InsightMath

Extending Place Value and Adding and Subtracting Efficiently

Family Guide | Grade 4 | Unit 3

> Your student is exploring how to understand patterns and regularity of the base-10 place value system helps to compare and compute with multidigit numbers.

Key Math Ideas

In this unit, students build on their understanding of place value beyond the thousands to include millions, helping them work confidently with larger numbers. They strengthen their grasp of our number system by recognizing how each digit in a number represents ten times the value of the digit to its right. This expanded understanding of place value helps students develop effective strategies for adding and subtracting multidigit numbers, connecting their conceptual knowledge of place value with practical addition and subtraction skills.
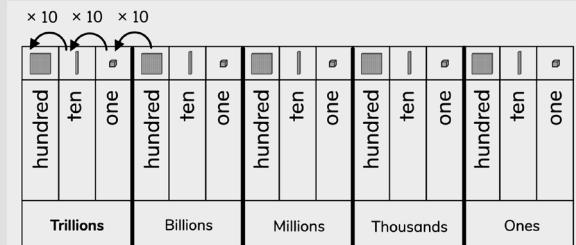
Students use place value charts and place value models to explore how to use multiplication to describe the relationship between place values.

→ **In the beginning of the unit, your student will learn to**

- read, write, and say any whole number up to one million;
- write numbers in expanded form, such as
  524 = (5 × 100) + (2 × 10) + (4 × 1);
- compare the value of the same digit in adjacent place values.
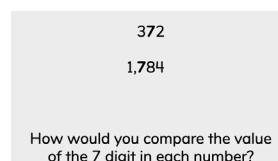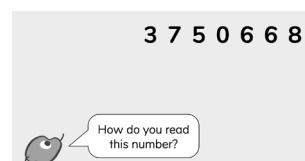
→ **In the middle of the unit, your student will learn to**

- round a number to a specific places value,
  such as the nearest 10 or nearest 100;
- compare large numbers, such as those above 1,000;
- estimate sums and differences of large numbers;
- mentally add and subtract multidigit numbers;
- solve addition and subtraction problems using an open number line.
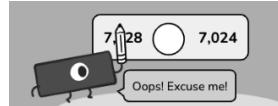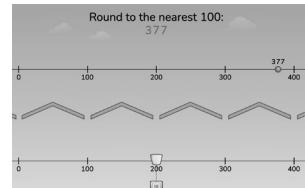
→ **At the end of the unit, your student will learn to**

- add multidigit numbers using the standard addition algorithms;
- subtract multidigit numbers using the
  standard subtraction algorithm;
- determine when it is more efficient to add or subtract using mental math strategies, the standard algorithm, or a different strategy;
- solve multistep word problems with large numbers.

Helpful Hint

Students often include the word "and" when reading whole numbers, for example saying 4,027 as "four thousand and twenty-seven" rather than "four thousand twenty-seven." Practice reading a variety of whole numbers to the millions without using "and." When students use "and," prompt them to restate it correctly. Later in the year, students will learn that "and" is used to read decimal numbers.

4,027
Four thousand and twenty-seven

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ **At the beginning of the unit:**

- What do you know about the value of the digits in this number?
- How can you represent this number in expanded form?
- How do commas help us understand large numbers?

→ **In the middle of the unit:**

- How can you round this number in different ways?
- Why is it helpful to estimate sums and difference?
- How can rounding numbers help you estimate sums and differences?
- How can you compare these two numbers?
- How can you use what you know about place value to add or subtract large numbers?

→ **At the end of the unit:**

- Will you have to regroup or ungroup any place value to solve this problem? How does this impact your strategy for solving?
- Will you use the standard algorithm to solve this problem? Why or why not?

If...	Try...
your student misses a step when adding or subtracting with the standard algorithms . . .	prompting them to estimate the sum or difference first. After they solve, prompt them to use their estimate to check the reasonableness of their answer by asking "Is your answer reasonable? How do you know?"

Student Strengths Spotlight

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I do not give up, even when a problem is challenging.	Using a positive mindset, students show their willingness to learn and grow with every difficult problem.
I consider how precise I need to be when solving problems.	Students understand that the level of accuracy required in their answer, such as rounding or using exact values, should be determined by the specific context of the problem.
I choose representations to help me solve problems and show my thinking.	Students use a variety of strategies or tools to show their work, such as number lines and place value charts.

Try This Together!

- **Planning a Drive.** Have your student look up distances for a pretend trip (or maybe even one you have taken or will take). Include stops along the way so there are multiple distances (as shown in the example). Use them to try the following activities:
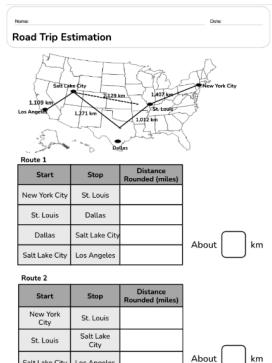
  - **Estimate Distances:** Have your student round distances to estimate the total distance from start to end.

  - **Add or Subtract Distance:** Have your students round each distance to the nearest whole number, then solve addition and subtraction

problems. For example, they can find the total distance that will be driven or how much further one destination is than another.

- **Read and Write Large Numbers.** Have your student roll a die between 6 and 9 times, recording each digit that is rolled. Then, ask them to finish writing the number by adding commas where needed. When they finish writing the number, they should read the number out loud. If needed, draw a simple place value chart. To extend the activity, ask them to rearrange the same digits to create a new number, such as the greatest or least possible number.

hundreds	tens	ones	hundreds	tens	ones	hundreds	tens	ones
Millions			Thousands			Ones		
			6	3	0	1	2	0