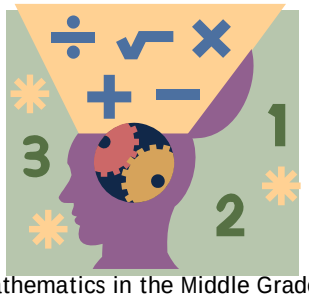
Duval County Schools

6th Grade Mathematics
Volume 1, Issue 2

"BITS and PIECES I" Math Newsletter

Dear Family,

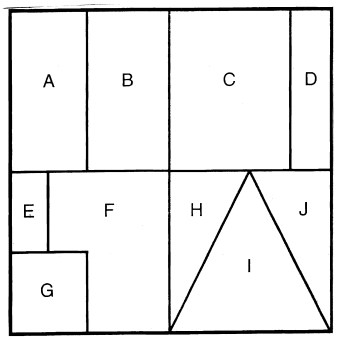
The next unit in your child's course of study in mathematics this year is "BITS and PIECES I". It's focus is whole numbers, and it teaches students about factors, multiples, divisors, products, prime numbers, composite numbers, common factors and multiples, computations and many other ideas about numbers. This unit engages students in a series of activities that allow them to discover many of the key properties of fractions and to see how these properties apply to real-life situations.



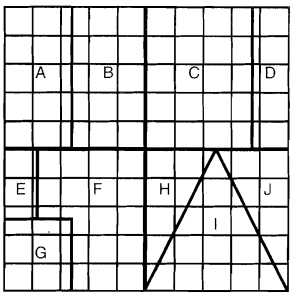
Mathematics in the Middle Grades

As part of the assessment for this unit, your child may be asked to complete a project called "Using Your Fractional Number Sense". Students are to test their understanding and skill working with fractions, decimals, and percents by solving the following problems.

1. The diagram below shows a puzzle made up of different familiar shapes. Your challenge is to find a fraction name and a decimal name for the size of each piece.
 a. What fraction of the whole puzzle is covered by each piece? Use your measurement estimation skills and reasoning to find each fraction.

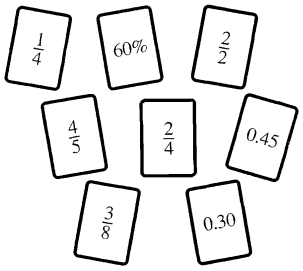


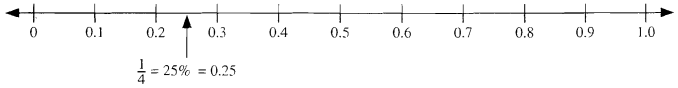
b. What decimal represents each part of the puzzle? The same puzzle is shown below, drawn on a 10-by-10 grid.



2. *Glenda drew eight cards from a deck of number cards. She was asked to show the position of each number on a number line and to write two equivalent names for each number.*

The fraction $\frac{1}{4}$ has already been located on the number line below, along with its percent and decimal equivalents. Copy the number line and show the placement of each of the other number cards. Write two equivalent names for each number.





$\frac{1}{4}$ = 25% = 0.25

Investigation 1- Goals

- Develop strategies to partition fraction strips for halves, thirds, fourths, fifths, sixths, eights, ninths, tenths, and twelfths
- Understand the role of the numerator and the denominator in a fraction and the part-to-whole nature of fractions
- Begin to investigate equivalent fractions that result from different partitioning strategies
- Begin to use find fraction parts of whole-number quantities
- Understand the need to consider the size of the whole when comparing fraction amounts
- Begin to reason with fractions greater than 1
- Use fractions to represent part-to-whole relationships

Investigation 2- Goals

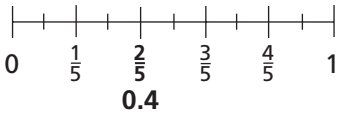
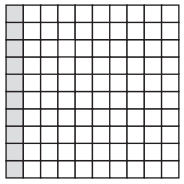
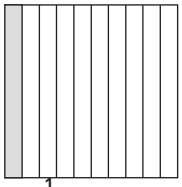
- Recognize the role of the numerator and denominator when partitioning-that the size of the partition is different b
- Use fractions as operators to find the actual measure of a fraction length of a whole
- Understand the need to consider the size of the whole when comparing fractions
- Understand that a place on a number line can have more than one fraction name
- Recognize that fractions can represent a location on a number line and the length from one point to another on a number line
- Develop strategies for finding equivalent fractions
- Use benchmarks to estimate the size of fractions and compare fractions
- Develop strategies for comparing and ordering fractions
- Develop strategies for finding a fraction between any two given fractions
- Recognize that by using smaller partitions one can always find eights, ninths, tenths, and twelfths

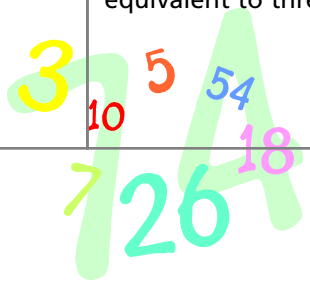
Investigation 3- Goals

- Understand relationships between tenths and hundredths including how tenths are partitioned to create hundredths
- Represents decimals as a fraction with denominations of ten and one hundred
- Move between fraction strip models, grid models, and numerical forms for both fraction and decimal numbers
- Read and write fractions and decimal numbers
- Extend understanding of fractions and decimals to include place values greater than hundredths
- Develop ways to find a decimal between any two givn decimals
- Represent fractions and decimals fwith hundredths grids
- Use representations to find approximate or exact decimal equivalents for fraction benchmarks
- Recognize fractions as indicated division problems
- Understand why division is an appropriate interpretation of a fraction
- Use the decimal place-value system to interpret, compare, and order decimals

Investigation 3- Goals

- Introduce percents as a part-whole relation-ship where the whole is not out of 100 but scaled to be "out of 100"
- Use fraction partitioning and fraction benchmarks to make sense of percents
- Develop strategies, including percents, to use in comparisons where the whole is less than 100
- Understand that comparing situations with different numbers of trials is difficult unless we use percents or other equivalents
- Work with situations where the whole is some-times greater than 100 and sometimes less than 100

Important Concepts	Examples
Fractions as Parts of a Whole In the part-whole interpretation of fractions, students must: • determine what the whole is; • subdivide the whole into equal-size parts—not necessarily equal shape, but equal size; • recognize how many parts are needed to represent the situation; and • form the fraction by placing the parts needed over the number of parts into which the whole has been divided.	If there are 24 students in the class and 16 are girls, the part of the whole that is girls can be represented as $\frac{16}{24}$.  The shaded portion above can also be represented as $\frac{2}{3}$.  The **denominator** of 3 tells into how many equal-size parts the whole has been divided, and the **numerator** of 2 tells how many of the equal-size parts have been shaded.
Fractions as Measures or Quantities In this interpretation, a fraction is thought of as a number.	A fraction can be a measurement that is "in between" two whole measures. Students meet this every day in such references as $2\frac{1}{2}$ brownies, 11.5 million people, or $7\frac{1}{2}$ inches.
Fractions as Indicated Divisions To move with flexibility between fraction and decimal representations of rational numbers, students need to understand that fractions can be thought of as indicated divisions.	Sharing 36 apples among 6 people calls for division (36 ÷ 6 = 6 apples each), so sharing 3 apples among 8 people calls for dividing 3 by 8 to find out how many each person receives ($\frac{3}{8}$ of an apple).
Fractions as Decimals Students need to understand decimals in two ways: as special fractions with denominators of 10 and powers of 10, and as a natural extension of the place-value system for representing quantities less than 1.	For the fraction $\frac{2}{5}$ for example, we can find the decimal representation by rewriting as the equivalent fraction $\frac{4}{10}$ or by dividing 2 by 5. This uses the division interpretation of fractions to find the decimal representation of the same quantity. $\frac{2}{5} = 2 \div 5 = 0.4$  **0.4**
Fractions as Percents This builds the connection between and among fractions, decimals, and percents. Percents are introduced as special names for hundredths, $\frac{1}{100}$.	Ten percent, 10%, is simply another way to represent 0.10 or 0.1, which is another way to represent $\frac{10}{100}$ or $\frac{1}{10}$.  $\frac{10}{100}$ or 0.10  $\frac{1}{10}$ or 0.1
Equivalent Fractions Partitioning and then partitioning again is an important skill that contributes to understanding equivalence. Equivalent fractions have the same value.	If a bar is marked into fourths (the first partition) and then each fourth is marked into thirds (the second partition), each original fourth has three parts (or three-twelfths) in it. This one-fourth is equivalent to three-twelfths. $\frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12}$



Search

Copy and paste this in the address bar to access online games for Bits and Pieces

http://www.phschool.com/webcodes10/index.cfm?fuseaction=home.gotoWebCode&wcprefix=amd&wcsuffix=2204

Codes- amk-9900 , if needed

Language Arts
Science
Math
Social Studies
World Languages
Career & Technology
AP* & Electives

SUCCESSNET Login

Online Resources

Web Codes What is this?

CMP2 GRADE 6 STUDENT HOME PAGE

Connected Mathematics 2

Active Math Online

The Active Math Online feature lets you explore the mathematical concepts taught in your textbook.

You will need java to run these Active Math Online activities. Visit the java Web site and choose "Java Software Free Download" to install the latest version of java.

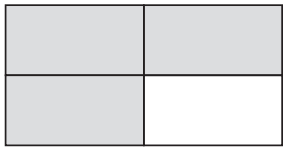
- Prime Time
- Bits and Pieces I
- Shapes and Designs
- Covering and Surrounding
- Data About Us

Customer Support

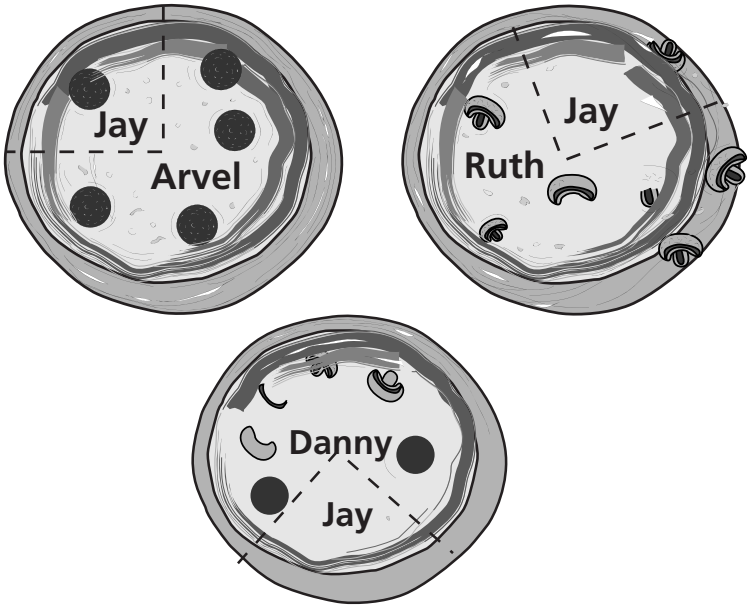
Phone: 1-800-848-9500
Fax: 1-877-260-2530
Address:
145 S. Mount Zion Road
PO Box 2500
Lebanon, IN 46052

E

fraction A number (quantity) of the form $\frac{a}{b}$ where a and b are whole numbers. A fraction can indicate a part of a whole object, set, or measurement unit; a ratio of two quantities; or a division. For the picture below, the fraction $\frac{3}{4}$ shows the part of the rectangle that is shaded. The denominator 4 indicates the number of equal-size pieces. The numerator 3 indicates the number of pieces that are shaded.



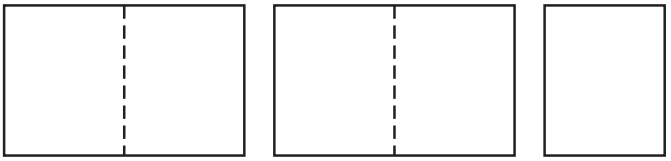
The fraction $\frac{3}{4}$ could also represent three of a group of four items meeting a particular criteria. For example, when 12 students enjoyed a particular activity and 16 students did not, the ratio is 3 to 4. Another example is the amount of pizza each person receives when three pizzas are shared equally among four people ($3 \div 4$ or $\frac{3}{4}$ of a pizza per person).



Duval County Public Schools

I

improper fraction A fraction in which the numerator is larger than the denominator. An improper fraction is a fraction that is greater than 1. The fraction $\frac{5}{2}$ is an improper fraction. The fraction $\frac{5}{2}$ means 5 halves and is equivalent to $2\frac{1}{2}$, which is greater than 1.



M

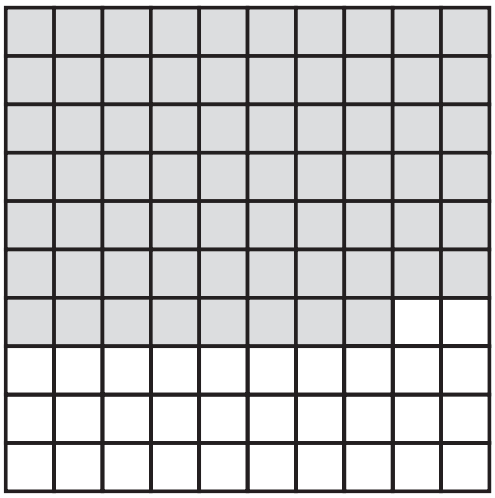
mixed number A number that is written with both a whole number and a fraction. A mixed number is the sum of the whole number and the fraction. The number $2\frac{1}{2}$ represents two wholes and one half and can be thought of as $2 + \frac{1}{2}$.

N

numerator The number written above the line in a fraction. In the fraction $\frac{5}{8}$, 5 is the numerator. When you interpret the fraction $\frac{5}{8}$ as a part of a whole, the numerator 5 represents 5 of 8 equal parts.

P

percent "Out of 100." A percent is a special decimal fraction in which the denominator is 100. When we write 68%, we mean 68 out of 100, $\frac{68}{100}$ or 0.68. We write the percent sign (%) after a number to indicate percent. The shaded part of this square is 68%.



R

ratio A number, often expressed as a fraction, used to make comparisons between two quanitities. Ratios may also be expressed as equivalent decimals or percents. $\frac{3}{5}$, 0.6, and 60% are all ratios. A phrase such as "120 out of 200" is another way to represent a ratio.

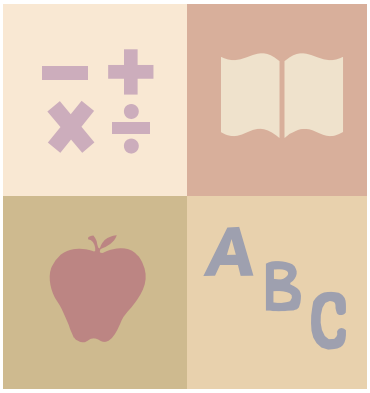
rational number A number that can be written as a quotient of two positive or negative whole numbers. You are familiar with positive rational numbers like $\frac{3}{4}$, $\frac{107}{5}$, and $3(\frac{3}{1})$. Some examples of the negative rational numbers you will see in the future are $^{-}3$, $\frac{^{-}2}{5}$, and $^{-}20$. Both positive and negative rational numbers can be used to represent real-life situations. For example, temperatures or yardage during a football game can be positive, negative, or 0. There are other numbers, such as pi, that are *not* rational numbers.

U

unit fraction A fraction with a numerator of 1. In the unit fraction $\frac{1}{13}$, the denominator 13 indicates the number of equal-size parts into which the whole has been split. The fraction represents the quantity of 1 of those parts.

Content Connections to Other Units

Big Idea	Prior Work	Future Work
Understanding, comparing, and applying fractions	Comparing whole numbers and finding the least common multiple (*Prime Time*)	Developing algorithms for performing calculations with fractions (*Bits and Pieces II*); developing algorithms and performing calculations with decimals (*Bits and Pieces III*); using scale factors (*Stretching and Shrinking*); applying rational numbers (*Covering and Surrounding; Comparing and Scaling*); interpreting slope (*Moving Straight Ahead*); interpreting fractions as probabilities (*How Likely Is It?; What Do You Expect?*); identifying and finding equivalent expressions (*Say It With Symbols*)
Understanding, comparing, and applying decimals	Comparing whole numbers; exploring multiples of 10 (*Prime Time*)	Developing algorithms and performing calculations with decimals (*Bits and Pieces III*); interpreting decimals as probabilities (*How Likely Is It?; What Do You Expect?*); applying rational numbers (*Bits and Pieces II; Covering and Surrounding; Bits and Pieces III; Comparing and Scaling; Samples and Populations*); using decimals to express, compare, and work with very large or very small numbers (*Data Around Us* ©2004)
Understanding, comparing, and applying percents	Comparing whole numbers; finding the greatest and least common multiple of two whole numbers (*Prime Time*)	Applying rational numbers (*Bits and Pieces II; Comparing and Scaling; Samples and Populations*); interpreting percents as probabilities (*How Likely Is It?; What Do You Expect?*); working with statistics and data reported as percents (*Data Around Us ©2004*)
Connecting fractions, decimals, and percents	Studying multiples (*Prime Time*)	Using fractions, decimals, and percents as expressions of probabilities (*How Likely Is It?; What Do You Expect?; Samples and Populations*); using fractions and decimals as slope or variable coefficients in equations (*Variables and Patterns; Moving Straight Ahead; Growing, Growing, Growing; Frogs, Fleas, and Painted Cubes; Say It With Symbols; Thinking With Mathematical Models*); connecting fractions, decimals, and percents by interpreting percentages as decimals and fractions (*Bits and Pieces II; Bits and Pieces III; Comparing and Scaling*)



The First-Year Cost of Cat Ownership

Cost	Percent	Decimal	Fraction
$600 and up		0.11	
From $500 to $599	25%		
From $400 to $499			$\frac{2}{5}$
From $300 to $399	18%		
From $200 to $299			
Under $200		0.02	$\frac{1}{25}$