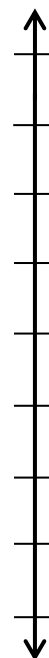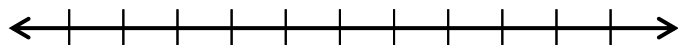# Lesson 1: Positive and Negative Numbers on the Number Line—Opposite Direction and Value

Classwork

Exploratory Challenge: Constructing a Number Line

Exercises

Complete the diagrams. Count by ones to label the number lines.

1.   Plot your point on both number lines.

2.   Show and explain how to find the opposite of your number on both number lines.

3.   Mark the opposite on both number lines.

4.   Choose a group representative to place the opposite number on the class number lines.

5.   Which group had the opposite of the number on your index card?

Problem Set

1. Draw a number line and create a scale for the number line in order to plot the points −2, 4, and 6.

    a. Graph each point and its opposite on the number line.

    b. Explain how you found the opposite of each point.

2. Carlos uses a vertical number line to graph the points −4, −2, 3, and 4. He notices that −4 is closer to zero than −2. He is not sure about his diagram. Use what you know about a vertical number line to determine if Carlos made a mistake or not. Support your explanation with a number line diagram.

3. Create a scale in order to graph the numbers −12 through 12 on a number line. What does each tick mark represent?

4. Choose an integer between −5 and −10. Label it R on the number line created in Problem 3 and complete the following tasks.

    a. What is the opposite of R? Label it Q.

    b. State a positive integer greater than Q. Label it T.

    c. State a negative integer greater than R. Label it $S.$

    d. State a negative integer less than R. Label it $U.$

    e. State an integer between R and Q. Label it V.

5. Will the opposite of a positive number *always, sometimes,* or *never* be a positive number? Explain your reasoning.

6. Will the opposite of zero *always, sometimes,* or *never* be zero? Explain your reasoning.

7. Will the opposite of a number *always, sometimes, or never* be greater than the number itself? Explain your reasoning. Provide an example to support your reasoning.