

Name \_\_\_\_\_

**Chapter**

**1**

# Adding and Subtracting Rational Numbers

Dear Family,

Hiking can be good exercise and a nice opportunity to talk with your family. Whether you walk to a nearby park, or travel to a favorite hiking trail, you usually plan to end up where you start. How far have you traveled on your walk, then? In a sense, you have gone nowhere—you have traveled zero distance.

This isn't the whole story, though. What also happens is that you travel a certain distance there and then the same distance back. The two distances are in opposite directions, so they bring you back to your starting point. But if you want to know how far you have walked, you talk about the distance without regard to direction—the *absolute value*. If the park is a mile away, you walk one mile there and one mile back—two miles in total.

The same reasoning applies when you walk up a hill. If you climb a 300-foot hill, you are going up 300 feet. If you want to end up back at the bottom, you must eventually climb down 300 feet. How much have you climbed in total?

While you are walking, keep track of how far you have traveled. You might talk with your student about the following:

- When is it helpful to assign direction (positive or negative) to each part of the walk?
- When is it helpful to ignore direction and just use the absolute value of the distance?

Usually we express the up direction as a positive number and the down direction as a negative number. Talk with your student about why that might be the case. With your student, think of situations where the reverse might be more convenient.

Enjoy the sunshine while you walk and talk with your student!

Lesson	Learning Target	Success Criteria
1.1 Rational Numbers	Understand absolute values and ordering of rational numbers.	<ul style="list-style-type: none"> <li>I can graph rational numbers on a number line.</li> <li>I can find the absolute value of a rational number.</li> <li>I can use a number line to compare rational numbers.</li> </ul>
1.2 Adding Integers	Find sums of integers.	<ul style="list-style-type: none"> <li>I can explain how to model addition of integers on a number line.</li> <li>I can find sums of integers by reasoning about absolute values.</li> <li>I can explain why the sum of a number and its opposite is 0.</li> </ul>
1.3 Adding Rational Numbers	Find sums of rational numbers.	<ul style="list-style-type: none"> <li>I can explain how to model addition of rational numbers on a number line.</li> <li>I can find sums of rational numbers by reasoning about absolute values.</li> <li>I can use properties of addition to efficiently add rational numbers.</li> </ul>
1.4 Subtracting Integers	Find differences of integers.	<ul style="list-style-type: none"> <li>I can explain how subtracting integers is related to adding integers.</li> <li>I can explain how to model subtraction of integers on a number line.</li> <li>I can find differences of integers by reasoning about absolute values.</li> </ul>
1.5 Subtracting Rational Numbers	Find differences of rational numbers and find distances between numbers on a number line.	<ul style="list-style-type: none"> <li>I can explain how to model subtraction of rational numbers on a number line.</li> <li>I can find differences of rational numbers by reasoning about absolute values.</li> <li>I can find distances between numbers on a number line.</li> </ul>