

Lesson 8

Relating Fractions to Benchmarks

Objective

Your student will learn to compare the sizes of fractions by comparing them to the benchmarks of $\frac{1}{2}$ and 1.

You Will Need

- Swoop into Math!* pages 63 to 68
- Open Number Line, *Oxley's Math Tools*
- dry-erase board, pocket, and marker
- Fraction Tiles
- Partitioned Fraction Rectangles, *Oxley's Math Tools*
- Units of Measurement Cards, *Oxley's Math Tools* page 14

Math Vocabulary

benchmark numbers

Before You Begin

Preview Benchmark Numbers

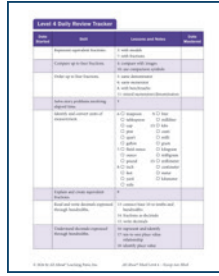
In this lesson, your student will understand the sizes of fractions by using benchmark numbers. In math, benchmark numbers are reference points that help compare, estimate, or make calculations easier.

For example:

- 10, 100, and 1,000 are some whole benchmark numbers. When estimating how much something costs or weighs, people often round to the nearest hundred or thousand.
- $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{3}{4}$ are benchmark fractions that are often used to quickly compare other fractions or to approximate. If you have $\frac{2}{5}$, you might round it to $\frac{1}{2}$ for an easier estimate.

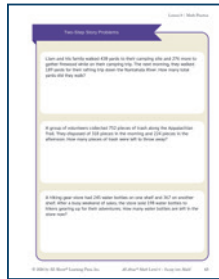
The benchmark numbers for this lesson are $\frac{1}{2}$, one, and two. For example, your student knows that if a whole is split into four parts, it takes four parts to make one whole. If a fraction has more than four parts, it is greater than one; if it has fewer than four parts, it is less than one. He can also use his understanding of equivalent fractions from previous lessons to help compare fractions. Since he knows that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$, he knows the fraction $\frac{1}{4}$ must be less than the benchmark number $\frac{1}{2}$.

This lesson is important to help your student's number sense with fractions. Knowing the fractions' relationship to the benchmark numbers will help him compare fractions that have unlike numerators and denominators in future lessons.



Daily Review

As part of your math time each day, refer to your student's *Daily Review Tracker*. Choose one or two skills, and take a few minutes to practice.



Math Practice

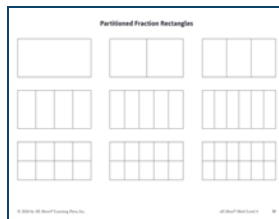
Turn to page 63 in the *Swoop into Math!* activity book.

“Let’s review solving two-step story problems. Read the story problems, and solve each one.”

Answer Key

- 903 total yards
- 210 pieces of trash
- 414 water bottles left

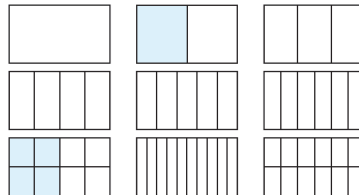
Representing Equivalent Fractions



Partitioned Fraction Rectangles

Find the *Partitioned Fraction Rectangles* from *Oxley's Math Tools*. Place the page into the dry-erase pocket.

“Let’s review equivalent fractions! Draw models by using the *Partitioned Fractions Rectangles* to show that the fraction $\frac{4}{8}$ is equivalent to $\frac{1}{2}$.”



Review (continued)

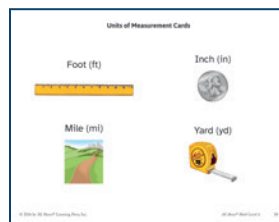
“Explain how you know that these fractions are equivalent.” *I shaded one-half of one rectangle and four-eighths of another, and the same amount of space is shaded in each one.*

“Explain and show me how you can use the fraction tiles to find a fraction with a denominator of four that is equivalent to $\frac{3}{12}$.”
Three one-twelfth tiles equal a one-fourth tile.

New Teaching

Customary Length Units of Measurement

“Before we dive into our main lesson, let’s explore some common customary units for measuring length. We use customary units of length to measure how long, tall, or far something is. Inches, feet, yards, and miles are all part of the customary system used mostly in the United States.”

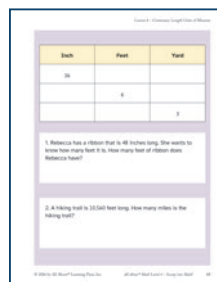


Units of Measurement Cards

Find the *Units of Measurement Cards* from *Oxley’s Math Tools* on page 14. Separate and place these cards in front of your student.

“These cards include things like inches, feet, yards, and miles. Where have you heard of these words?” (*Answers may include: using a ruler, height, football, speed of a car, road signs, etc.*)

Use the guided questions on the back to discuss the different measurement units with your student.



Customary Length Units of Measure

Find *Customary Length Units of Measure* in the *Swoop into Math!* activity book, page 65.

“Let’s practice converting between different units of measurement and fill out the table. We can use multiplication or division to help us. We know there are 12 inches in 1 foot. Let’s use this to help us find out how many feet are equivalent to 36 inches.”

Write $12 \times 2 = \underline{\quad}$ and $12 \times 3 = \underline{\quad}$ on the dry-erase board.

New Teaching

(continued)

“Find the product of both equations. (*Answer: $12 \times 2 = 24$, $12 \times 3 = 36$*)
Which equation has a product of 36?” ($12 \times 3 = 36$)

“Yes. Three feet is equivalent to 36 inches. Write 3 in the first box under the Feet column.”

Inch	Feet	Yard
36	3	
	6	
		3

“Now, think about how many feet are in a yard.” (*Answer: three*)

“Good. Fill in the table to reflect this. Now we know that 36 inches is equivalent to 3 feet, which is equivalent to 1 yard.”

Continue to practice by completing the table.

Inch	Feet	Yard
36	3	1
72	6	2
108	9	3

“Let’s solve a story problem with these units of measurement.”

Story Problem #1: Rebecca has a ribbon that is 48 inches long. She wants to know how many feet it is. How many feet of ribbon does Rebecca have?

“How can we solve this problem?” *We can use multiplication to help us. We need to find out what number times 12 equals 48.*

“Yes. How many feet are equivalent to 48 inches?” *Four feet.*

“Nice. Let’s do another one.”

Story Problem #2: A hiking trail is 10,560 feet long. How many miles is the hiking trail?

“What do we know, and what are we trying to find out?” *We know that the trail is 10,560 feet long. We need to find out how many miles that is.*

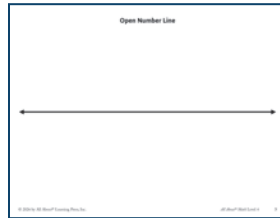
“Yes. How can we solve this problem?” *There are 5,280 feet in one mile. We can use multiplication to help us. We need to find out what number times 5,280 equals 10,560.*

“Good. How many miles are equivalent to 10,560?” *Two miles.*

New Teaching (continued)

“Nice. You learned how to convert customary length units. Now let’s get into the main lesson and use benchmark numbers to compare fractions.”

Between One-Half and One Whole

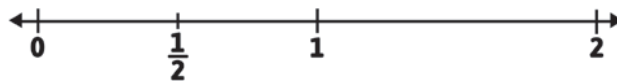


Open Number Line

Find the *Open Number Line* from *Oxley’s Math Tools*. Place it into the dry-erase pocket.

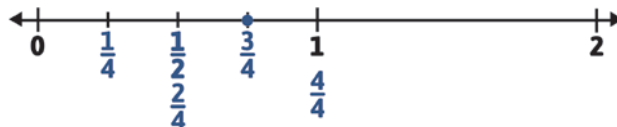
“A group of hikers is hiking a two-mile trail. Along the trail, there are markers to help them figure out where they are. An open number line can be used to represent the trail the hikers are on.”

Add tick marks at the beginning, middle, and end of the *Open Number Line*. Label the tick marks with zero, one, and two. Then add a tick mark between 0 and 1 and label it $\frac{1}{2}$.



“We can use this number line to help us answer questions about the hikers. I have already marked some numbers on the number line. The numbers zero, $\frac{1}{2}$, one, and two are benchmark numbers. **Benchmark numbers** are numbers that can help us understand the sizes of fractions and how they compare to each other. We will use these benchmark numbers to answer questions about the hikers.”

“One hiker takes a water break at $\frac{3}{4}$ of a mile (write $\frac{3}{4}$ on the dry-erase board). Let’s find out if the hiker stops before or after one mile. We can mark this fraction on the *Open Number Line* to help us.” Have your student add shorter tick marks for fourths and put a point at $\frac{3}{4}$.



“Is this fraction greater than or less than the benchmark number one?”
Less than.

“Right. The fraction $\frac{3}{4}$ is less than the benchmark number one because it is three parts away from zero. (Point to the three parts.) We need to go one more part to be equal to one.”

New Teaching

(continued)

“How does the benchmark $\frac{1}{2}$ compare to the fraction $\frac{3}{4}$?”
Three-fourths is to the right of one-half.

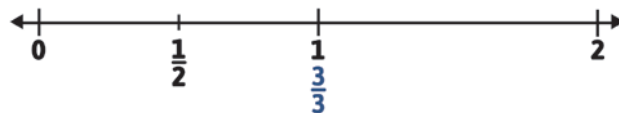
“That means $\frac{3}{4}$ is greater than $\frac{1}{2}$ but less than one whole. By comparing $\frac{3}{4}$ to the benchmarks of $\frac{1}{2}$ and one, we learned about the value $\frac{3}{4}$. You figured out that the hiker stopped before one mile but went more than $\frac{1}{2}$ a mile.” Keep the numbers zero, $\frac{1}{2}$, one, and two on the *Open Number Line*, and clear the rest. Clear the dry-erase board.

Greater than One Whole

“Let’s use the *Open Number Line* and benchmark numbers to find the value of another fraction. A red-bellied woodpecker was spotted on a hiking trail at $\frac{4}{3}$ miles. Let’s find out how far down the trail the bird was spotted so we can tell our friends.” Write the fraction $\frac{4}{3}$ on the dry-erase board.

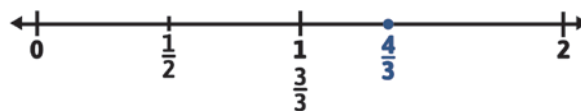
“What do you notice about $\frac{4}{3}$ that can help us figure out where to put it on the *Open Number Line*?” *I notice that the denominator is three. I see that the numerator is greater than the denominator.*

“Good. I know that the fraction $\frac{3}{3}$ is equal to one. Write the fraction $\frac{3}{3}$ under the one on the *Open Number Line*.”



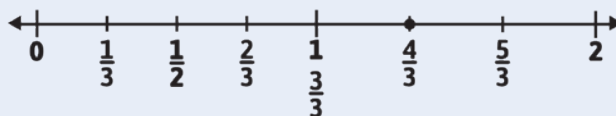
“Is $\frac{4}{3}$ greater than or less than $\frac{3}{3}$?” *Greater than.*

“Right. I can place the fraction after the benchmark number one on the number line (add a point and label on the *Open Number Line* for the fraction $\frac{4}{3}$). Do you think this fraction is greater than two? Explain your reasoning.” *I do not think that this fraction is greater than two. It would take six-thirds to equal two, and this is only four-thirds.*



New Teaching (continued)

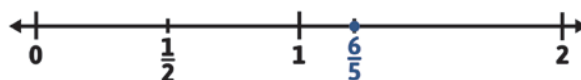
If your student is unsure how to explain his reasoning, encourage him to add tick marks and labels to the *Open Number Line* up to the number 2 (or $\frac{6}{3}$).



“That’s right. This fraction is greater than the benchmark one but less than two. We would need to go two more spaces to equal two. The fraction $\frac{4}{3}$ is $\frac{1}{3}$ greater than one.”

Keep the numbers zero, $\frac{1}{2}$, one, and two on the *Open Number Line* and clear the rest. Clear the dry-erase board.

“Let’s try another one. A hiker went $\frac{6}{5}$ miles along the Pacific Coast Trail before stopping to adjust her pack (write $\frac{6}{5}$ on the dry-erase board). Did this hiker stop before or after the one-mile marker? Mark where you think $\frac{6}{5}$ should go on the *Open Number Line*, and then explain why you put it there.” *I put six-fifths after the one but before the two. I marked it closer to one than to two because I think it is just one-fifth after one.*



“Notice that the numerator is greater than the denominator in $\frac{4}{3}$ and $\frac{6}{5}$. When the numerator is larger than the denominator, the fraction is larger than the number one benchmark.”

Keep the benchmarks zero, $\frac{1}{2}$, one, and two on the *Open Number Line* and clear the rest. Clear the dry-erase board.

Less than One-Half

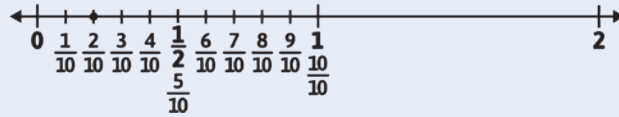
“A trail guide map says that a waterfall is along the hike at $\frac{2}{10}$ of a mile (write $\frac{2}{10}$ on the dry-erase board). What do you notice about $\frac{2}{10}$ that can help you figure out where to place it on the number line?” *I noticed that the numerator is two and that the denominator is ten.*

“Good. The denominator helps determine where to place a fraction. Using the denominator of ten, you can think about where $\frac{1}{2}$ would be and where one whole would be. What fractions with a denominator of ten are equal to $\frac{4}{3}$ and to one whole?” *Five-tenths is equal to one-half, and ten-tenths is equal to one whole.*

New Teaching

(continued)

If your student is unsure how to find the equivalent fractions, add tick marks and labels to the *Open Number Line* to represent the tenths.



“Right. Since five is half of ten, $\frac{5}{10}$ is equal to $\frac{1}{2}$. When the denominator is ten and the numerator is ten, the fraction represents one whole. Using what you know about $\frac{2}{10}$, place it on the number line, and then explain why you chose that spot.” *I placed two-tenths before one-half because two-tenths is less than five-tenths.*

“How far away is $\frac{2}{10}$ from the benchmark one?” *Eight more spaces.*

“Good. The fraction $\frac{2}{10}$ is less than the benchmark $\frac{1}{2}$.” Keep the benchmarks zero, $\frac{1}{2}$, one, and two on the *Open Number Line* and clear the rest. Clear the dry-erase board.

“Let’s try another one! A hiker began a hike but turned around after going only $\frac{2}{6}$ of the way because it was getting dark (write $\frac{2}{6}$ on the dry-erase board). Find the benchmark number that the hiker gets the closest to on the *Open Number Line*. Mark where you think $\frac{2}{6}$ should go on the number line, and then explain why you chose that spot.” *I marked two-sixths before one-half. I know that it takes three-sixths to make one-half because three is half of six, so two-sixths comes before one-half.*

“You can use the relationship between the numerator and the denominator to help place fractions on the number line. If you have sixths, then half of six is three. Because two is less than three, you know that $\frac{2}{6}$ comes before $\frac{1}{2}$ on the number line. How far away was the hiker from the $\frac{1}{2}$ marker?” *Two-sixths is one-sixth away from one-half.*

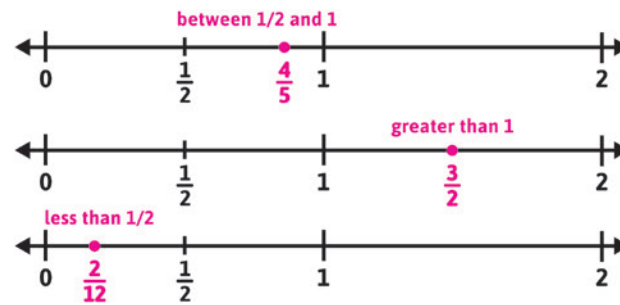
“How far away from the number one benchmark was the hiker?” *The hiker was four-sixths of the way from the benchmark one.*

“Since $\frac{3}{6}$ is equivalent to $\frac{1}{2}$, it takes one more sixth to be at one-half. Using benchmark numbers like $\frac{1}{2}$ and one can help you reason about how fractions compare.”

Have your student determine if the fractions $\frac{4}{5}$, $\frac{3}{2}$, and $\frac{2}{12}$ are less than $\frac{1}{2}$, between $\frac{1}{2}$ and one, or greater than one, and explain his reasoning. Ask your student to tell you how far away the fraction is from the benchmark one. If needed, use the *Open Number Line* to help.

New Teaching (continued)

Answer Key



Complete Activity Sheet

“Let’s use benchmark fractions to compare the sizes of fractions!”

Fraction	Less than $\frac{1}{2}$	Between $\frac{1}{2}$ and 1	Greater than 1	Distance from 1
$\frac{2}{10}$	✓			$\frac{8}{10}$
$\frac{8}{12}$				$\frac{4}{12}$
$\frac{6}{4}$				$\frac{2}{4}$
$\frac{2}{8}$				$\frac{6}{8}$
$\frac{9}{10}$				$\frac{1}{10}$
$\frac{13}{12}$				$\frac{1}{12}$

Spotting Animals Along the Trail

Turn to page 67 in the *Swoop into Math!* activity book.

“The table shows different points along a two-mile hike where animals were spotted. Place a checkmark to answer if the fraction is less than $\frac{1}{2}$, between $\frac{1}{2}$ and one, or greater than one. Use what you know about fractional parts to write how far each fraction is from one. You can use the *Open Number Line* to help you if needed.”

Answer Key

Fraction	Less than $\frac{1}{2}$	Between $\frac{1}{2}$ and 1	Greater than 1	Distance from 1
$\frac{2}{10}$	✓			$\frac{8}{10}$
$\frac{8}{12}$		✓		$\frac{4}{12}$
$\frac{6}{4}$			✓	$\frac{2}{4}$
$\frac{2}{8}$	✓			$\frac{6}{8}$
$\frac{9}{10}$		✓		$\frac{1}{10}$
$\frac{13}{12}$			✓	$\frac{1}{12}$

New Teaching (continued)



Look For

Some students might struggle to know how far away each fraction is from the benchmark one.

Here's How to Help: Have your student represent one in terms of a fraction. Use the same denominator as the fraction your student needs to compare. For example, if your student is comparing fourths, $\frac{4}{4}$ equals one. Then, your student can look at the numerator to see how much less than or greater than $\frac{4}{4}$ it is.

Math Reflection

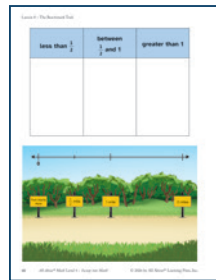
“Let’s Reflect!”

Ask some questions to guide your student’s reflection:

- “How are benchmark fractions, such as $\frac{1}{2}$ and one, helpful when you think about other fractions?”
- “How can you use the relationship between the numerator and the denominator to explain that $\frac{4}{3}$ is greater than one?”
- “What is something that you enjoyed about today’s lesson?”

Extended Practice (Optional)

If your student is not able to relate fractions to benchmarks, or he expressed the need for more practice, continue working on this skill.



The Benchmark Trail

Turn to page 68 in the *Swoop into Math!* activity book. Place the activity page into the dry-erase pocket.

“A group of hikers stopped at different locations along a two-mile trail. Place the following fractions on the number line, compare them to the benchmark numbers, and then fill in the chart with where each fraction belongs.”

Write the fractions on the dry-erase board.

$$\frac{3}{8}, \frac{7}{4}, \frac{1}{6}, \frac{5}{6}, \frac{2}{3}, \frac{5}{4}$$

New Teaching

(continued)

Answer Key

Lesson 8 – The Benchmark Trail

less than $\frac{1}{2}$	between $\frac{1}{2}$ and 1	greater than 1
$\frac{1}{6}$	$\frac{2}{3}$	$\frac{5}{4}$
$\frac{3}{8}$	$\frac{5}{6}$	$\frac{7}{4}$

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Your student will continue to relate fractions to benchmarks in future lessons. You can proceed to the next lesson without full mastery of this skill.

Oxley's Math Fun!

Trail Race!

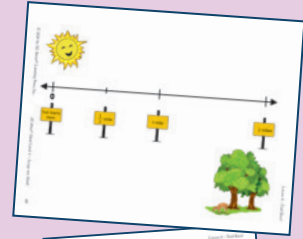
“Let’s practice our math skills!”

Materials

- Trail Race Gameboard, *Swoop into Math!* page 69
- Trail Race Fraction Cards, *Swoop into Math!* page 71
- dry-erase pocket and marker

Directions

1. Cut apart the *Trail Race* fraction cards. Mix them up and pass out the cards equally to the two players. Keep the cards face down in two stacks.
2. Place the *Trail Race* gameboard into the dry-erase pocket.
3. Each player turns over a card from his stack at the same time and then writes the fraction from his card on the number line on the *Trail Race* gameboard by using the benchmark numbers.
4. The player with the fraction beyond the larger benchmark keeps both cards. If both fractions fall between the same benchmark numbers (for example, $\frac{2}{3}$ and $\frac{3}{4}$ are both between $\frac{1}{2}$ and 1), each player keeps the card he drew.
5. The game continues until all the cards are gone.
6. The player with the most cards at the end is the winner!



Answer Key

Less than $\frac{1}{2}$: $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{2}{8}$, $\frac{3}{10}$, $\frac{4}{12}$

Between $\frac{1}{2}$ and 1: $\frac{2}{3}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{5}{6}$, $\frac{5}{8}$, $\frac{7}{8}$, $\frac{6}{10}$, $\frac{10}{12}$, $\frac{11}{12}$

More than 1: $\frac{4}{3}$, $\frac{5}{4}$, $\frac{6}{4}$, $\frac{7}{4}$

Track Your Progress

Mark the Progress Chart



Have your student mark Lesson 8 on the Progress Chart.

Lesson 16 Representing and Identifying Equivalent Fractions and Decimals

Objective

Your student will learn to reason about equivalent tenths and hundredths using decimal notation.

You Will Need

- Swoop into Math!* pages 133 to 135
- Fractions and Decimals Mat, *Oxley's Math Tools*
- Tenths and Hundredths Grids, *Oxley's Math Tools*
- Base-10 Blocks (optional)
- dry-erase board, pocket, and marker
- glue

Before You Begin

Preview Representing and Identifying Decimals that Are Equivalent

In the previous lesson, your student practiced identifying decimals from representations such as fractions or fraction models. He made connections between these representations to help him write each value as a decimal. In this lesson, he will use that knowledge to explore decimal equivalents.

Your student will be presented with models and may use base-10 blocks as a support to build an understanding that one tenth is equivalent to ten hundredths. This understanding will then be applied when comparing two values written in decimal notation to determine whether they are equivalent.

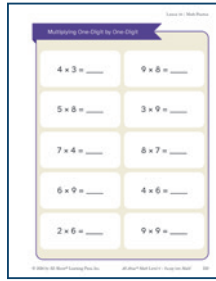
Review



Daily Review

As part of your math time each day, refer to your student's *Daily Review Tracker*. Choose one or two skills, and take a few minutes to practice.

Review
(continued)



Math Practice

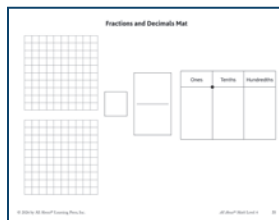
Turn to page 133 in the *Swoop into Math!* activity book.

“Let’s practice our multiplication facts! Write the product for each equation.”

Answer Key

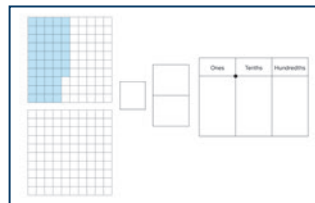
- $4 \times 3 = 12$
- $5 \times 8 = 40$
- $7 \times 4 = 28$
- $6 \times 9 = 54$
- $2 \times 6 = 12$
- $9 \times 8 = 72$
- $3 \times 9 = 27$
- $8 \times 7 = 56$
- $4 \times 6 = 24$
- $9 \times 9 = 81$

Writing Decimals from Other Representations



Fractions and Decimals Mat

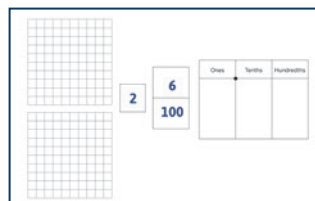
Find the *Fractions and Decimals Mat* from *Oxley’s Math Tools*. Place it into the dry-erase pocket. Shade in 47 small boxes on the hundredths grid.



“I’ve shaded the model to represent a decimal. Write the decimal on the place value chart.” (Answer: 0.47)

“How did you know to write the four in the tenths place?” *The grid shows four columns that are completely shaded. Each column represents a tenth.*

Clear the dry-erase pocket. Write the mixed number $2\frac{6}{100}$.



Review (continued)

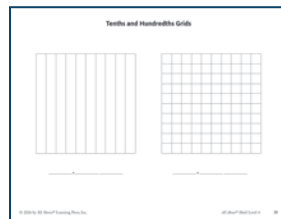
“This time, I’ve written a mixed number. Write its value as a decimal.”
(Answer: 2.06)

“I notice that the two is written to the left of the decimal point. What does that mean?” *There are two wholes.*

“Good. Let’s explore more about fractions and decimals, and how we can represent equivalent values.”

New Teaching

Identifying Equivalent Decimals

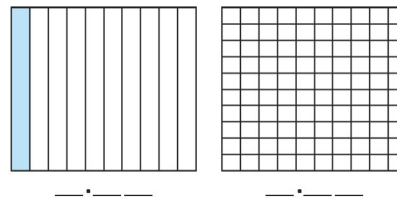


Tenths and Hundredths Grids

Find the *Tenths and Hundredths Grids* from *Oxley’s Math Tools*. Place this page into the dry-erase pocket.

“Let’s imagine we are at the beach with a marine life conservation group. The group has identified ten sea turtle nests along the beach. One hundred sea turtles just hatched from one of the nests and are making their way to the ocean!”

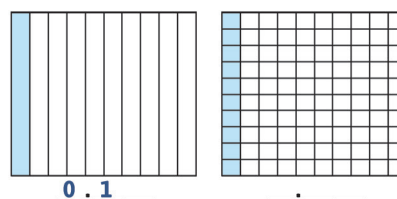
On the *Tenths and Hundredths Grids*, shade in one column on the grid that is separated into tenths.



“This model represents the number of nests that have hatched so far. What amount is represented here?” *One-tenth.*

“Yes. Write the decimal for one-tenth below the model.” (Answer: 0.1)

On the *Tenths and Hundredths Grids*, shade the first column on the grid, which is separated into hundredths.



New Teaching

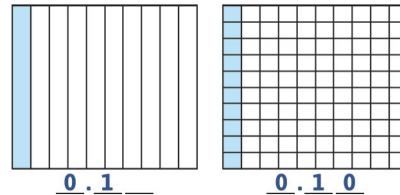
(continued)

“I’ve made another model to represent the number of baby sea turtles with spots. What amount is represented here?” *Ten-hundredths.*

“Write ten-hundredths as a decimal below the model.” (*Answer: 0.10*)

“What do you notice about these two models?” *The same amount is shaded in.*

“Since the same amount is shaded in both models, the two values are equivalent. But I notice that the decimals look a little different.”



“What do you notice when you compare the decimals for these two models?” *One has only one digit after the decimal point, and the other has two digits after the decimal point. They both have a one in the tenths place.*

“You’re right. The two decimals are equivalent because they represent the same amount. Let’s figure out why the decimals are equivalent even though they look a little different. When I look at the two decimals you wrote, I see that they both have a zero before the decimal point. What does that tell us?” *They are both less than one whole.*

“Now, let’s look at the decimal point. Remember, the first place after the decimal point is the tenths place. How many tenths does each decimal show?” *One-tenth.*

“Right! Each model has one-tenth. In this model (point to the grid separated into tenths), we shaded in one-tenth. In this model (point to the grid separated into hundredths), we shaded in ten-hundredths, but it also looks like one-tenth. That is because ten-hundredths make up one-tenth.”

If your student struggles with this idea, use the base-10 blocks to help make the connection. Start with a base-10 flat, and tell your student that we can think of this block as representing one whole, just like the hundredths grid. Place a base-10 rod on top of the flat so that it aligns with the leftmost column. Tell your student we can think of the base-10 rod as a tenth. We need ten rods to make a whole. Just like we’ve broken apart a rod to help us add and subtract, we can break apart a rod to represent smaller units. Trade the base-10 rod for ten base-10 units to help him see that they are equivalent.



New Teaching

(continued)

“What do you see in the hundredths place of each decimal?” *One is blank, and the other has a zero.*

“Good! Zero means nothing. So, writing a zero here or leaving it blank represents the same value, zero. So, the decimals 0.1 and 0.10 represent the same amount. They’re equivalent.”

Clear the *Tenths and Hundredths Grids*. On the dry-erase board, write the fractions $\frac{4}{10}$ and $\frac{40}{100}$.

“I’ve written two fractions on the dry-erase board. Each fraction represents the length of the beach the turtles must cross to reach the ocean.”

“Write each fraction as a decimal on the dry-erase board.”
(*Answer: 0.4 and 0.40*)

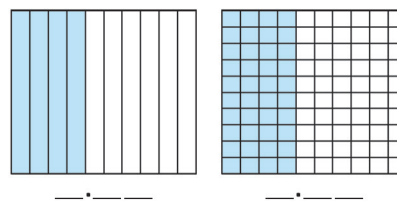
“Tell me the two decimals you wrote.” *Zero and four-tenths and zero and forty-hundredths.*

“I’m wondering if these two values are also equivalent. What do you think?” If your student recognizes that the values are equivalent and explains how he knows, you can move on to the next example. If he is unsure, continue with the following scripting.

“I see that both of the decimals you wrote have zero ones (point to the zero before the decimal). How many tenths are there in each decimal?” *Four.*

“That is also the same. What about the hundredths?” *One has a zero, and the other is blank.*

“Since they both have nothing in the hundredths place, they’re equivalent. Shade in the grids on the *Tenths and Hundredths Grids* to check our work.”



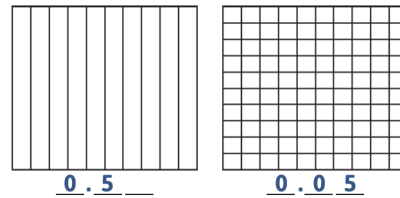
“The same amount is shaded! Just like fractions, decimals can be equivalent too!”

Clear the *Tenths and Hundredths Grids* and the dry-erase board. Write the fractions $\frac{5}{10}$ and $\frac{5}{100}$ on the dry-erase board.

New Teaching

(continued)

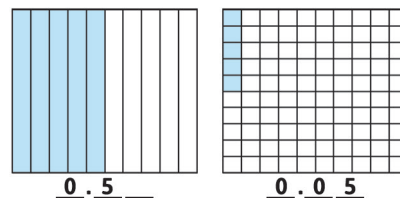
“These fractions represent the length of the beach that the sea turtles from two other nests need to cross to reach the ocean. Let’s figure out if the values are equivalent. Write each fraction as a decimal at the bottom of the *Tenths and Hundredths Grids*.”



Your student might write $\frac{5}{100}$ as 0.5. Remind him of the location of the hundredths place in the decimal, or have him shade the grid to recognize that $\frac{5}{100}$ has zero tenths.



“These decimals look similar but not quite the same. This time, I noticed that after the decimal point, there is a zero before the five (point to 0.05). This tells us there are no tenths in this number. But when I look at the other decimal, I see five-tenths (point to 0.5). I know five-tenths is more than zero-tenths, so I do not think these values are equivalent. Make a model of each decimal on the grids to check your work.”



“We were right! The fractions $\frac{5}{10}$ and $\frac{5}{100}$ are not equivalent. Your model of five-tenths has a lot more shaded in than your model of five-hundredths.”

Representing Equivalent Decimals

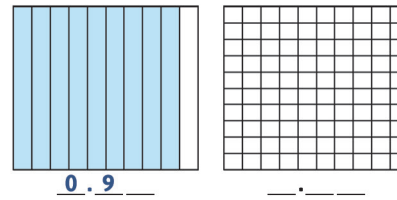
Clear the *Tenths and Hundredths Grids*. Write 0.9 at the bottom of the grid, which is divided into tenths.

“What decimal did I write?” *Zero and nine-tenths.*

New Teaching

(continued)

“Right! Nine-tenths of the sea turtles from the hatched nest reached the sea. Use the tenths grid to represent nine-tenths.”



“How many hundredths are equivalent to nine-tenths? Write the decimal, and read the value aloud.” (*Answer: 0.90, zero and ninety-hundredths*)

If your student is unsure, have him use the hundredths grid to make a model. Tell him to shade the hundredths grid so that the same amount is represented as in the tenths grid.



“That’s right! How did you figure that out?” *Each tenth is made up of ten hundredths. So, I multiplied 9 by 10 and got 90. To make the decimal equivalent, I made sure that each number had the same number of tenths, so I placed the nine in the tenths place. Then, I added a zero in the hundredths place.*

Have your student continue to practice identifying and representing equivalent decimals. If needed, have him use the *Tenths and Hundredths Grids*.

Provide the following pairs of fractions. Have your student write each fraction as a decimal, then determine if the pair is equivalent and explain how he knows.

- $\frac{8}{10}$ and $\frac{8}{100}$ (*Answer: 0.8 and 0.08; These are not equivalent because eight-hundredths is only eight small squares on the grid, and eight-tenths is almost a full grid.*)
- $\frac{2}{10}$ and $\frac{20}{100}$ (*Answer: 0.2 and 0.20; These are equivalent because each tenth is made up of ten hundredths, so two-tenths is the same as twenty-hundredths.*)

Provide the following fraction-and-decimal pairs. Have your student determine if each pair is equivalent and explain how he knows.

- 0.70 and $\frac{7}{10}$ (*Answer: These are equivalent because seven-tenths broken into hundredths makes seventy-hundredths.*)
- 0.3 and $\frac{3}{100}$ (*Answer: These are not equivalent because one is three-tenths, and the other is three hundredths. Three-tenths can be represented by three rods or three shaded columns, while three-hundredths is just three units or three shaded squares.*)

Complete Activity Sheet

“Let’s practice identifying and representing equivalent decimals!”

Off to the Sea

Remove page 135 from the *Swoop into Math!* activity book. Cut apart the cards that are on the side of the table.

Have your student use the information provided in each row of the table to find the two remaining matches and then glue them in the correct column. Each set of matches, or each row, will include a model, a fraction, and a decimal that all represent the same amount. Not all the cards will be used.

Answer Key

Model	Fraction	Decimal
	$\frac{4}{10}$	0.40
	$\frac{90}{100}$	0.90
	$\frac{20}{100}$	0.2
	$\frac{7}{10}$	0.70
	$\frac{3}{10}$	0.3
	$\frac{80}{100}$	0.80



Look For

Your student might think that the decimals with zero-tenths and some hundredths are also equivalent to the given fraction or decimal.

Here’s How to Help: Have him make a model or use the base-10 blocks to represent the decimals and the fractions.

New Teaching (continued)

Math Reflection

“Let’s Reflect!”

Ask some questions to guide your student’s reflection:

- “How can you decide if two decimals are equivalent?”
- “If you add a zero after the last digit in a decimal, does it change the value of the decimal?”
- “What is one thing that you found difficult at first but that got easier as we practiced?”

Extended Practice (Optional)


If your student is not able to identify equivalent tenths and hundredths, or he expressed the need for more practice, continue working on this skill.

Have your student use the base-10 blocks or the *Tenths and Hundredths Grids* to model each number in the following pairs of numbers to help determine whether the pair is equivalent:

- 0.03 and $\frac{3}{10}$ (*Answer: not equivalent*)
- $\frac{5}{10}$ and $\frac{50}{100}$ (*Answer: equivalent*)
- 0.8 and 0.80 (*Answer: equivalent*)

Your student will continue to work with decimals in future lessons. You can proceed to the next lesson without full mastery of this skill.

Mark the Daily Review Tracker



Write today’s date next to the skill: Understand decimals expressed through hundredths. Include this in your rotation of daily review items.

Hatch a Match

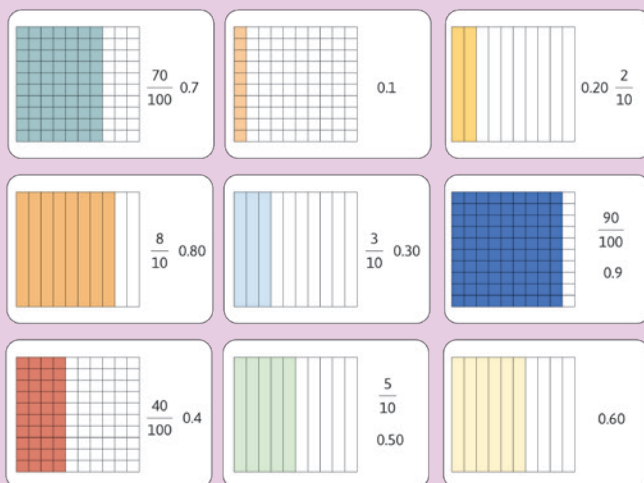
“Let’s practice our math skills!”

Materials

Hatch a Match Cards, *Swoop into Math!* pages 137 to 139

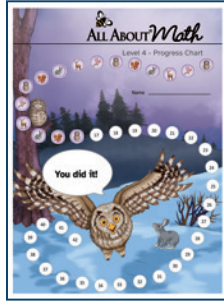
Directions

1. Cut apart the *Hatch a Match* cards. Sort the cards into three stacks depending on the way the number is represented (fraction, decimal and sea turtles, or grid), and mix the cards within each stack.
2. Deal two cards from each stack to each player. Then, mix the remaining cards together and place them face down in one stack. The players take turns flipping over the top card on the stack.
3. Both players look at the cards to see if they have a decimal, a fraction, or a model equivalent to the card. If a sea turtle card is flipped, the player who flipped it gets to call the number.
4. If either player can identify an equivalent match, he will read the value aloud and show the other player his card. If the card’s values are equivalent, that player puts his card in front of him, turtle side up, to “hatch” his turtle. The card that was flipped over should be placed in a discard pile.
5. If a player has more than one card that shows an equivalent value, he can place all the cards in front of him and “hatch” multiple turtles.
6. If a player has a sea turtle card, he can choose any decimal to play at any time in the game.
7. The first player to hatch all his turtles is the winner!



Track Your Progress

Mark the Progress Chart



Have your student mark Lesson 16 on the Progress Chart.

