Name Date

Integers and Absolute Value

For use with Activity 1.1

1.1

Essential Question How can you use integers to represent the velocity and the speed of an object?

On these three pages, you will investigate vertical motion (up or down).

* Speed tells how fast an object is moving, but it does not tell the direction.
* Velocity tells how fast an object is moving, and it also tells the direction.

When velocity is positive, the object is moving up.

When velocity if negative, the object is moving down.

1 activity: Falling Parachute

Work with a partner. You are gliding to the ground wearing a parachute. The table shows your height above the ground at different times.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (seconds) | 0 | 1 | 2 | 3 |
| Height (feet) | 90 | 75 | 60 | 45 |

a. Describe the pattern in the table. How many feet do you move each second? After how many seconds will you land on the ground?

b. What integer represents your speed? Give the units.

c. Do you think your velocity should be represented by a positive or negative integer? Explain your reasoning.

d. What integer represents your velocity? Give the units.

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Integers and Absolute Value (continued)

2 Activity: Rising Balloons

Work with a partner. You release a group of balloons. The table shows the height of the balloons above the ground at different times.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (seconds) | 0 | 1 | 2 | 3 |
| Height (feet) | 8 | 12 | 16 | 20 |

a. Describe the pattern in the table. How many feet do the balloons move   
each second? After how many seconds will the balloons be at a height   
of 40 feet?

b. What integer represents the speed of the balloons? Give the units.

c. Do you think the velocity of the balloons should be represented by a positive or negative integer? Explain your reasoning.

d. What integer represents the velocity of the balloons? Give the units.

3 Activity: Firework Parachute

Work with a partner. The table shows the   
height of a firework’s parachute above   
the ground at different times.

|  |  |
| --- | --- |
| Time (seconds) | Height (feet) |
| 0 | 480 |
| 1 | 360 |
| 2 | 240 |
| 3 | 120 |
| 4 | 0 |

a. Describe the pattern in the table. How   
many feet does the parachute move   
each second?

b. What integer represents the speed of the parachute? What integer represents the velocity? How are these integers similar in their relation to 0 on a number line?

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Integers and Absolute Value (continued)

1.1

Inductive Reasoning

4. Complete the table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Velocity (feet per second) | –14 | 20 | –2 | 0 | 25 | –15 |
| Speed (feet per second) |  |  |  |  |  |  |

5. Find two different velocities for which the speed is 16 feet per second.

6. Which number is greater:  Use a number line to explain your reasoning.

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7. One object has a velocity of feet per second. Another object has a velocity   
of 3 feet per second. Which object has the greater speed? Explain your answer.

8. in your own words How can you use integers to represent the velocity and the speed of an object?

What Is Your Answer?

9. logic In this lesson, you will study **absolute value**. Here are some examples:

Absolute value of  Absolute value of 

Absolute value of  Absolute value of 

Which of the following is a true statement? Explain your reasoning.



