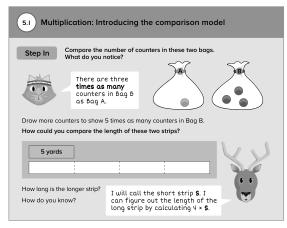
## **Core Focus**

- Multiplication: Introducing the comparison model, making comparisons between multiplication and addition, and between division and subtraction
- Length: Introducing millimeters and kilometers
- Mass and Capacity: Reviewing grams and kilograms

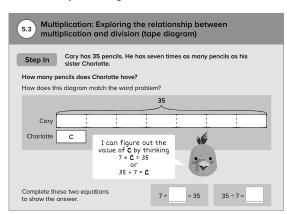
## Multiplication

• In Grades 2 and 3, students understood multiplication as equal groups or equal rows. In comparison model multiplication, there are two different-sized groups, and one group involves multiple copies of the other.



In this lesson, students are introduced to tape diagrams to make multiplicative comparisons between two numbers.

Phrases such as times as many, times as long as, and times as heavy as signal
multiplicative comparison. If multiplicative comparison problems have a known
total, they may be solved by dividing.



In this lesson, students use division to solve a multiplicative comparison problem.

- Jake has four times as many apples demonstrates multiplicative comparison. Jake has 4 times as many as Sarah, so  $3 \times 4 = 12$ . Jake has 12 apples in total.
- Subtractive comparison is often confused with multiplicative comparison: Sarah has 3 apples and Jake has 4 apples; how many more does Jake have?

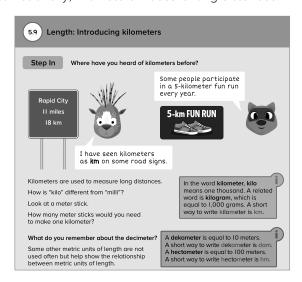
# **Ideas for Home**

- Listen for multiplicative comparison claims in advertising on television, online, and in print. Talk about the meaning of the statements times as many, times fewer than, and so on. Our prices are three times lower than the leading brand means that if the leading brand costs \$21.00, the advertised brand costs \$7.00.
- When doubling or tripling a recipe, use multiplicative comparison language: "We need two times as much rice as the recipe calls for, so how much rice is that?"

# STEPPING STONES 2.0

## Length

- In Grade 4, students explore relationships among various measurements of length in the metric system. In earlier grades, students learned that a centimeter (cm) is about the width of a finger, and a meter (m) is a little longer than a yard, and that 100 cm = 1 m.
- The decimeter (dm) and the kilometer (km) are introduced in this module. The decimeter is not frequently used, though it is actually a convenient length 10 cm. The prefix *kilo* means one thousand. A kilometer is 1,000 meters (a little more than half a mile). Internationally, kilometers measure long distances.



• If students can name and picture these metric measurements, then they are not likely to get confused when working with them. If they can picture how the measurements relate to one another (all the relationships are 10s, 100s, or 1,000s), the arithmetic is easy.

# Mass and Capacity

Students review grams and kilograms in this module: I kilogram = 1,000 g.
 Students also review metric measures of liquid volume (liters and milliliters).
 Just as with kilograms and grams, IL is the same as 1,000 mL.

Centimeters (cm)	Meters (m)	Kilometers (km)
	1,000	
	100	
		1/2
	250	

# **Ideas for Home**

- Take turns estimating small lengths or short distances, and then use a metric ruler or metric tape measure to check your estimates.
- Notice together how

  ×10 and ÷10 work in the
  metric system. Think of a
  measure in one metric unit
  (3 m 23 cm) and practice
  figuring out what that
  measure would be in other
  units (3 m + 23 cm = 323 cm
  = 3,230 mm); 6 km + 8 m =
  6,008 m = 600,800 cm.
- If you are not familiar with the metric system, we encourage you to learn about it along with your child by practicing conversions between kilograms and grams, liters and milliliters, and meters and millimeters. Check conversions using an online conversion calculator.