Common Core Fractions in Bridges, Grades K–2

Kindergarten	Grade One	Grade Two

Instructional Focus:
- Understand and represent halves as parts of a whole and parts of a set

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- Understand and represent halves, (thirds), and fourths as parts of a whole and parts of sets
- Partition circles and rectangles into 2 and 4 equal parts, and describe the shares using terms such as halves, fourths, and so on
- Understand that the more equal shares you have, the smaller they are

Instructional Focus:
- Recognize, name, model, and write fractions, especially halves, thirds, and fourths
- Compare fractions using 1/2 as a benchmark
- Understand that fractions of the same-sized wholes must be the same size, but don't have to be the same shape

Resources in Bridges:

Resources in Bridges:
Supplement Sets: C4, A6

Resources in Bridges:
Bridges: Unit 4, Unit 7
Number Corner: January & March Calendar Grid;
December–January Magnetic Tile

Kindergartners
- Work with the idea that to cut something in half means to cut it into two equal parts.

Students *Those aren't halves because when you cut something in half, it has to be fair. Halves have to be the same.*

- Fold and cut square paper "sandwiches" in half.

DJ   Alex

- Divide small trains of Unifix cubes in half.

Students *It's 5 because 5 and 5 is 10.*
We went 1 for you, 1 for me. I got 5 and so did Anna.
If you put all the cubes together in one big line and then break it, it makes 5 and 5.
It's fair! You can see that 5 is half.

- Start to connect fractions and division.
$1 \div 2 = 1/2$
$2 \div 4 = 1/2$
$3 \div 6 = 1/2$

1 pancake   2 pancakes   3 pancakes

Students *If 2 kids share a pancake, they each get a half.*
If 4 kids share 2 pancakes, they each get a half.
If 6 kids share 3 pancakes, they each get a half.

First Graders
- Experiment with paper folding to create half and quarter "sandwiches"

Alana   James

- Investigate what happens when you share something among 2, then 3, then 4 children.

1 pizza   1 pizza   1 pizza

Every time there's a new kid, the pieces get smaller.

- Explore fractions as parts of wholes and parts of sets.

- Connect fractions and symmetry.

Calendar Grid Observations			
Date	Figure	When you fold it in half…	Symmetrical?
12/1	Triangle	It makes 2 little △'s.	Yes
12/2	Square	You get 2 ☐'s or 2 △'s.	

Second Graders

- Use tile in two different colors to build, name, and compare fractions, using one-half as a benchmark.

$\frac{5}{9}$ are red
$\frac{4}{9}$ are green
More than half are red.

Red Less than ½, Exactly ½, or More than ½		
		6/10
2/5	4/8	5/9
1/3	2/4	2/2
< ½ less than ½ red	= ½ exactly ½ red	> ½ more than ½ red

- Cut and label paper fraction strips, and use them to build and compare fractions visually.

Circle the *larger* of the two fractions in each pair. The first one is done for you.

2/8   ③/4

Wow! ³/4 is way bigger than ²/8.

- Find different ways to divide the same-sized whole into equal parts, then prove that these parts are the same size, even though they're not the same shape.

Our Evidence (how we know):

Common Core Standards Addressed:
None (CCSS has no fraction requirements for K, but the activities in Supplement Set A2 can be used to introduce concepts taught more formally in Grades 1 & 2.)

Common Core Standards Addressed:
CCSS 1.G.3

Common Core Standards Addressed:
CCSS 2.G.3

Common Core Fractions in Bridges, Grades 3–5

| Grade Three	Grade Four	Grade Five
Instructional Focus: • Represent halves, thirds, fourths, tenths as equal parts of a whole, parts of a set, and on the number line. • Compare and order fractions by reasoning about their size • Recognize and generate simple equivalent fractions & explain why the fractions are equivalent using visual models	**Instructional Focus:** • Extend understanding of fraction equivalence as well as comparing and ordering fractions; compare fractions with unlike denominators • Add and subtract fractions and mixed numbers with like denominators • Understand decimal notation for fractions, and compare decimal fractions to hundredths	**Instructional Focus:** • Use equivalent fractions as a strategy to add and subtract fractions • Solve word problems involving addition, subtraction, and multiplication of fractions • Interpret a fraction as division of the numerator by the denominator • Multiply a whole number or a fraction by a fraction
Resources in Bridges: Bridges: Unit 6 Number Corner: Dec–Feb Magnetic Board, Apr & May Calendar Grid Supplement Sets: A5 Practice Book pages: 8, 10, 30, 103, 105, 108–110, 112, 114–117, 125, 128	**Resources in Bridges:** Bridges: Unit 3, Unit 6 Number Corner: Sept–Dec, Mar, Apr Cal Collector, Mar–May Number Line Supplement Sets: A6, A9, A10 Practice Book pages: 41–44, 46, 47, 57, 59, 67, 101–103, 105, 107, 109, 111, 113, 115, 117, 119, 137	**Resources in Bridges:** Bridges: Unit 4, Unit 6 Number Corner: Nov & Feb Cal Grid, Nov Cal Collector, Mar & Apr Comp Fluency Supplement Sets: A6, A9, A11, A12, D2 Practice Book: 76–79, 80, 84, 103–110, 114, 115, 117–119, 127, 129, 133–137

Grade Three

Third Graders
• Investigate fractions in the context of data and measurement.

Student: We cut it into 4 equal pieces, so I think that a quart is one-fourth of a gallon.
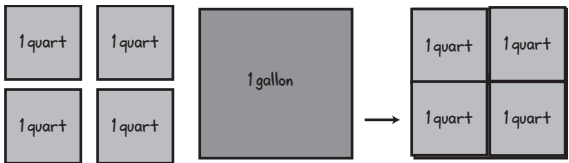
• Build and discuss fractions on two different types of geoboards. Use the models to compare fractions, and identify equivalent fractions.
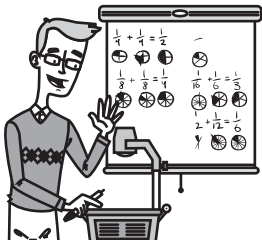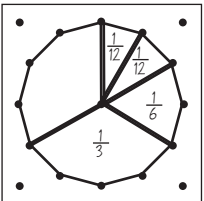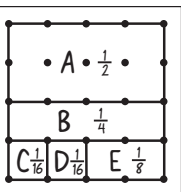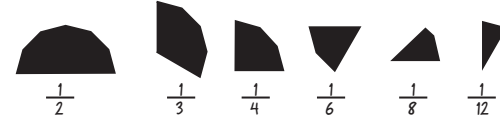
• Locate, compare and order fractions on a ruler and a number line.
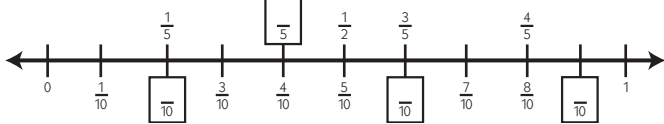
Student 1 Half a foot is 6 inches.

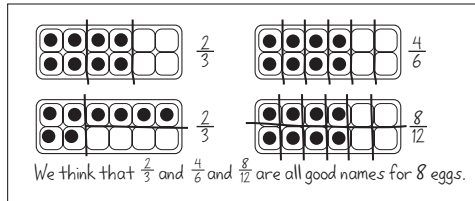*Student 2 And a third of a foot is 4 inches because 4 + 4 + 4 = 12.*

$\frac{1}{4} < \frac{1}{2}$

$\frac{1}{8} > \frac{1}{16}$

$\frac{2}{16} = \frac{1}{8}$

Common Core Standards Addressed:
CCSS 3.NF.1–3.NF.3

Grade Four

Fourth Graders
• Use a variety of models to compare and order fractions, investigate equivalent fractions, and add & subtract fractions with like denominators.

$\frac{2}{3}$ $\frac{4}{6}$ $\frac{2}{3}$ $\frac{8}{12}$

We think that $\frac{2}{3}$ $\frac{4}{6}$ and $\frac{8}{12}$ are all good names for 8 eggs.

Egg Carton Fractions

Paper Fraction Strips

When Sam gets up on school days, it takes him $\frac{2}{4}$ of an hour to take a shower and get dressed, $\frac{1}{4}$ to eat breakfast, and $\frac{2}{4}$ of an hour to finish his homework. How long does it take Sam to get ready for school?

a Labeled Sketch

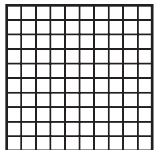shower and dress / eat / finish homework

b Explanation (in words):
2 fourths plus 1 fourth plus 2 more fourths is 5 fourths in all. There are 4 fourths in an hour, so it takes him 1 and $\frac{1}{4}$ hours to get ready for school.

c Equation:
$\frac{2}{4} + \frac{1}{4} + \frac{2}{4} = \frac{5}{4}$ $\frac{5}{4} = 1\frac{1}{4}$ hour

Geoboard Area of 1 / *Geoboard Fractions*

If the biggest square on the geoboard has an area of 1 unit, what is the area of each lettered region below? Label the area of each region below.

We think the area of Region A is:
• 8 units
• half of the whole geoboard
• $\frac{1}{2}$
• 8 out of 16 or $\frac{8}{16}$
• $\frac{2}{4}$ because B is $\frac{1}{4}$, and A can hold 2 of B
$\frac{1}{2} = \frac{2}{4}$ because A = 2 B's
$\frac{1}{2} = \frac{4}{8}$ because A = 4 C's
$\frac{1}{2} = \frac{8}{16}$ because A = 8 D's
$\frac{1}{2} = \frac{16}{32}$ because A = 16 E's
$\frac{2}{4}$ and $\frac{4}{8}$ and $\frac{8}{16}$ $\frac{16}{32}$ are all names for $\frac{1}{2}$.

• Use base ten pieces to model and compare decimals to hundredths.

Mark We built both numbers. Here's what they looked like with base ten pieces. We thought baby B was going to be heavier, because 9 is more than 2, but then when we built it, we remembered the numbers meant 9 hundredths and 2 tenths. So baby A weighed more.
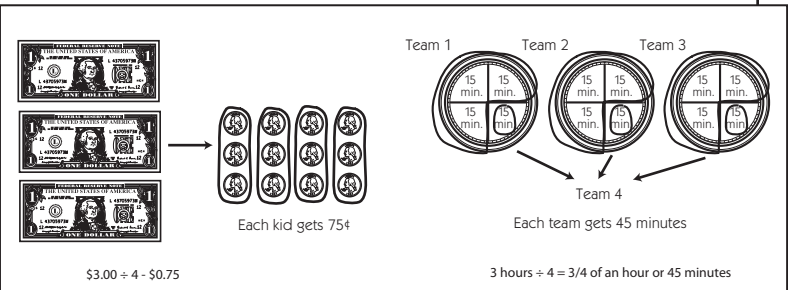
unit 1 / striplet $\frac{1}{10}$ / matlet $\frac{1}{100}$

0.60 0.6
$\frac{60}{100}$ $\frac{6}{10}$
$\frac{3}{5}$
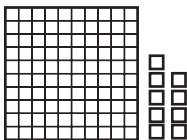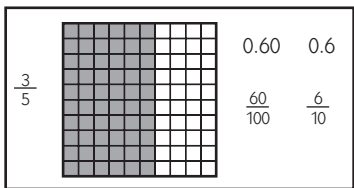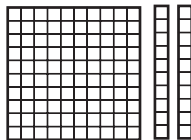
1.09 baby B   1.2 baby A

Common Core Standards Addressed:
CCSS 4.NF.1–4.NF.7

Grade Five

Fifth Graders
• Investigate the relationship between fractions and division.

Team 1 / Team 2 / Team 3 / Team 4
Each kid gets 75¢
Each team gets 45 minutes
$3.00 ÷ 4 - $0.75
3 hours ÷ 4 = 3/4 of an hour or 45 minutes

• Use models, including paper fraction strips to develop intuitions about adding and subtracting fractions with unlike denominators.
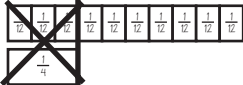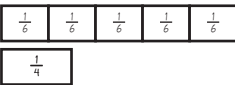
Student We decided to try 5/6 – 1/4 with fraction strips. We put out 5/6 and tried to figure out how to take away 1/4. We were pretty stuck until Morgan saw that we could turn the sixths into twelfths. Since 1/4 is the same as 3/12, we could see that the answer was 7/12 then.
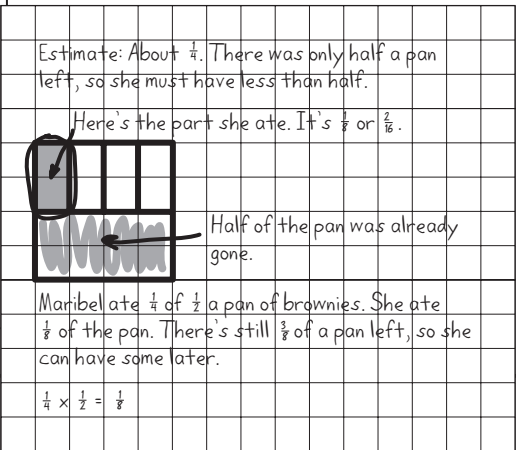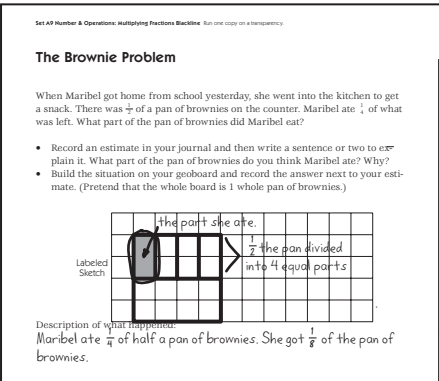
• Use models to see and understand least common multiples and their role in fraction addition and subtraction.

$\frac{1}{4}$ $\frac{1}{3}$
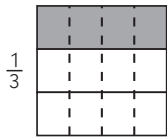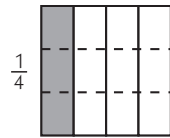
$\frac{1 \times 3}{4 \times 3} = \frac{3}{12}$ $\frac{1 \times 4}{3 \times 4} = \frac{4}{12}$

$\frac{1}{3} - \frac{1}{4} \rightarrow \frac{4}{12} - \frac{3}{12} = \frac{1}{12}$

• Make sense of fraction operations (+, −, x) in the context of story problems.

The Brownie Problem

When Maribel got home from school yesterday, she went into the kitchen to get a snack. There was $\frac{1}{2}$ of a pan of brownies on the counter. Maribel ate $\frac{1}{4}$ of what was left. What part of the pan of brownies did Maribel eat?

• Record an estimate in your journal and then write a sentence or two to explain it. What part of the pan of brownies do you think Maribel ate? Why?
• Build the situation on your geoboard and record the answer next to your estimate. (Pretend that the whole board is 1 whole pan of brownies.)

Labeled Sketch / the part she ate / $\frac{1}{2}$ the pan divided into 4 equal parts

Description of what happened:
Maribel ate $\frac{1}{4}$ of half a pan of brownies. She got $\frac{1}{8}$ of the pan of brownies.

Estimate: About $\frac{1}{8}$. There was only half a pan left, so she must have less than half.

Here's the part she ate. It's $\frac{1}{8}$ or $\frac{1}{8}$.

Half of the pan was already gone.

Maribel ate $\frac{1}{4}$ of $\frac{1}{2}$ a pan of brownies. She ate $\frac{1}{8}$ of the pan. There's still $\frac{3}{8}$ of a pan left, so she can have some later.

$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$

Common Core Standards Addressed: CCSS 5.NF.1–5.NF.6