feet below sea level?

- A. 1,500  
B.  $-1,500$   
C.  $-(-1,500)$   
D.  $\frac{1}{1500}$

- 8 Which number line shows the opposites of  $-8$ ,  $3$ ,  $9$ , and  $-2$ ?



- 9 Megan and Kyle are on vacation. Megan decides to hike a local mountain that has an elevation of 1,237 meters. Kyle decides to go scuba diving to a coral reef located 15 meters below sea level. Represent these situations as signed numbers.

- A. 1,237, 15  
B.  $-1,237$ ,  $-15$   
C.  $-1,237$ , 15  
D. 1,237,  $-15$

- 10 What is the opposite of 37?

- A.  $\frac{1}{37}$   
B.  $-\frac{1}{37}$   
C. 37  
D.  $-37$

- 11 For which value of  $n$  is  $-(-n)$  a positive number?

- A.  $-21$   
B. 0  
C.  $-5$   
D. 21

- 12 Which situation would be represented by the opposite of 52?

- A. A checking account deposit of \$52  
B.  $52^\circ\text{F}$   
C. A depth of 52 feet below sea level  
D. A gain of 52 yards in a football game

- 13 A checking account is overdrawn by \$42. How would you represent the deposit necessary to bring the account balance to \$0?

- A. 0  
B. 42  
C.  $-42$   
D.  $-(42)$

- 14 A submarine is at a depth of 1,300 feet below sea level. An airplane is flying at an altitude of 35,000 feet. Represent these situations as signed numbers.

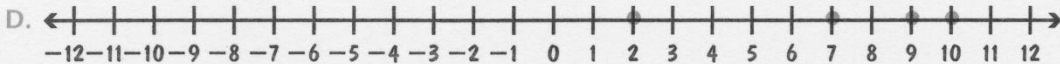
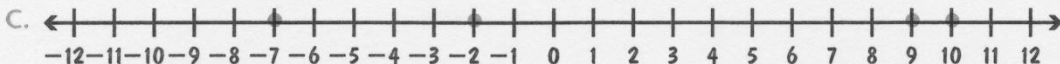
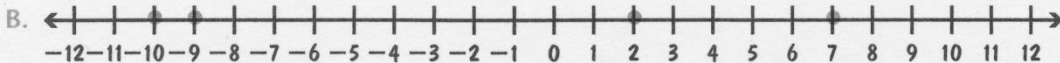
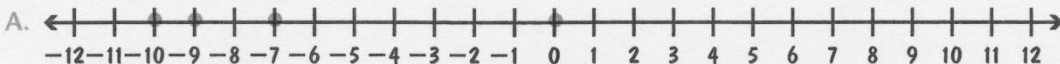
- A. 1,300; 35,000  
B.  $-1,300$ ;  $-35,000$   
C. 1,300;  $-35,000$   
D.  $-1,300$ ; 35,000

# Practice 1

# Positive and Negative Numbers

6.NS.5 – Medium, 6.NS.6.a – Medium

- 1 Which number line shows the opposites of 7,  $-10$ , 2, and  $-9$ ?



- 2 Describe the location of 23 and  $-23$  with respect to zero on a number line.

- A. 23 is to the left of 0, and  $-23$  is to the right of 0.  
 B. 23 is to the right of 0, and  $-23$  is to the left of 0.  
 C. 23 is to the right of 0, and  $-23$  is to the right of 0.  
 D. 23 is to the left of 0, and  $-23$  is to the left of 0.

- 3 What is the value of  $-(-57)$ ?

- A.  $-57$                       B. 0  
 C.  $\frac{1}{57}$                         D. 57

- 4 How would you represent the elevation of Death Valley, CA, which is 282 feet below sea level?

- A. 282                              B.  $-(-282)$   
 C.  $\frac{1}{282}$                          D.  $-282$

- 5 Which pair of numbers are opposite numbers?

- A.  $-442, 342$                 B.  $-29, 29$   
 C.  $5, \frac{1}{5}$                             D. 113, 114

- 6 Steven uses his debit card to make a \$49 purchase. Represent this situation as a signed number.

- A.  $-49$                               B.  $-\frac{1}{49}$   
 C.  $-(-49)$                         D. 49

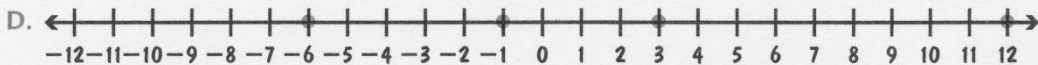
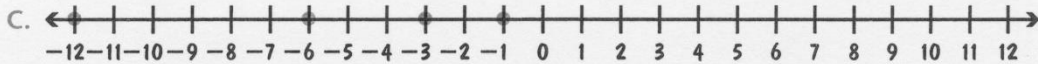
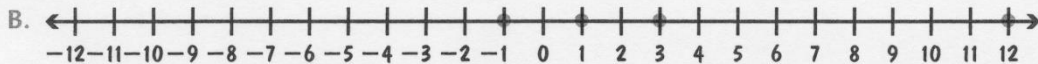
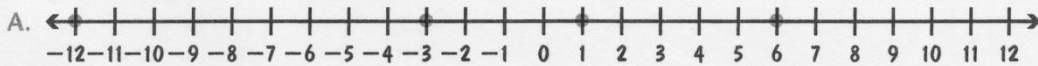
- 7 The highest temperature ever recorded in Arkansas is  $120^{\circ}\text{F}$ . The coldest temperature ever recorded in Arkansas is  $29^{\circ}\text{F}$  below zero. Represent each situation as a signed number.

- A. 120, 29                            B. 120,  $-29$   
 C.  $-120, 29$                         D.  $-120, -29$

- 8 Which situation would be represented with a negative number?

- A. A cheetah runs 75 mph in short bursts.  
 B. The average low temperature in south Florida is  $67^{\circ}\text{F}$ .  
 C. The Apo Reef is located 87 ft below sea level.  
 D. The height of Mount St. Helens is 8,366 ft.

Which number line shows the opposites of  $-1$ ,  $3$ ,  $-6$ , and  $12$ ?



10 What is the opposite of  $-99$ ?

- A. 100                      B. 99  
C.  $\frac{1}{99}$                       D.  $-(99)$

11 Which situation would represent the opposite of  $-64$ ?

- A.  $64^\circ\text{F}$  below 0  
B. a speedboat traveling 64 mph  
C. a depth of 64 ft below sea level  
D. a withdrawal of \$64 from your account

12 A great white shark is swimming at a depth of 225 feet below sea level. A pelican is gliding at an altitude of 49 feet. Represent each situation as a signed number.

- A. 225, 49                      B.  $-225$ , 49  
C. 225,  $-49$                       D.  $-225$ ,  $-49$

13 For which two values of  $n$  is  $-(-n)$  a positive number?

- A. 23                      B. 7  
C.  $-9$                       D.  $-18$

14 A checking account has a balance of \$135. Which withdrawal will leave a positive balance?

- A. \$129                      B. \$136  
C. \$212                      D. \$317

15 Describe the location of two opposite numbers on a number line.

- A. Both numbers will be to the right of 0.  
B. Both numbers will be to the left of 0.  
C. One number will be to the left of 0, and one number will be to the right of 0. They will be different distances from 0.  
D. One number will be to the right of 0, and one number will be to the left of 0. They will be the same distance from 0.

16 The first floor is 21 feet above sea level. How is the height of the first floor represented as a signed number?

- A. 21                      B.  $\frac{1}{21}$   
C. 0                      D.  $-21$

17 A withdrawal of \$78 is made, and then a \$117 deposit is made to the same account. Represent each transaction as a signed number.

- A. 78, 117                      B.  $-78$ ,  $-117$   
C. 78,  $-117$                       D.  $-78$ , 117

18 What is the opposite of 1?

- A. 2                      B. 1  
C.  $-1$                       D.  $-2$

# Math-D Lesson-1 Key

## Lesson 1

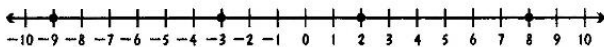
### Positive and Negative Numbers

(6.NS.5, 6.NS.6.a)

1. D. The opposite of each number is a number with the same digits but a different sign, as represented below.



2. D. A temperature of  $136^{\circ}\text{F}$  is a positive number because it is greater than zero and would be represented as 136. A temperature of  $126^{\circ}\text{F}$  below zero would be represented as a negative number.
3. C. 10 is greater than zero and would appear to the right of zero on the number line.  $-10$  is less than zero and would appear to the left of zero on the number line.
4. C. Because the temperature in Prospect Creek, Alaska is  $80^{\circ}\text{F}$  below zero, a number less than zero, it would be represented as a negative number.
5. B. Opposite numbers have the same digits but different signs.
6. C. The opposite of the opposite of a number is the number itself, so the opposite of the opposite of 25 is 25.
7. B. Because the submarine is 1,500 below sea level, it would be represented by the negative number  $-1,500$ .
8. B. The opposite of each number is a number with the same digits but a different sign, as represented below.



9. D. An elevation of 1,237 is above sea level and would be represented by a positive number. A dive of 15 meters below sea level would be represented by a negative number.
10. D. Opposite numbers have the same digits but different signs, so the opposite of 37 is  $-37$ .
11. D. The opposite of the opposite of a number is the number itself, so for the opposite of the opposite of  $n$  to be a positive number,  $n$  must be a positive number, in this case 21.
12. C. The opposite of 52 is  $-52$  which would be represented by a depth below sea level.
13. B. If the checking account is overdrawn, it has a negative balance. To bring the account to zero you would have to add the opposite, or 42, to the account.
14. D. A depth below sea level is represented as a negative number ( $-1,300$ ), and altitude is represented as a positive number (35,000).

# Math-D Practice-1 Key

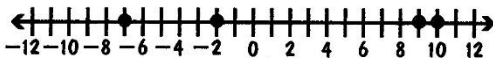
## Practice 1

### Positive and Negative Numbers

pp. 2-3

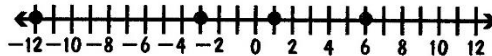
(6.NS.5, 6.NS.6.a)

1. C. The opposite of each number is a number with the same digits but a different sign. The opposites of 7, -10, 2, and -9 are -7, 10, -2, and 9, respectively.



2. B. 23 is greater than 0 and appears to the right of 0 on the number line; -23 is less than 0 and appears to the left of 0 on the number line.
3. D. The opposite of the opposite of a number is the number itself. So the opposite of the opposite of 57 is 57.
4. D. Because Death Valley, CA is 282 ft below sea level, it is represented by a negative number: -282.
5. B. Opposite numbers have the same digits but different signs. Therefore, 29 and -29 are opposites.
6. A. To make a purchase with a debit card is to deduct that amount from the checking account. Therefore, a debit of \$49 would be represented as -49.
7. B. A temperature of 29°F below 0 is represented as a negative number, -29, and a temperature of 120°F is represented as a positive number, 120.
8. C. Because the Apo Reef is located 87 ft below sea level, a number less than 0, it is represented as a negative number.

9. A. The opposite of each number is a number with the same digits but a different sign. The opposites of -1, 3, -6, and 12 are 1, -3, 6, and -12, respectively.



10. B. Opposite numbers have the same digits but different signs. So the opposite of -99 is 99.
11. B. The speed of 64 mph is a positive value.
12. B. A depth below sea level is represented as a negative number, -225, and altitude is represented as a positive number, 49.
13. A, B. The opposite of the opposite of a number is the number itself. So for the opposite of the opposite of  $n$  to be a positive number,  $n$  must be a positive number. Both 23 and 7 are positive numbers.
14. A. A positive balance will be left with any amount withdrawn that is less than \$135:  $129 < 135$ .
15. D. Opposite numbers are located the same distance from 0 but in opposite directions.
16. A. A height of 21 ft above sea level is positive.
17. D. A withdrawal is deducted from the account, so the amount is a negative number -78. A deposit is added to the account, so it is a positive number 117.
18. C. Opposite numbers have the same digits but different signs. So the opposite of 1 is -1.