Bridges in Mathematics
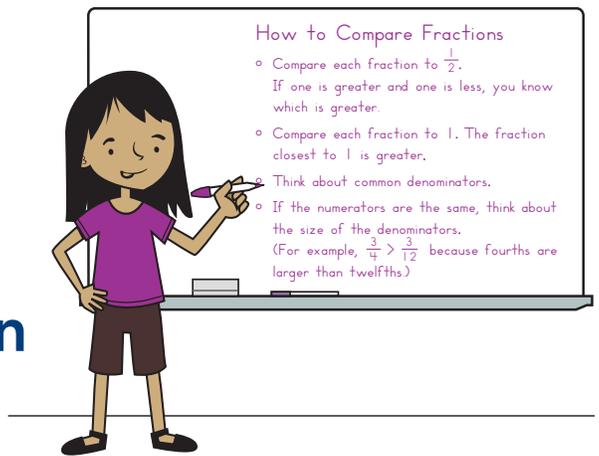## Grade 4 Unit 7

Reviewing & Extending Fractions, Decimals & Multi-Digit Multiplication

How to Compare Fractions
- Compare each fraction to $\frac{1}{2}$. If one is greater and one is less, you know which is greater.
- Compare each fraction to 1. The fraction closest to 1 is greater.
- Think about common denominators.
- If the numerators are the same, think about the size of the denominators. (For example, $\frac{3}{4} > \frac{3}{12}$ because fourths are larger than twelfths.)

In this unit your child will:

- Compare fractions

- Recognize and generate equivalent fractions

- Represent and compare decimal numbers

- Multiply two-digit numbers with the standard algorithm and other methods

Your child will learn and practice these skills by solving problems like those shown below. Use the free Math Vocabulary Cards app for additional support: mathlearningcenter.org/apps.

PROBLEM	COMMENTS
Sketch and name two fractions that are equivalent to $\frac{1}{3}$. $\frac{1}{3}$ **a** $\frac{2}{6}$ **b** $\frac{3}{9}$	Students show the process of creating equivalent fractions by dividing equal parts of a fraction bar into even more equal parts. In this example, each third is divided into two equal parts to show sixths and then into three equal parts to show ninths. These bars can be used to show fractions that are equivalent to $\frac{1}{3}$: $\frac{2}{6}$ and $\frac{3}{9}$. As long as the resulting number of equal parts is a multiple of 3 (6, 9, 12, … 42, and so on), the bar can be used to represent a fraction equivalent to $\frac{1}{3}$.
Write an inequality symbol (< or >) to show which fraction is greater and which is less. $\frac{30}{100}$ < $\frac{6}{10}$ $\quad$ $\frac{40}{100}$ > $\frac{2}{10}$ Write an inequality symbol (< or >) to show which decimal is greater and which is less. 0.08 < 0.3 $\quad$ 0.39 < 0.4	To successfully determine which fraction or decimal number in a pair is greater, students need to think carefully about the value each represents. In the first example at left, students might decide that $\frac{30}{100}$ is greater than $\frac{6}{10}$ if they are not thinking carefully about the value of each fraction. If they slow down to rewrite $\frac{6}{10}$ as $\frac{60}{100}$, they can see clearly that $\frac{6}{10}$ is greater than $\frac{30}{100}$. Similarly, although 39 is greater than 4, the decimal 0.4 is greater than 0.39 because 0.4 is equal to 4 tenths or 40 hundredths, and 40 hundredths is greater than 39 hundredths. If students are struggling to compare decimal fractions, encourage them to rewrite the fractions with a common denominator of 100. If they are struggling to compare decimals, they can rewrite each to the hundredths place or rewrite each as a decimal fraction. This will force them to think carefully about the actual value of each fraction or decimal, instead of thinking about the digits as isolated whole numbers.

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PROBLEM	COMMENTS
Solve this problem. $32 \times 19 =$ _____ $32 \times 20 = 640$ $640 - 32 = 608$ $\begin{array}{r} 32 \\ \times\ 19 \\ \hline 288 \\ +\ 320 \\ \hline 608 \end{array}$	Students are becoming fluent with the standard algorithm and should be able to use it to multiply multi-digit numbers. Some students will have other equally efficient and accurate strategies for solving problems like this one, as shown at far left.
Terrell's aunt pays him to help with her yardwork. She pays him $4 per hour. Terrell's little sister helps him with the work sometimes. For her help, Terrell gives his little sister $10. Which expression shows how much money Terrell has left after paying his sister? (The letter h stands for the number of hours Terrell will work for his aunt.) $14 \times h$ $4 + 10 \times h$ $(4 \times h - 10)$ $6 \times h$ How much money will Terrell have after working 16 hours and paying his sister? Show all your work. $4 \times 16 - 10$ $2 \times 2 \times 16 - 10$ $2 \times 32 - 10$ $64 - 10$ $54	Students are eventually expected to write their own expressions to represent problem situations. Selecting an expression from a few choices is a step toward that skill. It requires students to think carefully about the relationships among the numbers in the problem.

FREQUENTLY ASKED QUESTIONS ABOUT UNIT 7

Q: Why does my student use pencil-and-paper to solve problems that would be more easily approached with a calculator? This work seems like review.

A: We want fourth graders to become proficient with mental and paper-and-pencil methods for adding, subtracting, multiplying, and eventually, dividing. They need practice to become even more proficient at these skills, so please ask your student not to use a calculator for now.