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Georgia Standards of Excellence Framework GSE Grade 6 Mathematics • Unit7

## What's Your Sign?

Part I: Representing numbers on a number line.
Directions: Use the thermometer to answer the questions. Use a blue colored pencil to represent colder temperatures, and use a red colored pencil to represent warmer temperatures.


1 A . Which temperature is colder, $-10^{\circ}$ or $0^{\circ}$ ?

1B. Plot both numbers on the number line below.


2 A . Which temperature is colder, $-5^{\circ}$ or $0^{\circ}$ ?

2B. Plot both numbers on the number line.


3 A . Which temperature is warmer, $-6^{\circ}$ or $-9^{\circ}$ ?

3B. Plot both numbers on the number line.


4 A . Which temperature is warmer, $-2^{\circ}$ or $-5^{\circ}$ ?

4B. Plot both numbers on the number line.

5. What do you notice about negative numbers?

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## Part II: Absolute Value

Directions: Use the diagram of the city to answer the questions. Use a blue colored pencil to graph the locations on the number line.


1. If the park is located at zero on the number line, plot the location of the house and school if they are located one unit from the park. What do you notice about the placement of your plots on the number line?

2. Plot the location of the house and school if they are two units from the park. What do you notice about the placement of your plots on the number line?

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3. Plot the location of the house and school if they are five units from the park. What do you notice about the placement of your plots on the number line?

4. Plot the location of the house and school if they are nine units from the park. What do you notice about the placement of your plots on the number line?


## Vocabulary Alert:

The distance between a number and zero on the number line is called absolute value. The symbol for absolute value is shown in this equation $|8|=8$ and $|-8|=8$. These are read as, "The absolute value of 8 equals 8 " and "the absolute value of negative 8 equals 8 ." This is true because the distance between 0 and 8 on the number line is 8 spaces and the distance between 0 and negative 8 on the number line is 8 spaces. Distance is always positive. One can never travel a negative distance.
5. Explain $|4|$.
6. Explain $|-7|$.
7. Explain $|8|$.

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8. Explain $|-21|$.
9. Explain $|d|$.
10. Explain $|-d|$.
11. Explain $\left|-\frac{1}{4}\right|$.
12. Explain $\left|\frac{3}{5}\right|$.
13. Explain |1.25|.
14. Explain $|-5.6|$.

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15. Explain $-|-8|$. This is read as, "The opposite of the absolute value of negative 8." Think about this. If the absolute value of negative 8 is eight, what is the opposite?
16. Explain $-|8|$. This is read as, "The opposite of the absolute value of $8 . "$ Think about this. If the absolute value of 8 is 8 , what is the opposite?
17. Explain -|12|.
18. Explain -|19|.
19. Explain $-|p|$.
20. Explain $-|-7|$.
21. Explain $-|-3|$.
22. Explain $-|-p|$.

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## Part III: Opposites

## Vocabulary Alert:

Opposite numbers are two different numbers that have the same absolute value. Example: 4 and -4 are opposite numbers because $|4|=4$ and $|-4|=4$.

## More about Opposite Numbers

1. When opposite numbers are added, the sum is zero.
2. To get the opposite of a number, change the sign.
3. The absolute values of opposite numbers are the same.
4. Opposite numbers are equidistant from 0 on a number line.

## Examples of Opposite Numbers

- 10 and -10 are the opposite numbers.
- -4 is the opposite number of 4 .
- 0 is the opposite of 0 .
- The opposite of negative 3 is 3

$$
\text { ○ Example: }-(-3)=3
$$

Directions: Use the number lines to find the opposite of the plotted point. Plot the opposite of the given number using a green colored pencil.
1.

2.

3.

4.


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5. Plot the opposite and tell the decimal and fraction that are represented by the black and green dot.

6. Plot the opposite and tell the decimal and fraction that are represented by the black and green dot.

7. Plot the opposite and tell the decimal and fraction that are represented by the black and green dot.

8. Plot the opposite and tell the decimal and fraction that are represented by the black and green dot.

9. Plot $-(-7)$.

10. Plot $-\left(-1 \frac{1}{3}\right)$.

11. Plot $-\left(-1 \frac{1}{4}\right)$.

12. Plot the opposite of 1.75 .

13. Plot the opposite of 0.25 .

14. Plot the opposite of 0.20 .

15. Plot the opposite of -1.60 .

16. Plot the opposite of $(-.25)$.


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Answer the following:
17. In a game of football, Jared gained 12 yards on the first play of the game. On the second play of the game, Jared lost 12 yards. How many total yards did Jared gain or lose?
18. Sydney Kate's mom gave her $\$ 10$ for allowance. Sydney Kate owed her dad $\$ 10$ for the cool pair of socks that he purchased for her. How much money did Sydney Kate have left?
19. Brian has $\$ 60.42$ in his savings account. He really wants to purchase a volleyball net along with all the supplies to be able to have a game with his neighborhood friends. Brian spent $\$ 60.42$ on everything he needed. How much money does Brian now have in his savings account?
20. Ciana is on a mountain top that is 18,240 feet above sea level. How far must she walk down the mountain to reach sea level?
21. What is the sum of -6 and 6 ?


[^0]:    Mathematics • Grade 6 • Unit 7: Rational Explorations: Numbers and their Opposites

