Conceptual Understanding of Fractions and Decimals

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Overview

Fractions are one of the main mathematical concepts that students continue to struggle with in elementary schools. Students do not see fractions as numbers because they usually work with real numbers. Real numbers to students represent a number in the set {…-4, -3, -2, -1, 0, 1, 2, 3, 4,}; a whole number, or the opposite of a whole number the numbers they use for counting, and the numbers they see on a number line in the classroom. Students have difficulty understanding the concepts of decimals/fractions as numbers between two whole numbers, because they are unable to readily see them. This is where the student's prior preparation and readiness are important. These students also have trouble understanding decimal place value.

Students have trouble explaining what the numerator and denominator actually represent in a fraction. Some students need to explore fractions informally without any rules at first, so that students can develop their own concepts and ideas. Counting fractional parts help children develop a complete generalized system for naming fractions before they learn about fraction symbolism. Then algorithms will seem less confusing and make more sense. If they have not had enough exposure or practice, it makes the concept of fractions even more difficult for students to understand. If these students had a handle on decimal place value they would be able to convert decimals into fractions.

Students must have a basic command of addition, subtraction, multiplication, and division facts to work with fractions without frustrations. In order for students to be able to reduce a fraction to its simplest form or to a lower equivalent fraction students will need to know how to divide. To find equivalent fractions students will need to multiply or divide. If students are still struggling with these skills, they will not be ready to grasp the concept of equivalent fractions, turning improper fractions into mixed fractions, converting mixed fractions into improper fractions.

Strategies for teaching fractions should be inclusive of the readiness of the individual student. Tiered activities aligned with the learning ability of each student will help students to conceptually understand fractions and decimals. They will be able to understand what fractions represent and how they relate to whole numbers. Students will develop meanings of fractions as parts of a unit whole, as a part of a collection, as numbers and as a division of whole numbers.

Rationale

This unit will help 5th grade students between the ages of 9 and 10 years of age to conceptually understand fractions and how they are used in everyday life. Student will see how fractions are named and their importance in mathematics. Students will explore alternative strategies to find equivalent fractions and how to compare and order fractions. Students of the 21st century are motivated by the use of technology and manipulating objects. Materials students will use during instruction range from Cuisenaire rods, base ten blocks, graph paper, and any others the students choose to assist in the learning process.

This unit could be aligned and used as a supplement to the Pittsburgh Public Schools Everyday Math Curriculum. This unit will help students that are struggling and don't catch on to beginning and developing concepts quickly. The unit will provide more direct instructions and example for students to picture visually the needed outcome of each lesson. Students will develop mastery of skills and concepts so that they will be able to problem solve enough to figure out rules for particular concepts they will encounter in future situations.

The Everyday Mathematics Curriculum is not a curriculum of mastery; students are exposed to concepts through the curriculum in various ways. The idea is that students' exposure to concepts will cause a spiral effect of learning which will help to create better problem solvers and thinkers. Instead of the teacher explaining the rules of how to solve problems, students are to learn through inquiries being made by the teacher to help them figure out how to solve problems and particular rules. However, there are some students who are unable to learn with this approach. If they already know the rules they will be able to apply them to any problem they may meet.

Fractions: Parts of the whole & parts of a set

When students are exposed to fractions they will be able read them and name the fractional parts. Identification of the numbers and how they are placed is essential to understanding fractions. The top number of the fraction is called the **numerator** and it represents how many parts out of the whole. The **denominator** is the name for the bottom number and it represents how many parts there are to the whole unit. For example, there are 3 friends that want to share a candy equally. The candy bar is the whole and the 3 friends represent how many parts the candy bar will be split into equally.

Snickers Bar 1Whole

1/3 piece	1/3 piece	1/3 piece

Therefore each friend will receive 1/3 of the whole candy bar.

1 ⟶ Numerator
3 ⟶ Denominator

- **One third**
- **One out of three**
- **One divided by three**

Other examples:

*****1/4********	******1/4*******	******1/4*******	1/4

¾ is shaded.

**********1/2**********	1/2

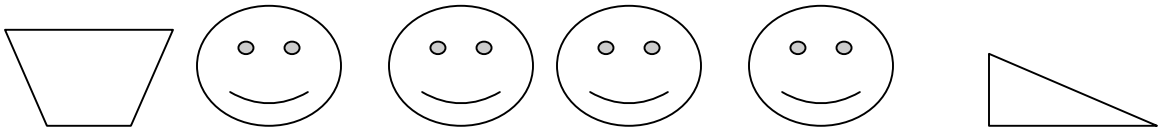
½ is shaded.

*****1/5*****	*****1/5*****	****1/5*****	*****1/5*****	****1/5******

5/5, or 1, is shaded.

Students will be able to figure out of sets what the fraction represents.

Example:
What fraction of the shapes are circles?



4
6 of the shapes are circles.

Equivalent Fractions

When working with equivalent fraction understanding the term equivalent is essential for students to understand the objective of the lesson. They are looking for fractions that represent the same amounts. First, I write on the chalkboard ½, 2/4, 4/8, and 16/32. I then asked if anyone can tell me the next number in the pattern and if so to explain how we got each fraction. The student should explain that in each fraction the numerator and denominator were both multiplied by 2. For students that may still be having difficulty understanding the process I would have them illustrate each fraction.

Illustration of equivalent fractions

**********	***1/2***

**********	**********	***1/4***	***1/4***

*******	*******	*******	*******	***1/8***	***1/8***	***1/8***	***1/8***

Students should see that the shaded area of each fraction is equal. For students that need to know the rule to figure out what equivalent fractions are I would explain that in order to find an equivalent fraction you must multiply the numerator and denominator by the same number. For instance, to find an equivalent fraction for 1/3 multiply the numerator 1 by 4 and multiply the denominator 3 by 4 the new fraction is 4/12 and it is equal to 1/3.
I would then divide the numerator and denominator by the same number to see if they understand the concept. For 12/16 I would divide the 4 into the numerator and divide 4 into the denominator and the equivalent fraction would become ¾. Students should recognize that by dividing you get a smaller equivalent fraction and by multiplying you get a higher equivalent fraction. **The key is to remember that you must multiply or divide the numerator and denominator by the same number to get an equivalent fraction.**

Comparing and ordering fractions

Students really have a hard time putting fractions in order from smallest to largest and vice versa. One Strategy I find that is beneficial for students to actually see the difference between the fractions is to convert each fraction into a decimal. If students work with decimals as if they were money it seems easier for some students. Students will experience less difficulty working with decimals once they have an understanding and are able to read a decimal's place value because it also names its fraction. For instance, 5/10 is converted to a decimal by dividing the denominator into the numerator. 10/5 10 can't go into 5 so you add a decimal point and a zero. Now 10 can go into fifty 5 times. Therefore the solution/quotient is .5 also read 5 tenths because of the place value of the 5 after the decimal point.

Students can also use equivalent fractions to compare fractions. Students will convert each fraction so that they are equal then compare the numerator to differentiate which is larger.
Example: Compare fractions ½ and ¾.

Look at the denominators	Write equivalent fractions	Compare numerators	Correct order of fractions
1/**2** 3/**4**	1 *2=**2** 2 *2=**4** **3 *1=3** **4 *1=4**	2<3	½ is smaller than ¾

Mixed Numbers and Fractions

Students will explore fractions when the numerator is greater than the denominator and the fraction is actually greater than 1.
This type of fraction is also referred to as an improper fraction or a "top-heavy" fraction. Improper fractions are usually converted into mixed numbers/fraction.
Explore 5/3 As a mixed number.
The process for students to change an improper fraction into a mixed number incorporates division. Students will divide the denominator into the numerator and write the remainder over the divisor. 3 goes into 5, 1 time and the remainder would be 2.
The mixed number/fraction would be 1 2/3.
Common errors when working with mixed numbers/fractions

- Students write the wrong whole number
- Students switch whole number and numerator in answer
- Students confuse operations involving whole number, numerator, and denominator

I generally explain to students that when a fraction is used to show a quotient, the dividend is always on top and the divisor is always on the bottom.

To change a mixed number/fraction into an improper fraction the student must multiply the denominator by the whole number of the fraction and then add the product to the numerator as follows; 3 * 1 + 2 = 5/3 the denominator doesn't change.

Adding and Subtracting Fractions

Students will explore adding fractions with the same denominators. Like fractions are fractions with the same denominators.

Example: 1/6 and 3/6

To figure out if two fractions with like denominators are greater than or less than 1 students can use a fraction bar to help them figure out a rule for adding fraction pieces.

Example: Find the sum for 3/8 and 4/8.

Line up 3 of the 1/8 fraction bars next to 1whole bar

1 whole fraction bar		
1/8	1/8	1/8

Next line up 4 more 1/8-fraction bars beside the 3 1/8 bars already there.

1 whole fraction bar						
1/8	1/8	1/8	1/8	1/8	1/8	1/8

Students will be able to conclude that 3/8 and 4/8 are less than 1.

Example 2: Find the sum of 4/8 and 5/8

Step one, line up 4 1/8 fraction bars under the whole bar.

1 whole fraction bar			
1/8	1/8	1/8	1/8

Step two students will line up 5 more 1/8 fractions bars next to the 4 1/8 fractions bars under the whole fraction bar to figure out the sum and see if it is greater than or less than 1.

1 whole fraction bar								
1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8

Students will visually be able to recognize that the sum of 4/8 and 5/8 is greater than 1.
Students will also identify that they used the same fraction bars when adding with like denominators.

One strategy students can use to add fractions with unlike denominators is to convert the fractions with the smaller denominator into an equivalent fraction first and then add.
Example:

$$\begin{array}{l} \frac{1}{8} \\ + \\ \frac{2}{4} \end{array}$$

change this fraction into an equivalent fraction so that the denominator becomes 8.

Remember to change a fraction into an equivalent fraction the numerator and the denominator must be multiplied by the same number. In order to change the initial fraction 2/4 so that the denominator changes to 8 the numerator and denominator must each be multiplied by 2.

$$\begin{array}{l} 2 * 2 = 4 \\ 4 * 2 = 8 \end{array}$$

Now it is easier for students to add the two fractions together to find a sum.

$$\begin{array}{l} \frac{1}{8} \\ + \\ \frac{4}{8} \\ \hline \\ \frac{5}{8} \end{array}$$

Subtraction of fractions with like and unlike denominators

Explain to students that the processes for adding fractions and subtracting fraction are similar. "In each case, if the fractions have like denominators, then the answer is obtained by subtracting (or adding) the numerators."

However, students usually have difficulty when they are presented with a problem written as:

$$\begin{array}{r} \frac{2}{3} \\ - \\ \frac{7}{18} \\ \hline \end{array}$$

Students will think this problem is impossible to solve because the numerator in the top fraction is smaller than the bottom fraction.
Students should use the strategy of changing the top fraction into a higher equivalent with a denominator of 18.
For example:

In order to get a denominator of 18 the numerator and denominator must both be multiplied by 6.

$$\begin{array}{l} \underline{2*6=12} \\ 3*6=18 \end{array}$$

Now students can subtract because the top fraction is larger and the denominators are the same.

$$\begin{array}{r} \frac{12}{18} \\ - \\ \frac{7}{18} \\ \hline \end{array}$$

$$\frac{5}{18}$$

Instead of explaining how to find the greatest common factor/or less common denominator this strategy is affective with students because when subtracting, students fail to answer in the simplest form. Fractions are difficult enough for students to comprehend and in order for them to work extensively with fractions students must have a command of all basic facts in order to figure out any rules and all the different components and representation of the facts. For example, students must know in a problem like **2*3=6,** that **2&3** are called factors and **6** is the product. Students should know all the multiples of multiplication factors.

Factor	***Factor***	***Product/Multiples***
2	1	2
2	2	4
2	3	6
2	4	8
2	5	10
2	6	12
2	7	14
2	8	16
2	9	18
2	10	20
2	11	22

Reducing fractions to lowest form

To reduce a fraction there are several methods students can use. The first method is to find the largest multiple that both the numerator and denominator can be divided by equally to reduce the fraction to its lowest term. If a student is trying to reduce 15/45 students should know or will find that 15 is the multiple for the numerator and denominator to be divided by evenly 15 divided by 15 is 1, and 45 divided by 15 is 3 so the reduced fraction is 1/3.

Divisibility Rules

Using divisibility rules is another method students can use to recognize whether or not a fraction is in its lowest form. By knowing the divisibility rule students will know whether a whole number can be divided by another whole number. For instance, if the numerator and denominator both end with an even number {0, 2, 4, 6, 8} students will be able to identify that the fraction can be reduced by dividing the numerator and denominator by the largest even factor they both possess. If the students are unable to recognize the factors readily they can write the factors down for each until they are able to see the largest one they both have; for example, inthe fraction 8/16 the factors for 8 are 1, 2, 4, 8; the

factors for 16 are 1, 2, 4, 8, 16. Students will see that these two rational number have several factors in common but they are looking for the largest and that would be 8. Therefore, they would divided each number by 8 to reduce the faction to it lowest term. The rule for fractions ending with a 5 or a 0 students can reduce each part of the fraction by dividing by 5. The rules for dividing by 3 if the sum of the digits in the fraction can be divided by 3 as in the fraction 12/15 are that students would add the numbers in the numerator 1+2 =3. It is divisible by 3 because 3 is a factor of 12. Next, students look at the denominator, 1+5=6 where again 3 is a factor of 6 so 12/15 can be reduced by dividing each by 3. 12 divided by 3 is 4 and 15 divided by 3 is 5 reducing the fraction to 4/5. The rule for dividing by 9 is the same process as dividing by 3. Students can reduce fractions with a 0 in the ones place like this fraction 20/30 by dividing the numerator and denominator by 10.

Objectives

The NCTM Principles and Standards of School Mathematics say the majority of instruction should be focused on rational numbers in fifth grade. "The focus should be on developing students' conceptual understanding of fractions and decimals---what they are, how they are represented, and how they are related to whole numbers—rather than on developing computational fluency with rational numbers."

This unit will coincide with the Principles and Standards of School Mathematics. Students will be able to expound on the meanings of fractions as parts of a unit whole, as a part of a set, as numbers and as a division of whole numbers. Students will be able to read and write decimals and convert them to fractions. Students will create strategies for comparing and ordering decimals using examples. Students will be to recognize and make conversions for common fractions, decimals and percents.

Strategies

Many students have difficulty with the study of fractions as a whole. The best strategy for parents and teachers to use to help students with the concept of fractions is the use of models. Students should have access to manipulatives to use in the classroom environment such as, fraction strips, number lines, and folded paper and Cuisenaire rods. The learning style for some students involves the use of visuals. These students need a picture to be painted in order for them to understand the concept. Students should be encouraged to use drawings to explain their solutions.

Students should be taught at the ability/level of what they already know. Just because they are in a particular grade doesn't necessarily mean they are ready for a certain concept. Students would meet with more success if they are taught at their individual level and brought up to the level of expectation. For instance, if a student's number sense has not been developed that needs to be mastered first before they can understand the concept of fractions. A strategy for this development can be for the students to compare fractions with the numbers 0, ½, 1 which will help student make sense of the problem and make the necessary corrections.

Lesson Ideas **CECmath.39**

TITLE: EQUIVALENT FRACTIONS

AUTHOR: Elizabeth Lofties, St. Charles Borromeo Elementary School, Oklahoma City, Oklahoma

GRADE LEVEL: Appropriate for grades 3-5

OVERVIEW: Most students will benefit from the use of physical objects when they are introduced to the concept of equivalent fractions. This activity was designed to show the students that the notion of several names for a number is similar to the notion of several names for a person. One of them is the "given name". In the same way that we refer to "Rebecca Smith, alias Becky Smith", we can refer to "1/2, alias 3/6".

OBJECTIVES: Students will be able to:
1. Write a fraction to tell what part of a region is shaded.
2. Name the numerator and denominator of a fraction.
3. Identify equivalent fractions.

RESOURCES/MATERIALS:
Teacher: rectangular pieces of paper, chalkboard, chalk

Student: crayolas

ACTIVITIES AND PROCEDURES:

1. Provide each student with a piece of rectangular paper. Fold the paper in half. After you have folded the paper in half, instruct the students to do the same. Explain that a fraction is a part of a whole. You have divided a whole piece of paper into two equal parts.

Instruct the students to color one of the two equal parts. Ask a student to write 1/2 on the board to show that one out of the two equal parts is now shaded.

Introduce the vocabulary words numerator and denominator. The numerator is the number of parts shaded and the denominator is the total number of equal parts. (For those students who have difficulty remembering which is the numerator and which is the denominator, try this memory association technique----In a fraction, one number is UP above the line and one is DOWN below the line. Numerator has an "u" in it and so does up; denominator begins with "d" and so does down.)

2. Repeat the same activity with pieces of paper, demonstrating 1/4, 3/4, 1/3, 2/3, 1/8. Each time, a student should write the fraction on the board and identify the numerator and the denominator. If you prefer, project a rectangle on the overhead projector and divide the rectangle into the same fractions as those in the paper-folding demonstration.

3. Equivalent Fractions: Ask students to fold a rectangular sheet of paper in half and color one of the two equal parts. Ask what fraction of the paper is colored (1/2). Now have them refold the same paper and then fold it in half once again. Unfold. How many equal parts now? (4) What fraction is shaded (2/4 or 1/2) Since the amount of shading has not changed, this means that 1/2 = 2/4. Tell students that 1/2 and 2/4 are two names for the same amount. Therefore, they are equivalent. Now have students refold the papers and then fold in half a third time. Unfold. What new fraction have they found that is equivalent to 1/2 and 2/4? (4/8) These three fractions name the same amount.

TYING IT ALL TOGETHER: Once students have a firm understanding of equivalent fractions, they will be ready to find "another name" for a fraction by multiplying or dividing the numerator and denominator by the same (nonzero) number. This emphasis on equivalent fractions will pay dividends when you begin teaching addition and subtraction of fractions with unlike denominators.

TITLE: MARS FRACTION HUNT

AUTHOR: Paul T. Williams, Vanguard Honors Program,
Phoenix, AZ

GRADE LEVEL: Appropriate for grades 3 - 5.

OVERVIEW and PURPOSE: This lesson is designed to give the students practice in the use of fractions, changing fractions, using equivalent fractions, and paying attention to detail. This lesson works well at fourth grade level, but I find it can have good use with advanced third graders.

OBJECTIVES: The student will be able to:
1. Divide a word into appropriate fractional parts
2. Use equivalent fractions to correctly divide words
3. Pay attention to details in instructions relating to "first, "last", "second", etc.
4. The student will analyze the clues and decode the message.

RESOURCES/MATERIALS NEEDED: A MARS candy bar, classroom globe (on a small stand or cradle), activities paper. Before the activity, the MARS bar should be hidden under the classroom globe. The ANSWER KEY for the activity is:
FOR THE FIRST ONE TO FINISH THIS THERE WAITS A PRIZE IF YOU USE YOUR HEAD PERIOD CLUE MARS IS DIRECTLY BENEATH THE SOUTH POLE PERIOD GO LOOK

ACTIVITIES: (See "Resources/Materials Needed" for necessary preparation and activities page) The student will write the appropriate parts of the words on the line to form a new word. When the message is complete, the first student to decode the message will be rewarded by finding the hidden candy bar (MARS bar).

TYING IT ALL TOGETHER: After the winner has claimed his prize, the assignment should be reviewed. During this exercise, many of the students claim that "no such words exist." This is where it is necessary for them to pay attention to the details of the instructions. Usually the brighter students will be the ones to win; in that case, the teacher could team the students into pairs or small teams-- if this is done, it is best to be sure to have a MARS bar available for each winning team member.

FRACTION HUNT

1. The first half of food + the last quarter of door.

_____

2. The last third of hat + the first 2/5 of heavy.

_____

3. The second 1/3 of office + the last 1/4 of door + the first 1/3 of street.

_____

4. The last half of go + the last 1/2 of done.

_____

5. The last 1/8 of elephant + the first 1/5 of order.

_____

6. The first 3/4 of fine + the last 3/4 of dish.

_____

7. The last 1/6 of cement + the first 3/7 of history.

_____

8. The last half of bath + the first 1/3 of end + the last 2/7 of require.

_____

9. The first 2/5 of water + the last 3/4 of fits.

_____

10. The last 1/6 of Glenda.

_____

1. The first 1/3 of principal + the first half of zero.

_____

12. The first 1/7 of instant + the first third of fat.

_____

13. The first 2/5 of young + the first 1/10 of understand.

_____

14. The first 1/4 ugly + the first 1/5 of settlement.

_____

15. The first 1/4 of youthful + the last half of pour.

_____

16. The first 1/4 of hesitate + the last 2/3 of sad.

_____

17. The first 1/3 of permanent + the first half of iodine.

_____

18. The first 2/6 of clover + the last 2/4 of blue.

_____

19. The first 1/4 of Mark + the last 3/5 of stars.

_____

20. The last 1/4 of Meri + the first 1/5 of Susan.

_____

21. The first 3/5 of dirty + the last 3/7 of perfect + the first 2/5 of Lynda.

_____

22. The first 3/4 of bent + the last 2/3 of breath.

_____

23. The first 1/3 of Thomas + the first 1/8 of Endicott.

_____

24. The first 3/5 of sound + the last 2/9 of Aylsworth.

_____

25. The first quarter of positive + the first two thirds of Lee.

_____

26. The first 4/9 of periscope + the last 2/5 of blood.

_____

27. The first third of get + the second fourth of Jody.

_____

28. The first half of loud + the last half of book

Annotated Bibliography/Resources

MarcoPolo Discovers Mississippi > Mathematics Framework (**Fifth**) > ... - ... Model, identify, and write equivalent **fractions** including improper **fractions** and mixed numerals ... return to **Fifth** Grade Mathematics framework. ... GRITS **lesson** plan. ...
http://marcopolo.mde.k12.ms.us/frameworks/mathematics/ma_05_c04.html

MarcoPolo Discovers Mississippi > Mathematics Framework (**Fifth**) > ... - ... Model, identify, and write equivalent **fractions** including improper **fractions** and mixed numerals ... return to **Fifth** Grade Mathematics framework. ... GRITS **lesson** plan. ...
http://marcopolo.mde.k12.ms.us/frameworks/mathematics/ma_05_c04.html

Lesson ideas **for** working with **fractions** - **Lesson** ideas **for** working with **fractions**. It is necessary **for** fourth and **fifth** grade students to be able to convert between **fractions**, decimals, and percents. ...
http://www.shodor.org/interactivate/elementary/fractions.html

The Math Forum - Math Library - 5th Grade - ... Justice, Gunsaulus Scholastic Academy A **lesson for** grades 5 ... math requirements, concepts and methods, **for fifth** grade. ... do I help students learn about **fractions**? ...
http://mathforum.org/library/levels/5/

NH 4-6 Math Curriculum Addendum - Fraction **Lesson** - ... Fraction **Lesson**. Students in my **fifth** grade classes have generally had exposure to **fractions** many times in the past, but have not developed a firm understanding ...
http://www.plymouth.edu/psc/math/curricula/46frcton.html

Appendices-Standards

Grade 5 PA Standards

2.1.5 ALL	**Numbers, Number Systems and Number Relationships**
2.1.5A	Use expanded notation to represent whole numbers or decimals.
2.1.5B	Apply number theory concepts to rename a number quantity (e.g., six, 6, 2 12 , 3 « 2, 10 - 4).
2.1.5C	Demonstrate that mathematical operations can represent a variety of problem situations.
2.1.5D	Use models to represent fractions and decimals.
2.1.5G	Develop and apply number theory concepts (e.g., primes, factors, multiples, composites) to represent numbers in various ways.

2.2.5 ALL	**Computation and Estimation**
2.2.5A	Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.
2.2.5B	Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with decimals with and without regrouping.
2.2.5C	Develop and apply algorithms to solve word problems that involve addition, subtraction, and/or multiplication with fractions and mixed numbers that include like and unlike denominators.
2.2.5E	Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.
2.2.5H	Explain multiplication and division algorithms.
2.2.5I	Select a method for computation and explain why it is appropriate.

2.3.5 ALL	**Measurement and Estimation**

2.3.5D Convert linear measurements within the same system.

2.3.5E Add and subtract measurements.

Mathematical Reasoning and Connections

2.4.5A Compare quantities and magnitudes of numbers.

2.4.5B Use models, number facts, properties and relationships to check and verify predictions and explain reasoning.

2.4.5C Draw inductive and deductive conclusions within mathematical contexts.

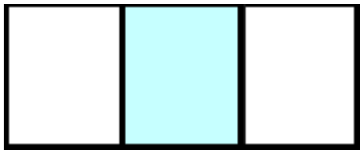
Name _____ Date_____

Directions: Write each decimal in fraction form.

1. 0.27	=	_____	2. 0.55	=	_____	3. 0.1	=	_____
4. 0.95	=	_____	5. 0.82	=	_____	6. 0.94	=	_____
7. 0.02	=	_____	8. 0.32	=	_____	9. 0.86	=	_____
10. 0.17	=	_____	11. 0.98	=	_____	12. 0.48	=	_____
13. 0.29	=	_____	14. 0.91	=	_____	15. 0.85	=	_____

Name_____ Date_____

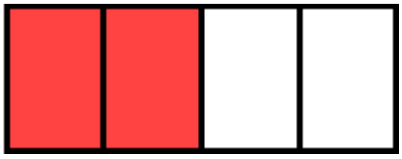
Fractions



This rectangle is divided into three equal parts.
One part of the rectangle is shaded.

You write the *fraction* $\frac{1}{3}$ to show what part of the rectangle is shaded.

You read $\frac{1}{3}$ as *one third.*

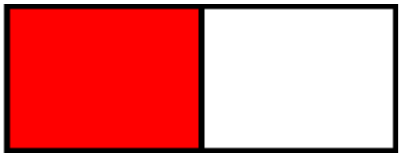


This rectangle is divided into four equal parts.
Two parts of the rectangle are shaded.

You write the *fraction* $\frac{2}{4}$ to show what part of the rectangle is shaded.

You read $\frac{2}{4}$ as *two fourths.*

Write the fraction for each shaded part



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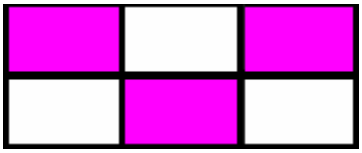

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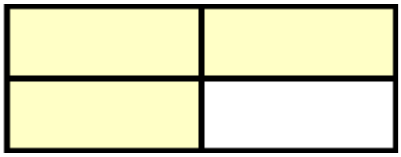
6



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4

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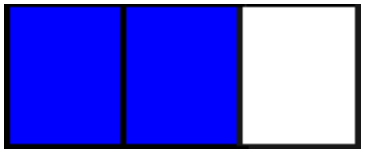
8



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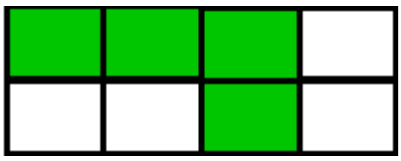
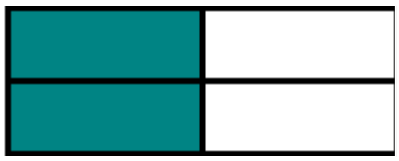
3

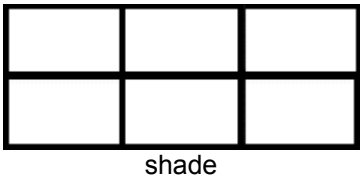


$\frac{\quad}{8}$

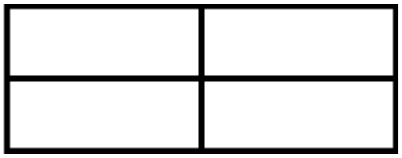
$\frac{\quad}{2}$



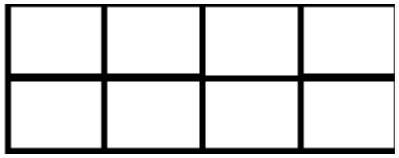
$\frac{\quad}{4}$



shade $\frac{5}{6}$



shade $\frac{1}{4}$



shade $\frac{7}{8}$

Fractions

Reduce the improper fractions

$\frac{17}{8} =$ $\quad =$ $\quad =$ $\quad =$

$\frac{2}{2} =$ $\quad \frac{14}{6} =$ $\quad \frac{8}{4} =$ $\quad \frac{14}{7} =$

$\frac{9}{5} =$ $\quad \frac{11}{6} =$ $\quad \frac{9}{7} =$ $\quad \frac{5}{3} =$

$\frac{11}{6} =$ $\frac{9}{3} =$ $\frac{8}{2} =$ $\frac{15}{10} =$

$\frac{10}{2} =$ $\frac{13}{8} =$ $\frac{8}{3} =$ $\frac{9}{6} =$

$\frac{9}{2} =$ $\frac{8}{8} =$ $\frac{12}{3} =$ $\frac{9}{5} =$

Answers

Fractions

Reduce the improper fractions

$\frac{17}{8} =$ $\frac{3}{3} =$ $\frac{12}{9} =$ $\frac{18}{10} =$

$\frac{2}{2} =$ $\frac{14}{6} =$ $\frac{8}{4} =$ $\frac{14}{7} =$

$\frac{9}{5} =$ $\frac{11}{6} =$ $\frac{9}{7} =$ $\frac{5}{3} =$

$\frac{11}{6} =$ $\frac{9}{3} =$ $\frac{8}{2} =$ $\frac{15}{10} =$

$\frac{10}{2} =$ $\frac{13}{8} =$ $\frac{8}{3} =$ $\frac{9}{6} =$

$\frac{9}{2} =$ $\frac{8}{8} =$ $\frac{12}{3} =$ $\frac{9}{5} =$

Answers