

KEY CONCEPT OVERVIEW

In Topic B, students revisit decimal operations (addition, subtraction, and multiplication) to prepare for decimal division. Students also encounter problems involving mixed numbers. They discover that when they convert mixed numbers to decimals, they can solve problems by using the **standard algorithm** for addition and subtraction of decimals and lining up the digits according to place value. This strategy mimics the way students subtract whole numbers and allows them to solve mixed-number problems quickly. Students also expand their knowledge of the **distributive property** as they use the property to multiply decimals.

You can expect to see homework that asks your child to do the following:

- Find the **sum** or **difference**. (In some cases, students will use a calculator and follow specific instructions for how to round the final answer.)
- Calculate the **product** by using **partial products**. (See the second Sample Problem.)
- Solve word problems by adding, subtracting, or multiplying decimals.

SAMPLE PROBLEMS (From Lessons 9 and 10)

After Arianna completed some work, she still had $78\frac{21}{100}$ pictures to paint. If she completes $34\frac{23}{25}$ more pictures, how many pictures will Arianna still have left to paint?

$$\text{Expression: } 78\frac{21}{100} - 34\frac{23}{25}$$

$$\text{Estimated answer: } 78 - 35 = 43$$

$$\text{Actual answer: } 78.21 - 34.92 = 43.29$$

Use partial products and the distributive property to calculate the product.

$$200 \times 32.6$$

$$200(32 + 0.6)$$

$$200(32) + 200(0.6) = 6,400 + 120 = 6,520$$

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

You can help at home in many ways. Here are just a few tips to help you get started.

- Estimate the product of 500×12.7 ($500 \times 10 = 5,000$). Then, with your child, find the product using partial products. ($500(10 + 2 + 0.7) = 500(10) + 500(2) + 500(0.7) = 5,000 + 1,000 + 350 = 6,350$)
- Show your child this number sentence: $11.5 \times 13.5 = 15.525$. Challenge your child to explain why the decimal point in the product (the answer) is in the incorrect place. Your child may say something like, “I can see right away that the decimal is in the wrong place because 11×13 would have to be more than 15. In fact, I know 11×13 is 143, so, if we move the decimal point one place to the right, 155.25 sounds about right.”
- Ask your child to explain how to use unit language to complete the problem $\frac{2}{5} \div 4$. The first number, $\frac{2}{5}$, can be renamed as 4 tenths ($\frac{2}{5} = \frac{4}{10} = 4$ tenths). This simplifies the problem: $\frac{2}{5} \div 4 = 4$ tenths $\div 4 = 1$ tenth $= \frac{1}{10}$.

Here is another example of how unit language can be used to make dividing fractions simpler:

$$\frac{3}{5} \div \frac{1}{4} = \frac{12}{20} \div \frac{5}{20} = 12 \text{ twentieths} \div 5 \text{ twentieths} = \frac{12}{5} = 2\frac{2}{5}.$$

TERMS

Difference: The answer to a subtraction problem.

Distributive property: Allows the numbers in a multiplication problem to be broken down into partial products (i.e., partial answers) to make the mental math simpler. The partial products can then be combined to find the end product (the answer to the original multiplication problem). For example, consider the problem 6×27 . The number 27 can be broken down into $(20 + 7)$, so $6 \times 27 = (6 \times 20) + (6 \times 7) = 120 + 42 = 162$.

Factors: Numbers that are multiplied together to get other numbers. For example, 2 and 3 are factors of 6 because $2 \times 3 = 6$; 4 and 5 are factors of 20 because $4 \times 5 = 20$.

Partial products: The results when you decompose, or break down, the factors in a multiplication problem according to place value and multiply them. For example, $64 \times 27 = (60 \times 20) + (60 \times 7) + (4 \times 20) + (4 \times 7)$. Therefore, the partial products of 67×24 are 1,200, 420, 80, and 28.

Product: The answer to a multiplication problem.

Standard algorithm: Step-by-step procedures used to solve a particular type of problem. In this module, students will learn and use the standard algorithms for adding, subtracting, multiplying, and dividing decimals, whole numbers, and fractions.

Sum: The answer to an addition problem.