

# Mathematical Background

Here is an overview of the content your students will learn in this unit.

## Measurement, Fraction Operations, and Data

### Converting Between Metric and Customary Units TEKS 5.7.A

- Multiplication and division can be used to convert between different-sized metric and customary units of length, mass, and liquid volume.
  - » Multiplication or division by 10, 100, or 1,000 can be used to convert between specific metric units.

**Metric Conversions:**

$$9,500 \text{ grams} = 9.5 \text{ kg}$$
$$9,500 \div 1,000 = 9.5$$

$$5 \text{ kilometers} = 5,000 \text{ m}$$
$$5 \times 1,000 = 5,000$$

$$6,000 \text{ milliliters} = 6 \text{ liters}$$
$$6,000 \div 1,000 = 6$$

**Customary Conversions:**

A lap around a track is 400 yards.  
If an athlete wants to run at least 2 miles, how many full laps should the athlete run?

$$5,280 \div 3 = 1,760, \text{ yards is } 1 \text{ mile}$$

$$2 \times 1,760 = 3,520, \text{ the athlete needs to run}$$

$$8 \times 400 = 3,200$$

$$9 \times 400 = 3,600, 9 \text{ laps will be at least 2 miles.}$$

### Adding and Subtracting Fractions and Mixed Numbers With Unequal Denominators TEKS 5.3.H

- Fractions and mixed numbers with unequal denominators can be added or subtracted using equivalent fractions
  - » Common factors and multiples can be used to determine *common denominators*.

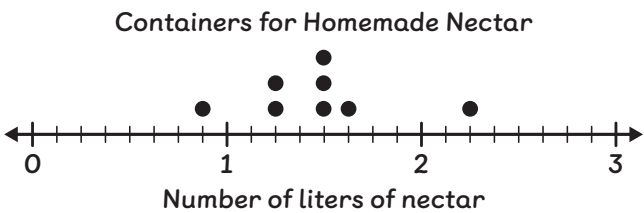
$$\frac{9}{6} + \frac{1}{15} = \frac{45}{30} + \frac{2}{30}$$
$$= \frac{47}{30} = 1 \frac{17}{30}$$

**Common Denominators:**

$$\frac{9 \times 5}{6 \times 5} = \frac{45}{30}$$
$$\frac{1 \times 2}{15 \times 2} = \frac{2}{30}$$

### Representing Categorical Data TEKS 5.9.A, 5.9.C

- Frequency tables, bar graphs, dot plot, and stem-and-leaf plots can be used to represent categorical data involving fractions.
  - » Data can be interpreted to solve related problems.



What is the difference between the greatest and least amount of homemade nectar in liters?

$$2 \frac{2}{8} - \frac{7}{8} = 1 \frac{10}{8} - \frac{7}{8}$$
$$= 1 \frac{3}{8} \text{ liters}$$

## Unit Investigation

**Lesson 1** is the Unit Investigation. Students explore and describe the number 1 trillion to build curiosity and apply their own knowledge in a variety of ways. Use the **Caregiver Connection** to help students continue to explore the math they will see in the unit.

### Caregiver Connection

Students may enjoy exploring very large numbers in the world around them. Encourage students to reflect or look for places with large quantities of objects, like the number of stars in the sky, the number of grains of sand on the beach, or the number of liters of water in the ocean.