InsightMath California

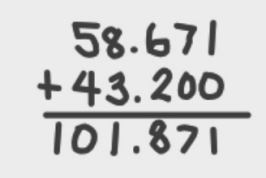
Extending Arithmetic in Base 10

Family Guide | Grade 6 | Unit 7

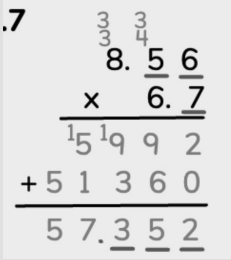
Your student is exploring how the base-10 system allows all four operations to be performed with algorithms involving a series of single-digit computations.

Key Math Ideas

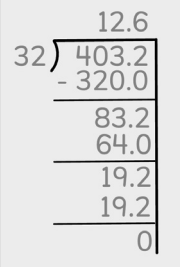
Students begin grade 6 knowing how to add, subtract, multiply, and divide whole numbers and decimals using algorithms based in place value. They have explored using the standard algorithm for addition and subtraction to solve problems involving whole numbers and decimals up to the hundredths place. In this unit, they extend to include decimals up to the thousandths place. In grade 5, students learned to multiply whole numbers using the standard algorithm for multiplication and multiply decimals using strategies based on place value patterns. In this unit, they extend to multiplying decimals using the standard algorithm. Students' previous work dividing whole numbers and decimals was based in place value understanding and making connections to multiplication. In this unit, students extend to dividing with the standard algorithm for division. The focus here is developing fluency with all four standard algorithms, however, your student should not simply be memorizing the steps. It is essential that they think about the role of place value in each algorithm to make meaning of the steps and help to avoid errors.



Using the standard algorithm to add decimals.



Using the standard algorithm to multiply decimals.



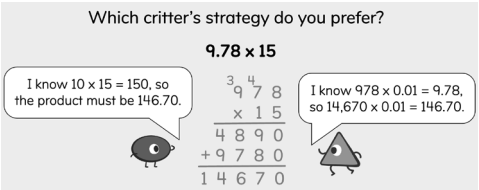
Using the standard algorithm to divide decimals.

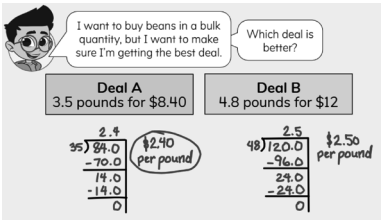
→ In the first half of the unit, your student will learn to

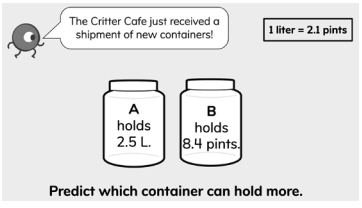
- estimate and use the standard algorithm to add and subtract multidigit whole numbers and decimals;
- estimate and use the standard algorithm to multiply multidigit whole numbers and decimals;
- use estimation and place value patterns to place the decimal point when multiplying decimals;
- solve addition, subtraction, and multiplication word problems involving whole numbers and decimals.
- solve percentage problems using a range of strategies, such as "What is 48% of 125?"

→ In the second half of the unit, your student will learn to

- estimate and use the standard algorithm to solve division situations, with decimals in the divisor, dividend or quotient;
- use place value patterns to divide decimals, relating to whole number thinking, such as solving 125 ÷ 1.2 by thinking of 1250 ÷ 12;
- solve equations where certain parts are decimal values;
- solve division word problems involving whole numbers and decimals, including those related to percentages;
- use ratio and proportional thinking to convert measurements within measurement systems (such as inches to feet) and between measurement systems (such as grams to pounds);
- solve multistep problems involving conversions within and between measurement systems.







Helpful Hint

Estimating is a powerful tool for students to make sense of operations with decimals because it allows them to think about the magnitude of their answer before solving. Encourage your student to estimate before solving a problem, then use their estimate after solving to check if their answer is reasonable.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ In the first half of the unit:

- What strategy did you use to add the decimal numbers? (try the same problem for subtraction!)
- What strategy do you know to multiply whole numbers and decimals?
- What strategies can you use to place the decimal point when multiplying decimals?

→ In the second half of the unit:

- How does thinking about place value help you to solve?
- Why can you shift the place value of the numbers when solving?
- What strategies can you use to divide by decimals?
- What strategies can you choose when converting between measurement systems?

If...	Try...
your student aligns the digits in decimal numbers to the right when adding or subtracting decimals instead of aligning by place value, such as shown in the example below:	reminding your student that adding and subtracting decimal numbers is like adding and subtracting whole numbers, where each place needs to be added to or subtracted from the same place. Support your student to use the decimal point to help them align each place value.

Student Strengths Spotlight

I make a plan to solve a problem and adapt my plan if I need to.	Before starting to solve, students consider efficient ways to divide based on the problem, adapting their plan as they work if needed.
I consider how precise I need to be when solving problems.	Students consider how to calculate accurately and efficiently while adding, subtracting, multiplying, and dividing decimals based on the context of the problem.
I notice patterns and try to apply them across situations.	Students use place value patterns to add, subtract, multiply and divide whole numbers and decimal numbers.
I choose representations to help me solve problems and to record and share my thinking.	Students choose strategies and record their work. This allows them to compare strategies for efficiency and reflect on their understanding.

Try This Together!

- **Distances in Your Daily Life!** Support your student to look up distances of the places they travel in their daily life, such as from home to school or from school to dance class. If needed, help them round the distances to the nearest hundredths. Ask them addition or subtraction questions and let them find the answers and share their strategy. For example, ask "What is the total distance from home to school, then to baseball practice?" or "How much further is it from home to gymnastics than from home to hockey practice?"
- **Grocery Decimals.** While grocery shopping or making a list of grocery items, have your student help determine costs by multiplying or dividing decimals. For example, if apples are $1.29 for each pound, what will be the cost of 1.5 pounds of apples? Or, the reverse, if 2.5 pounds of oranges costs $5.49, what is the cost of each pound? Ask them to share their strategies and models with you.
- **Measurement Conversion Fun.** Include your student in situations where you need convert measurements, especially between measurement systems. For example, say "We need to know the amount in pounds, but the package only gives it in kilograms. How can we find the amount in pounds?" Provide students with the conversion information or have them look it up, such as telling them that 1 kilogram = 2.2 pounds.