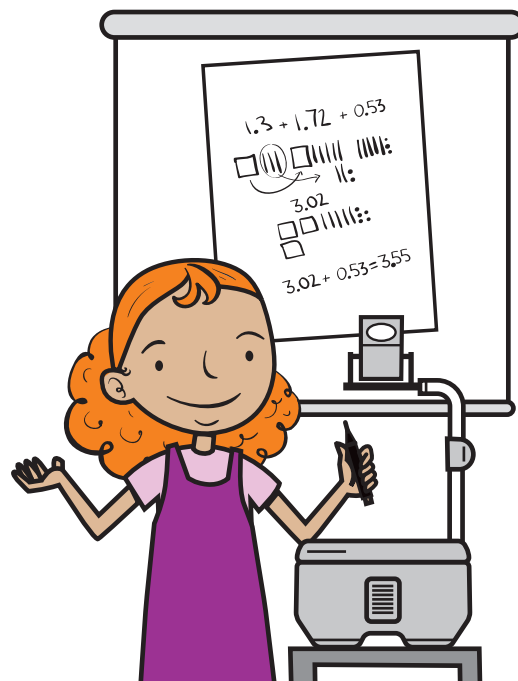## Bridges in Mathematics
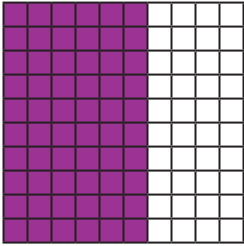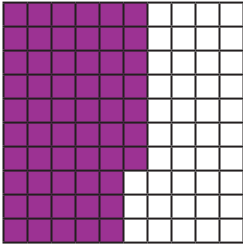## Grade 4 Unit 3

Fractions & Decimals

In this unit your child will:

- Compare fractions with like and unlike denominators
- Locate fractions on a number line
- Add and subtract fractions with like and unlike denominators
- Identify equivalent fractions and decimals
- Compare decimal numbers

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
Which is greater, $\frac{1}{2}$ or $\frac{1}{3}$? use the egg cartons to show your thinking. $\frac{1}{2}$ $\frac{1}{3}$	Students use egg cartons to show different fractions. The egg carton is useful because a set of 12 can be divided in different ways to show many fractions: halves, thirds, fourths, sixths, and twelfths. This makes it a good tool for representing, comparing, and adding and subtracting fractions whose denominators are factors of 12 (1, 2, 3, 4, 6, and 12).
A pan of brownies was cut into 9 equal pieces. Angie ate 4 of them. What fraction of the whole pan did she eat? Draw a sketch and write a fraction. $\frac{4}{9}$	Students use other models to represent fractions as parts of a whole as well. To do so, they need to be clear about what the whole is, how many equal parts it has been divided into, and how many of those parts have been selected. In the example, the whole is the pan of brownies, which has been divided into 9 equal parts, 4 of which were eaten. This means that $\frac{4}{9}$ (4 of 9 equal pieces) of the pan of brownies have been eaten.
Put the following fractions where they belong on the number line. $\frac{1}{2}$ $\frac{3}{4}$ $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{8}$ 0 $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ 1	The number line is an important model because it illustrates not just individual fractions, but shows the relationships among them. For example, we can see that $\frac{1}{4}$ is half of $\frac{1}{2}$ and that $\frac{1}{8}$ is half of $\frac{1}{4}$ by looking at this number line. Students also consider how landmark fractions can be useful when comparing and computing with fractions. For example, if a student knows that $\frac{1}{4}$ is less than $\frac{1}{2}$, while $\frac{2}{3}$ is greater than one half, they can quickly determine that $\frac{1}{4} < \frac{2}{3}$.

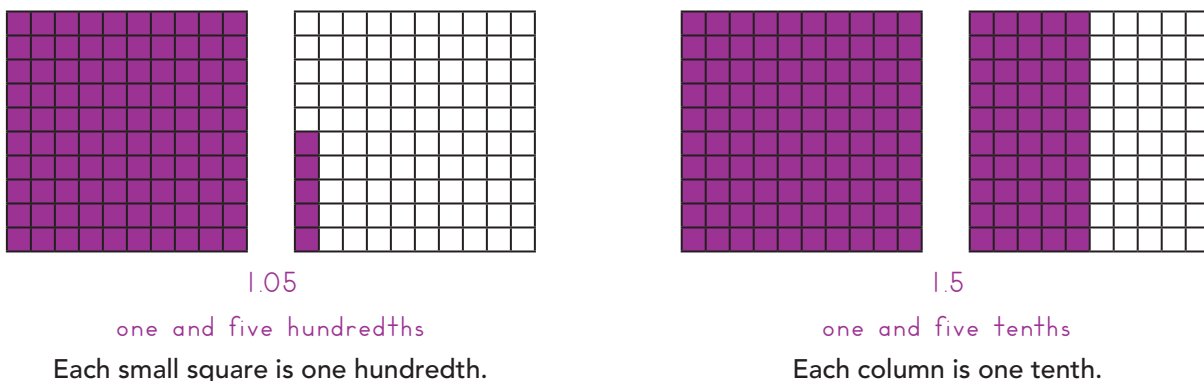| PROBLEM	COMMENTS
Which is larger, $\frac{6}{10}$ or $\frac{57}{100}$? Show each fraction on a grid, label it as a decimal number, and explain which is greater. 0.60 0.57 $\frac{6}{10}$ > $\frac{57}{100}$	Fractions with denominators that are powers of 10 (10, 100, 1000, and so on) can be expressed as decimal numbers and vice versa. Students represent such numbers with fractions, decimals, and pictures that show a whole divided into tenths and hundredths. Using all of these representations helps students compare, add, and subtract such numbers. It also reinforces the place value of the digits in decimal numbers. A clear understanding of each digit's value is crucial for comparing and calculating with decimal numbers.

FREQUENTLY ASKED QUESTIONS ABOUT UNIT 3

Q: I don't remember much about fractions. How can I help?

A: Fractions can be very challenging for students and adults alike, and you don't have to know all the answers to help. Students do a lot of sense-making in class by using pictures and logic to think about fractions, so invite your child to talk about what has been happening in class. Also ask your child to point out to you examples of fractions in real life or pictures—anything from the eggs left in the egg carton to the parts of a pie chart with a news item. Ask questions like, "Where do you see a fraction? What is the whole? How many equal parts are there? How many of those equal parts are we talking about?"

Q: Why are students using so many pictures to show fractions and decimals? Why not just use numbers?

A: Students use models like the egg carton, rectangles divided into equal parts, and the number line to represent fractions. They also use a square divided into 100 smaller squares to see decimal numbers and fractions. The model makes it clear, for example, that 1.05 is smaller than 1.5.

1.05

one and five hundredths

Each small square is one hundredth.

1.5

one and five tenths

Each column is one tenth.

Students will eventually work with numbers alone. Right now, the pictures help them build a strong understanding of decimal numbers and fractions, and of the relationships among them.