InsightMath

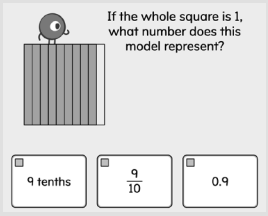
Exploring Fractional Thinking and Discovering Decimals

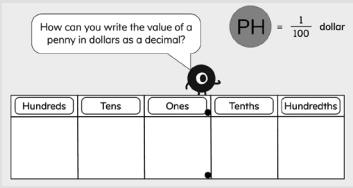
Family Guide | Grade 4 | Unit 7

Your student is exploring how any number can be represented in an infinite number of different, but equivalent, ways.

Key Math Ideas

In this unit, your student will be introduced to decimals for the first time using the understanding that a fraction can have many equivalent fractions, and it can also have equivalent decimals. They recognize that fractions can have many equivalent representations, both as equivalent fractions and by rewriting fractions as decimals. Through this exploration of equivalence, students add, subtract and compare fractions and decimals in different contexts. This unit becomes an important bridge between their work in grade 3 with equivalent fractions and their future work in grade 5 that will expand their decimal place value understanding.

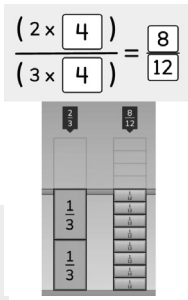




→ In the beginning of the unit, your student will learn to

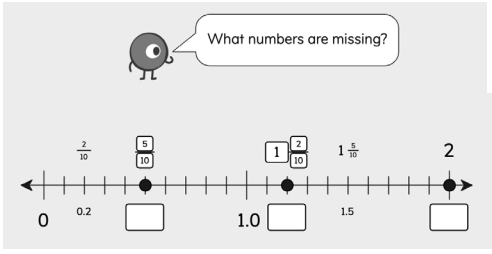
- explain that equivalent fractions mean that they are the same amount when the whole is the same;
- create and identify equivalent fractions and explain why the numerator and denominator must be multiplied or divided by the same number, as shown in the example to the right.

In this problem, $\frac{2}{3}$ and $\frac{8}{12}$ are equivalent fractions because they are the same amount when the whole is the same.



→ In the middle of the unit, your student will learn to

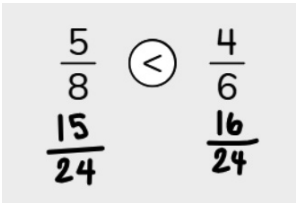
- explain that 1 is ten times as much as 0.1, and 0.1 is ten times as much as 0.01;
- model and convert between fractions with denominators of 10 and 100 and decimals to the hundredths place on an area model and number line;
- add tenths and hundredths by using a common denominator.



→ By the end of the unit your student will learn to

- explain that comparing and ordering fractions requires that the whole be the same size;
- compare and order fractions and decimals.

Students can compare fractions by creating equivalent fractions with a common denominator of 24.



Helpful Hint

When comparing decimal numbers, sometimes students use the number of digits to determine which decimal is greater or less. For example, they may think more digits means a number is greater, like saying 1.46 is greater than 1.6 because 1.46 has three digits and 1.6 only has two. Sometimes students also think that fewer digits means greater, like saying that 0.7 (7 tenths) is greater than 0.93 (93 hundredths) because tenths are greater than hundredths. Encourage your students to use place value thinking and language when comparing numbers. We want them to recognize that 0.7 is 7 tenths and no hundredths and 0.93 is 9 tenths and 3 hundredths. This means that 0.93 is greater than 0.7 because 9 tenths is greater than 7 tenths.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ At the beginning of the unit:

- How can you use bar models to make equivalent fractions?
- How can you use multiplication or division to make equivalent fractions?

→ In the middle of the unit:

- How can you write a fraction as a decimal?
- How can you write a decimal as a fraction?
- How are tenths and hundredths related?

→ By the end of the unit:

- How can you compare or order fractions with common denominators?
- How can you compare or order fractions with denominators that are not common?
- How can you compare or order decimals?

If...	Try...
your student treats decimals to the right of the decimal point as though they are whole numbers, such as saying that 0.40 is greater than 0.4 because 40 is greater than 4 . . .	asking your student to use place value language and expanded notation to understand and compare the numbers. Support them to recognize that 0.40 is 4 tenths and 0 hundredths and 0.4 is 4 tenths and no hundredths.

Student Strengths Spotlight

I make a plan to solve a problem and adapt my plan if I need to.	Before solving problems, students take time to make a plan and then are able to change the plan if needed.
I explain how my classmates' reasoning compares to my own.	Students use comparative language to describe how their reasoning is similar or different from their classmates'.
I choose representations to help me solve problems and show my thinking.	Students determine which visual representation they would like to use to represent their strategy.

Try This Together!

- **Grocery Prices.** Let your student practice comparing decimals by having them help price groceries at the store. For example, if one item is $1.25 and another is $1.05, have them tell you which has a greater cost (or costs less).
- **Spare Change Decimals and Fractions.** Take spare change and have your student choose three coins. Ask them to tell you the total value of the coins and how they would write it as a decimal and a fraction. For example, a penny and two dimes adds up to 21 cents. Support students to write it as a decimal (0.21 dollar) and a fraction ($\frac{21}{100}$ dollar).
- **Recipe Fractions!** Next time you are cooking or baking, have some fraction fun! These can be done with any recipes that include fractions.
  - » **Find Equivalent Fractions:** Choose one ingredient listed as a fraction and ask your student to tell you an equivalent fraction. For example, if a recipe calls for $\frac{2}{3}$ cup granola, support them to find an equivalent fraction like $\frac{4}{6}$ cup or $\frac{8}{12}$ cup. This is also an opportunity to ask your student to think flexibly, such as "If we need 1 cup, but we do not have 1 cup, which other cup can we use and how many?" We hope for students to recognize that they could use two $\frac{1}{2}$ cups, three $\frac{1}{3}$ cups, or four $\frac{1}{4}$ cups.
  - » **Compare Fractions:** Choose two ingredients listed as fractions and ask your student to tell you which is greater or less. For example, if a smoothie recipe calls for $\frac{3}{4}$ cup strawberries and $\frac{2}{3}$ cup blueberries, ask your student "Do we need more strawberries or blueberries to make the smoothie? How do you know?"