



Core Focus

- Reading and writing five-digit numbers
- Locating five-digit numbers on a number line, working with place value, comparing, ordering, and rounding
- Representing fractions using the area, set, and number line models
- Writing fractions as words, common fractions, and relating fraction words and symbols

Numbers in Base-10

- Once base-10 place value is understood for numbers up to several hundreds, students know nearly everything necessary to work with large numbers.
- Students learn to read, write, picture, compare, and order these larger numbers using familiar and new models, including a **numeral expander** and an **abacus**.

Look at the abacus. What number does it show?
Write the matching number on this expander.

Show how you would write the number in words.

In this lesson, students read and record numbers with an abacus and a numeral expander.

I can see 3 beads in the ten-thousands place. I know that each bead represents 10,000. So $3 \times 10,000 = 30,000$.

What is the total value of the beads in each place?
Karen writes the number in **expanded notation**.

$$(3 \times 10,000) + (8 \times 1,000) + (2 \times 100) + (1 \times 10) + (5 \times 1)$$

She uses **parentheses** to make the number sentence easier to read. They show the parts of the sentence that you should figure out first. Figure out each product, then add the products. What do you notice about the total?

In this lesson, students consider how each digit indicates the number of groups and the number in each group to write five-digit numbers in expanded form.

- When rounding numbers to the nearest ten, hundred, or thousand, students visualize where numbers are on a number line to understand the concept of rounding instead of focusing on “rounding rules”.
- Tens, hundreds, and thousands are important benchmarks in our number system. Knowing where other numbers are in relation to these benchmarks on a number line makes rounding and comparing more concrete.

What is the population rounded to the nearest ten?

I look at the digits in the tens and ones places. 13 is closer to 10 than 20.

In this lesson, students use a number line to round five-digit numbers to the nearest tens, hundreds, and thousands places.

Ideas for Home

- Reinforce place-value language by asking, “How many thousands, hundreds, tens, and ones?”
- Ask your child to read numbers aloud, e.g. the number of hits on a favorite website or scores on a video game.
- If five-digit numbers seem easy for your child, find larger numbers — millions, billions, or even trillions — e.g. by looking for and reading how many “hits” a website has received or by looking up distances from the earth to different planets, moons, and asteroids in the solar system and beyond.

Glossary

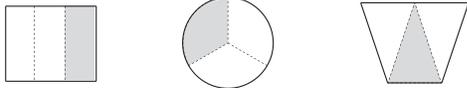
- ▶ A **numeral expander** shows how each position in a number represents a designated place value.
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- ▶ An **abacus** is a counting frame that shows place value. Each bead is the equivalent of 1 base-10 value, depending on the place.

Fractions

- Fractions are often challenging for students, but they are very important in daily life and they provide essential understanding for later work with decimals, algebra, and other advanced mathematics.
- In Grades K–2, students explored their understanding of one-half, one-third, and one-fourth in sets of objects and in geometric shapes. This section of the module begins by reviewing fractions using the area model.

4.b **Step In** **Representing Unit Fractions (Area Model)**

What do you notice about each of these shapes?



Each shape is divided into three equal parts. One part is shaded, so one-third of each shape is shaded.

Is one-third of this shape shaded? Explain your reasoning.



In this lesson, students review the naming of fractions.

- As in Grades 1 and 2, the area model continues to represent fractions by showing the relationship between the shaded area and the total area.
- In Grade 3, fraction models extend to number lines and are described using numeric symbols. Number lines show the relative position of fractions.

4.10 **Step In** **Writing Common Fractions**

Marcos is covering a rectangle with pattern blocks.



What fraction of the rectangle has he covered so far?

Write a numeral to show the number of parts that are covered and a numeral to show the number of equal parts in the whole.

The numeral on the top is called the **numerator**.
The numeral on the bottom is called the **denominator**.
What does the fraction tell you?

The numerator tells how many blocks have been used. The denominator tells how many blocks will cover the rectangle. The fraction shows that $\frac{3}{8}$ of the rectangle is covered.



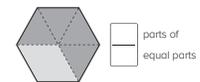
In this lesson, students write common fractions using numbers. Three shaded parts out of eight equal parts is written $\frac{3}{8}$.

Ideas for Home

- Notice fractions in kitchen measures, e.g. compare a $\frac{1}{2}$ cup flour to a whole cup, $\frac{1}{4}$ tablespoon to 1 tablespoon, etc.
- Look at an analog clock together and notice the half (30 minutes), quarter (15 minutes), and third (20 minutes) on the clock face.

Glossary

- The bottom number of a fraction is the **denominator**, the total number of equal parts in the whole.
- The top number is the **numerator**, the count of equal parts considered.



- The area model shows fractions as parts of a two-dimensional area or three-dimensional object.



- The set model shows fractions as a number of discrete objects out of a greater number of objects.



- The number line is a more sophisticated length model. Number lines specifically require that students interpret fractions as numbers.