

Core Focus

- Common fractions: Dividing
- Common fractions: Solving word problems
- Length, mass and capacity: Converting metric units and solving word problems
- Data: Creating and interpreting a line plot

Common fractions

- Students are introduced to the concept that fractions can also be used as a representation for division situations. Students broaden their interpretation of what a fraction is, and what the numerators and denominators mean.

9.1 Common fractions: Relating fractions to division

Step In These two pizzas must be shared equally among five friends.

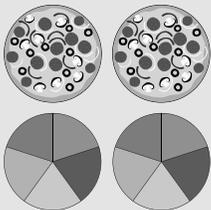
How much pizza should each person get?

Valentina drew a picture to show her thinking.

How many pizzas need to be shared?

How many people shared the pizzas?

So how much pizza in total will each person get?



In this lesson, students relate fractions to division.

- Students use the familiar area model to illustrate what it means to divide a fraction by a whole number.

9.5 Common fractions: Dividing a unit fraction by a whole number pictorially

Step In Four friends equally shared $\frac{1}{3}$ of a bowl of popcorn. What fraction of the original whole bowl did each friend eat?

Charlie drew a fraction strip to show his thinking.

What did he draw first?
What does it represent?

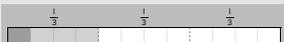


What did he draw next?



What does he need to do next to calculate how much each friend ate?

How does this finished diagram help Charlie find the answer?



I think he needs to figure out what fraction of the whole bowl the green part represents.



In this lesson, students divide a unit fraction by a whole number.

Ideas for Home

- To help your child make sense of dividing with fractions, connect numbers to something they know. E.g. $3 \div \frac{1}{4}$ might represent 3 apples cut into fourths. How many pieces of apple will there be in total? Work with them to see that each apple is now 4 pieces, so with 3 apples there will be 3 times as many pieces. Repeat this another time, using larger fruit (e.g. cantaloupes) cut into smaller pieces (e.g. $\frac{1}{8}$).

Helpful videos

View this short one-minute video to see these ideas in action.

www.bit.ly/OI_34

Length

- Students convert length measurements within the metric system. In earlier grades, students explored the relationships among various measurements of length in the metric system and 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 $100\text{ cm} = 1\text{ m}$. (The **millimeter** (mm) is a tiny measure of length (one-thousandth of a meter, or one-tenth of a centimeter. The prefix *milli-* means one-thousandth, and the prefix *centi-* means one-hundredth.)

9.8 Length: Converting metric units

Step In This number line represents one meter.

Mass

- Students review metric measurements of mass — kilograms (kg) and grams (g) — and solve problems involving these measures. They know that 1 kilogram = 1,000 grams. (The prefix *kilo-* is derived from a Greek word meaning thousand).

Capacity

- Students review metric measurements of capacity — liters (L) and milliliters (mL), practice converting between them, and think of different ways to write the same measure.
- Like kilograms, liters can be described using fraction language. Students describe 1,500 mL as 1.5 liters or $1\frac{1}{2}$ liters.

9.10 Capacity: Converting metric units

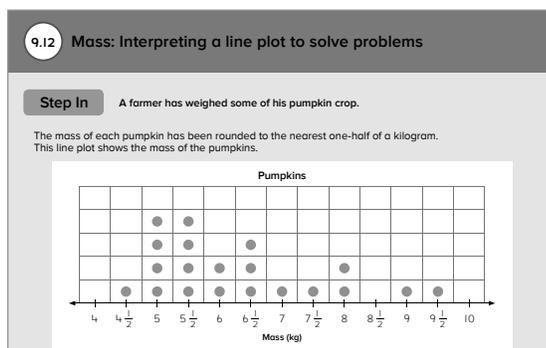
Step In How much juice is in this pitcher?

Imagine the juice was poured into containers that each held 200 mL. How many of the smaller containers could you fill? How many milliliters are in one liter?

Complete these statements.

Data

- Students use a **line plot** to compare the masses of different objects.



In this lesson, students use a line plot to compare the masses of a pumpkin crop.

Ideas for Home

- Use real-world situations to demonstrate how to convert between units of length, e.g. “I need to cut this paper to 35 cm or 350 mm in length,” “The pool is 50 m or 5,000 cm in length,” or “Today, we drove 27 km, how much would that be in meters?” Talk about which unit of length best fits the situation and why.
- Your child probably has a sense of the mass of pounds and ounces. Establishing a personal benchmark for grams and kilograms is also helpful. A large paper clip has a mass of about one gram, while a roll of new US nickels has a mass of 200 grams.
- To develop benchmarks for the relative size of metric measurements compared to customary measurements, look for objects in your home that are labeled with milliliters (mL). Examples include health care items and foods like soy sauce and salad dressing. E.g. 8 fl oz (one cup) is about 240 mL.

Glossary

- A **line plot** is used to show data. It is made by placing dots above a number line. Each dot represents one observation.