Family Support Materials

More Decimal and Fraction Operations

In this unit, students solve multi-step problems involving measurement conversions, line plots, and fraction operations, including addition and subtraction of fractions with unlike denominators. They also explain patterns when multiplying and dividing by powers of 10. Students interpret multiplication as scaling by comparing products with factors.

Section A: Measurement Conversions and Powers of 10

In this section, students convert smaller units to larger units (for example, centimeters to kilometers), and describe the patterns they notice when multiplying and dividing by powers of 10. Students work with the metric and customary system (for example. feet, quarts, pounds, and so on) and develop an understanding of the relative sizes of units of length, volume, and weight. Students use the four operations with whole numbers, decimals, and fractions to solve multi-step word problems involving measurement conversions.

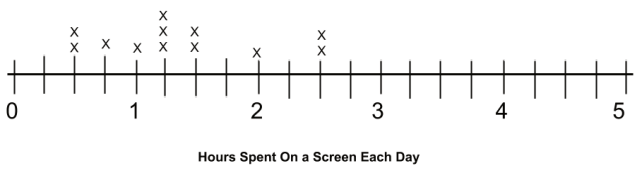
Section B: Add and Subtract Fractions with Unlike Denominators

In this section, students add and subtract fractions and mixed numbers with unlike denominators, and apply this learning to problem solving. Students first encounter problems where one denominator is a factor of the other (for example, $\frac{1}{4}$s and $\frac{1}{8}$s), so that they will only need to change one denominator. Then, students solve problems where the denominators are not related (for example, $\frac{1}{3}$s and $\frac{1}{4}$s). Students conclude that multiplying the denominators or finding a common multiple are helpful ways to create common denominators.

Students also extend their understanding of line plots. They create line plots using measurement data in fractional units (halves, fourths, and eighths), and interpret the data on line plots to solve problems involving the four fraction operations like this one.

Jada says $\frac{3}{4}$ of the students spend less than 2 hours on a screen. Is she correct?

Explain how you know your answer is correct.



Section C: The Size of Products

In this section, students build on their understanding of multiplication to include the concept of scaling. Students interpret multiplication expressions as a quantity that is resized or scaled by a factor.

Students compare multiplication expressions without performing the multiplication. In the example shown, students reason that $\frac{7}{6} \times 4$ is greater than the other two expressions because in each expression, 4 is being multiplied by a fraction, and $\frac{7}{6}$ is the largest fraction of the three.

Which of these expressions represents the largest product?

$\frac{5}{8} \times 4$ $\frac{7}{6} \times 4$ $\frac{1}{2} \times 4$

Students locate multiplication expressions on a number line, and analyze expressions to determine if the product is greater than, less than, or equal to one of its factors. Students make sense of their learning by recognizing that if a given number is multiplied by:

- a fraction greater than 1, then the product will be greater than the given number
- a fraction less than 1, then the product will be less than the given number
- a fraction equal to 1, then the product will be equal to the given number

Try it at home!

Near the end of the unit, ask your student to solve the following problems:

- How many kilometers is equal to 200 centimeters?
- $\frac{2}{3} + \frac{2}{9}$
- $\frac{2}{3} + \frac{5}{8}$
- Will $\frac{4}{3} \times 5$ be greater than, less than, or equal to 5? How do you know?

Questions that may be helpful as they work:

- What strategy are you going to use to help you solve the problem?
- Could you have solved the problem in a different way?
- Which problem was easier to solve? Why?