

Grade 4 Mathematics

Number and Number Relations: Lesson 20

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol () by them.

Purpose of Lesson 20:

- In this lesson, the tutor and the students will
 - ✓ locate decimals on a number line,
 - ✓ use number sense and estimation skills with decimals, and
 - ✓ be introduced to percents.

Equipment/Materials Needed:

- Copies of Student Sheets 96 and 97 for students
- Paper and pencils
- Chalkboard
- One pair of scissors

Preparations before beginning Lesson 20:

- Run one copy of Student Sheets 96 and 97 for each student. Cut Student Sheet 96 into 2 parts.
- Have paper and pencils available.

Lesson 20: Number and Number Relations

Say:

In Lesson 19 of Number Relations, you looked at fractions on a number line. In this lesson, you will look at decimals on a number line. Remember that in the last lesson, we folded pieces of paper to find halves, fourths, eighths, thirds and sixths. Thirds were harder to do. This time, we want to look at tenths. Folding a paper into tenths would be much, much harder to do, so I will give you a ruler that has been divided into tenths.

 Give students Part A of Student Sheet 96.

Say:

Let's label the ends of the ruler as 0 and 1. How many spaces are between 0 and 1? (10) Label each mark with a fraction. ($\frac{1}{10}, \frac{2}{10}, \frac{3}{10}, \frac{4}{10}, \frac{5}{10}, \frac{6}{10}, \frac{7}{10}, \frac{8}{10}, \frac{9}{10}$) Could you write 1 in tenths? ($\frac{10}{10}$) We could also use decimals to label marks. $\frac{1}{10}$ could be labeled as 0.1. Label the rest of the marks using decimals. (0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1 or 1.0) Which is larger, 0.2 or 0.6? (0.6) Which is smaller, 0.1 or 1.0? (0.1) Which number is halfway between 0 and 1? (0.5) What is another name for 0.5? ($\frac{1}{2}$) Is 0.8 closer to 0 or to 1? (1) Is 0.2 closer to 0 or to 1? (0)

 Give students Part B of Student Sheet 96.

Say:

This ruler is just like the ruler in Part A except that there are marks between the tenths. Let's label the end of the rulers as 0 and 1 and label all of the longer marks as tenths. How many spaces are between 0 and $\frac{1}{10}$? (10) How many spaces are between $\frac{1}{10}$ and $\frac{2}{10}$? (10) How many spaces are between 0 and 1? (100) This ruler is broken into hundredths. Now you can't label each one of the marks because you don't have room, but you can label some of them. How many hundredths are in $\frac{1}{10}$? (10 hundredths) We could also label $\frac{1}{10}$ as $\frac{10}{100}$.

Label the rest of the 10^{ths} as hundredths.

($\frac{20}{100}, \frac{30}{100}, \frac{40}{100}, \frac{50}{100}, \frac{60}{100}, \frac{70}{100}, \frac{80}{100}, \frac{90}{100}, \frac{100}{100}$) Which number is halfway

between 0 and 1? ($\frac{5}{10}$ or $\frac{50}{100}$) We could also call this mark $\frac{1}{2}$. One

fourth is a special fraction in mathematics. We use it quite often. See

whether you can find approximately where $\frac{1}{4}$ would be found on this

ruler. Let them try folding. It should be halfway between $\frac{20}{100}$ and $\frac{30}{100}$; it

is in fact $\frac{25}{100}$. Do the same thing with $\frac{3}{4}$. Another name for $\frac{3}{4}$ is 0.75.

These are the only fraction/decimal equivalents required for 4th grade.

 Give students Student Sheet 97.

Answers:

1. 0.7 lb. 2. 0.25 pound 3. $\frac{3}{4}$ degree

4. 0.6 second 5. more

Answers for problems 6 through 9 will vary.

6. 0.1, 0.2, 0.35, etc 7. 0.8, 0.85, 0.73, etc..

8. 0.21, 0.25, 0.28, etc 9. 0.76, 0.77, 0.80, etc.

Note: You may want to introduce percents here, but percents is a tough concept for 4th graders. If not, end the lesson with Student Sheet 97.

Say:

There is another way to label these numbers. The ruler has been broken into 100 parts. The word *percent* means parts per hundred. The sign % is used to show percents. 0 is written as 0%, and 1 is written as 100%.

0.25 means $\frac{25}{100}$, so it would be written as 25%. How would you write

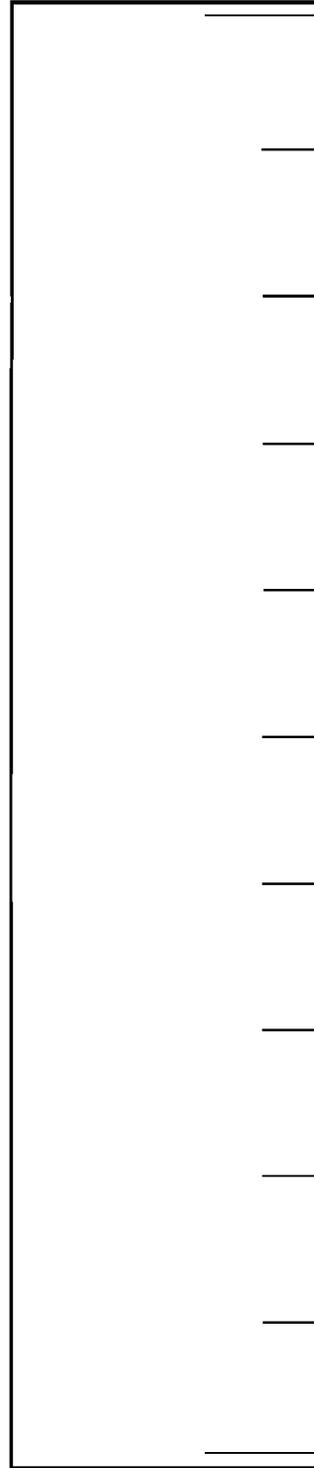
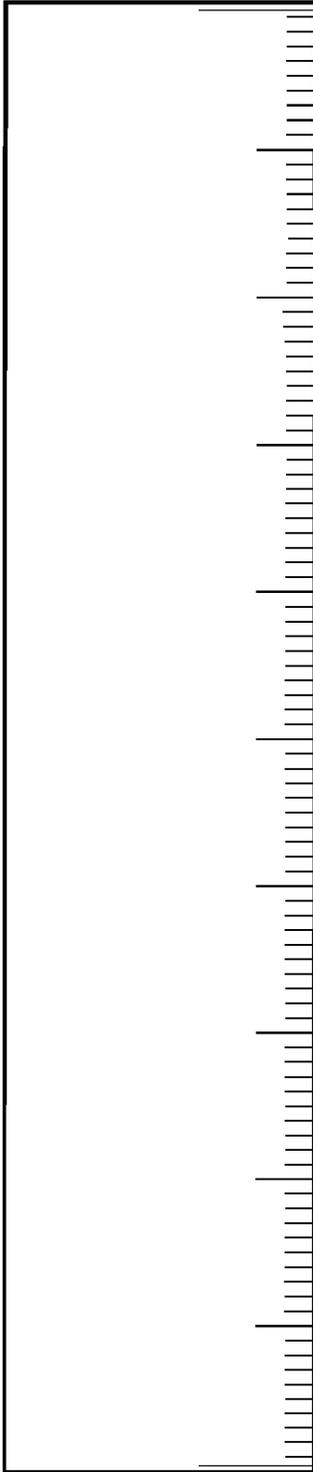
0.50 as a percent? (50%) How would you write 0.75 as a percent? (75%)

 Have one student summarize today's lesson. Visualizing decimals on a number line can help students compare decimals.

Student Sheet 96 (Number and Number Relations: Lesson 20)

Part B

Part A



Student Sheet 97 (Number Relations: Lesson 20)

Answer the following questions. Think about your number lines as you answer the questions.

1. Alice's mother asked Alice to buy ground turkey for dinner. Alice looked at two packages. One was labeled 0.7 pound and one was labeled as 0.65 pound. Which package contained the most ground turkey?
2. Eddie ordered a quarter-pound hamburger. A *quarter-pound hamburger* means that there is $\frac{1}{4}$ pound of meat in the burger. How would this amount be written as a decimal?
3. Donnie's temperature went up 0.75 of a degree. How would this amount be written as a fraction?
4. The stop light on Mac Arthur Ave. was broken. It would stay green for only 0.60 of a second. What is another decimal that could be used to name this amount?
5. The average person in the United States eats 0.5 lbs. of cheese each week. Is this amount more or less than $\frac{1}{4}$ pound of cheese?
6. Name a decimal that is closer to 0 than to 1.
7. Name a decimal that is closer to 1 than to 0.
8. Name a decimal that is between 0.20 and 0.30.
9. Name a decimal that is between 0.75 and 0.85.