Grade 3 Unit 4:
Representing and Comparing Fractions

References

Dear Parents

Your student's math class is calling for students to be actively engaged in doing math in order to learn math. In the classroom, students will frequently work on tasks and activities to discover and apply mathematical thinking. Students will be expected to explain or justify their answers and to write clearly and properly. Your student will receive a consumable My Math textbook and online access from his or her teacher.

Concepts Students will Use and Understand: Fractions

- Develop an understanding of fractions, beginning with unit fractions.
- Understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one.
- Solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.
- Recognize that the numerator is the top number (term) of a fraction and that it represents the number of equal-sized parts of a set or whole; recognize that the denominator is the bottom number (term) of a fraction and that it represents the total number of equal-sized parts or the total number of objects of the set
- Compare common fractions with like denominators and tell why one fraction is greater than, less than, or equal to the other
- Represent halves, thirds, fourths, sixths, and eighths using various fraction models
- Interpret line plots
- Partitions shapes in several different ways into equal parts of halves, thirds, fourths, sixths, and eighths and recognizes the partitioned parts have the same area.

Concepts Students will use and understand: Perimeter

- Students develop an understanding of the concept of perimeter by walking around the perimeter of a room, using rubber bands to represent the perimeter of a plane figure on a geoboard, or tracing around a shape on an interactive whiteboard. They find the perimeter of objects; use addition to find perimeters; and recognize the patterns that exist when finding the sum of the lengths and widths of rectangles.
- Given a perimeter and a length or width, students use objects or pictures to find the missing length or width. They justify and communicate their solutions using words, diagrams, pictures, numbers, and an interactive whiteboard.
- Students use geoboards, tiles, graph paper, or technology to find all the possible rectangles with a given area (e.g. find the rectangles that have an area of 12 square units.) They record all the possibilities using dot or graph paper, compile the possibilities into an organized list or a table, and

Area	Length	Width	Perimeter
12 sq. in.	1 in.	12 in.	26 in.
12 sq. in.	2 in.	6 in.	16 in.
12 sq. in	3 in.	4 in.	14 in.
12 sq. in	4 in.	3 in.	14 in.
12 sq. in	6 in.	2 in.	16 in.
12 sq. in	12 in.	1 in.	26 in.

Georgia Math   Grade 3
Textbook Connection:
Fractions
Ch. 10, Lessons 1-8
Ch. 12, Lessons 5-7
Ch. 14, lesson 7

Textbook Online:

connected.mcgraw-
hill.com

Ask your teacher for
the online passcode

determine whether they have all the possible rectangles. Students then investigate the perimeter of the rectangles with an area of 12.

- The patterns in the chart allow the students to identify the factors of 12, connect the results to the commutative property, and discuss the differences in perimeter within the same area. This chart can also be used to investigate rectangles with the same perimeter. It is important to include squares in the investigation.

Vocabulary: Fractions

Common Fraction: A number used o name a part of a group, or a whole containing a fraction bar, a numerator and a denominator.
Unit Fraction: any common fraction with a numerator of one
Numerator: the top number in a common fraction representing the number of equal parts of a whole or group under consideration.
Denominator: the bottom number of a fraction that represents the number of equal parts of a whole or set that has been divided into.
Equivalent: equal amount

Vocabulary: Area & Perimeter

Perimeter: is the distance around a two dimensional shape, or the measurement of the distance around something; the length of the boundary.
**Area**: the amount of surface the 2D covers. It is measured in square units.

Try http://intermath.coe.uga.edu/dictnary/homepg.asp or
http://www.amathsdictionaryforkids.com/ for further examples.

Examples: Fractions

1. Kim's dog had eight puppies. Five of the puppies are dark brown, the rest of them are white. What fraction of the puppies is dark brown? What fraction of the puppies is white?

Case Closed - Evidence:
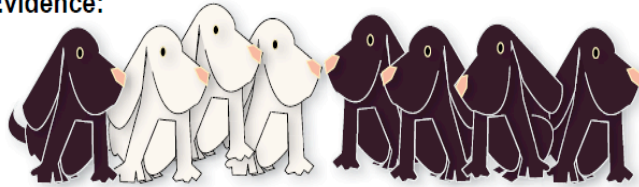
There are 8 puppies in all so $\frac{5}{8}$ of the puppies are dark brown and $\frac{3}{8}$ of the puppies are white.

2. You and your two best friends are going to share a chocolate bar. How could you share the chocolate bar so everyone has an equal share? What fraction of the chocolate bar would each person get to eat? Use pictures, words and numbers to explain your answer.
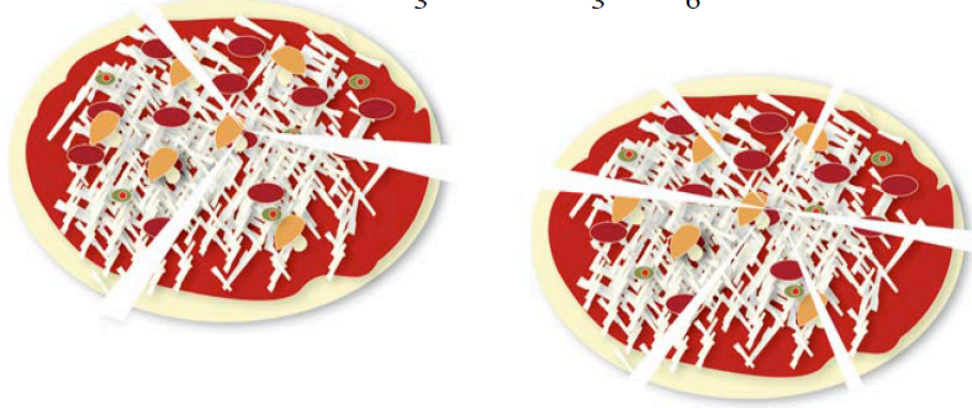
Case Closed - Evidence:
Since there are three of us altogether, there would need to be three equal shares. That means that the denominator will be 3. Each one of us would get one share, so the top number, the numerator, will be 1. Each of us will get 1/3 of the chocolate bar.
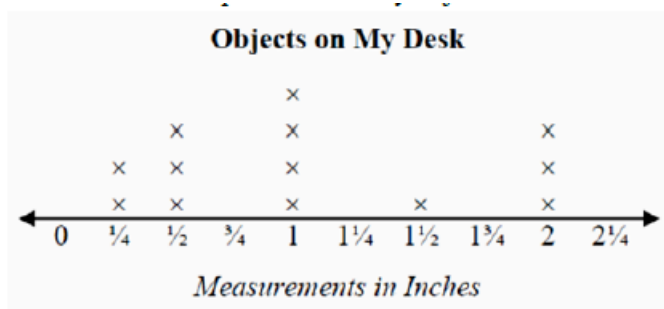
3. Your big brother bought a pizza. He said you can have either 2/3 or 3/6 of the pizza. Which would you choose? Why? Use pictures, words, and numbers to explain your answer.

Case Closed - Evidence:
I love pizza, so I would choose to eat $\frac{2}{3}$ of it because $\frac{2}{3}$ > $\frac{3}{6}$.

Examples of Line Plots

Objects on My Desk

		×					
×		×				×	
×	×	×				×	
×	×	×		×		×	

0 ¼ ½ ¾ 1 1¼ 1½ 1¾ 2 2¼

Measurements in Inches

Examples of Area & Perimeter:

What is Perimeter?

The perimeter is the distance all the way around the outside of a 2D shape.

Finding the perimeter

The perimeter is the total distance around the outside of a 2D shape.

To find the perimeter of any straight-sided shape, just add up the length of all the sides.

Home Activities: Fractions

Drop a handful of pennies (or other coins) on a table. Ask your child, "How many coins landed heads-up? How many coins landed tails-up? What fraction of the total coins is heads-up? What fraction is tails-up?"

Make a favorite recipe with your child. Help your child do the measuring. Try these No-Bake Cookies:
3 ½ tablespoons butter
4 tablespoons golden syrup
4 ounces semisweet chocolate, chopped
2 ¾ cups cornflakes cereal
In a saucepan over low heat, combine the butter, golden syrup and chocolate. Cook and stir until butter and chocolate have melted and everything is well blended. Mix in the cornflakes cereal.
Drop by heaping spoonfuls onto waxed paper or a buttered baking sheet. Place in the refrigerator until set, about 15 minutes.

Make a pan of brownies and let your child share them equally with your family or friends. Ask your child what fraction of the total batch each person will get.

Empty a small bag of M&M's on a table. Allow your child to estimate what fraction of the candies are red, yellow, green, orange, and brown. Have them separate by colors and determine the correct fractio for each color.

Home Activities: Area & Perimeter

1. Using straws cut into lengths of 2, 4, and 6 inches, along with pipe cleaners cut into 2-inch pieces, students explore perimeter by making polygons with sides of various lengths. They measure and record the lengths then draw the shapes in their math notebooks, annotating the length of each side along with the total perimeter.

2. The fence around the garden is a triangle. Each side measures 8 feet. How long is the fence? Draw and explain.

3. On your little league baseball team, you run the bases pretty fast. The distance between each base is 40 feet. How far do you run when you hit a home run?

4. The route from home to school is 6 blocks, from school to soccer practice is 8 blocks, from soccer practice to Tommy's is 7 blocks, and then 5 more blocks to home again. What is the round trip distance?

5. The garden at church measures 13 feet wide by 18 feet long. What is the perimeter?

6. The stop sign at the corner measure 12 inches on a side. What is the measure around the octagon?