

Fraction Frenzy

Grade Level: 3rd Grade

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Roscoe Wilson Elementary, Lubbock, TX

Length of Unit: 6 lessons (6 – 8 days)

I. ABSTRACT

The objective of this mathematics unit is to concretely develop basic concepts of fractions and decimals. Writing, comparing, and constructing fractions, as well as decimals, are among the primary focal points in the Core Knowledge Sequence for this grade level. Connecting fraction symbols to fractional quantities extends the understanding of this concept. Through the use of manipulatives and technology, students will also make real life connections. With an automatic fluency in these fundamental operations, a student can develop higher order problem solving skills.

II. OVERVIEW

A. Concept Objectives

1. The student develops an awareness of fraction names and symbols to describe fractional parts of whole objects or sets of objects. (TEKS Math 3.2)
2. The student understands place value to represent whole numbers and decimals. (TEKS Math 4.1)

B. Content from the *Core Knowledge Sequence* (Page 78)

1. Fractions and Decimals

- a. Recognize fractions to $\frac{1}{10}$.
- b. Identify numerator and denominator.
- c. Write mixed numbers.
- d. Recognize equivalent fractions.
- e. Compare fractions with like denominators using $<$, $>$, and $=$.
- f. Know and write decimals equivalents to $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$.
- g. Read and write decimals to the hundredths.

C. Skill Objectives

1. The student will construct concrete models of fractions. (TEKS Math 3.2A)
2. The student will identify numerators and denominators.
3. The student will write mixed numbers.
4. The student will construct concrete models of equivalent fractions for fractional parts of whole objects. (TEKS Math 3.2D)
5. The student will compare fractional parts of whole objects or sets of objects in a problem situation using concrete models. (TEKS Math 3.2B)
6. The student will use place value to read, write, compare, and order decimals involving tenths and hundredths, including money, using concrete models. (TEKS Math 4.1B)

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. *Using Cuisenaire Rods: Fractions & Decimals* distributed by Learning Resources

2. *What Your Third Grader Needs to Know* by E.D. Hirsch, Jr.
- B. For Students
 1. Fractions (Page 56)
 2. Numbers and Number Sense (Page 78)
 - a. Read and write numbers (in digits and words) up to six digits.
 - b. Recognize place value up to hundred thousands.
 - c. Order and compare numbers to 999,999, using $<$, $>$, and $=$.
 - d. Use a number line.
 3. Money (Page 78)
 - a. Write amounts of money using \$ and ¢ signs, and the decimal point.

IV. RESOURCES

- A. *Give Me Half* by Stuart Murphy
- B. *Apple Fractions* by Jerry Pallotta
- C. *Using Cuisenaire Rods: Fractions & Decimals* distributed by Learning Resources

V. LESSONS

Lesson One: Recognize Fractions

Daily Objectives

1. Concept Objective(s)
 - a. The student develops an awareness of fraction names and symbols to describe fractional parts of whole objects or sets of objects. (TEKS Math 3.2)
2. Lesson Content

Fractions and Decimals (Page 78)

 - a. Recognize fractions to one-tenth.
3. Skill Objective(s)
 - a. The student will construct concrete models of fractions. (TEKS Math 3.2A)

B. *Materials*

1. *Give Me Half* by Stuart Murphy
2. Sentence strips precut with vocabulary words written on them
3. Pocket chart
4. Overhead fraction manipulatives
5. Fraction Names graphic organizer (Appendix A)
6. Individual dry erase boards
7. One dry erase marker and eraser per student
8. Unifix Cubes ... 10 for each student (5 different colors)

C. *Key Vocabulary*

1. Fraction – a number that indicates a part of a whole
2. Whole – the total without being divided
3. Part – a portion of the whole

D. *Procedures/Activities*

1. Assess prior knowledge. Pre-reading activity – ask students “What is a fraction?” Write responses on the board. Read *Give Me Half* by Stuart Murphy. Post reading activity – have students recall words from the story they think relate to fractions.

Also point out words that indicate the use of fractions. For instance, words like *share* and *divide* should indicate to students that a fraction must be used.

2. Start a fraction vocabulary wall. Use the pocket chart to hold the vocabulary words for this entire unit. Start with the three vocabulary words for this lesson. Place one word at a time on to the chart. Discuss meaning and give examples. Emphasize that it is ONLY a fraction if *the parts are all equal*. Demonstrate this by drawing one square divided into equal parts and one square not divided into equal parts. The first one is a fraction while the second one is NOT a fraction. Continue to illustrate until all students grasp this concept of equal parts.
3. Review these terms from 2nd grade: *half, halves, thirds, fourths, fifths, sixths, sevenths, eighths, ninths, and tenths*. Using the fraction manipulatives, demonstrate each term. Also show the appropriate way to write fractions by writing one number directly over another number with a line drawn horizontally between them. Using the dry erase boards, have students write the fractions as they are said aloud. Have students show their answers before going to the next fraction.
4. Pass out Unifix Cubes to each student. Students will create fractions using the cubes. Discuss how the first number said, is how many of a particular color(s) and the second number said, is how many total cubes. **Example:** “Create a fraction with red being two-fourths of the whole.” Two cubes should be red and the other two cubes can be of any color. Continue having students create fractions until all have grasped the concept or time allows. Assist individuals as needed. Make sure to use fractions using halves through tenths. This can also be done as a game as students become more proficient.
5. Have students independently complete the Fraction Names graphic organizer. (Appendix A) Students are to write in the fraction names, whole through tenths.

E. *Assessment/Evaluation*

1. Teacher observations of student performance
2. Completion of graphic organizer

Lesson Two: Numerators and Denominators

A. *Daily Objectives*

1. Concept Objective(s)
 - a. The student develops an awareness of fraction names and symbols to describe fractional parts of whole objects or sets of objects. (TEKS Math 3.2)
2. Lesson Content
Fractions and Decimals (Page 78)
 - a. Identify numerators and denominators
3. Skill Objective(s)
 - a. The student will identify numerators and denominators.

B. *Materials*

1. *Apple Fractions* by Jerry Pallotta
2. Vocabulary pocket chart with vocabulary words written on sentence strips
3. Individual dry erase boards
4. One dry erase marker and eraser per student
5. Fraction Writing Strips (Appendix B)
6. Unifix Cubes ... 1 set of 10 for each team (each set should have the same amount of each color)

C. *Key Vocabulary*

1. Numerator – the number in a fraction written above the line that represents the number of parts
2. Denominator – the number in a fraction written below the line that represents the total number of parts

D. *Procedures/Activities*

1. Read *Apple Fractions* by Jerry Pallotta. Post reading activity – ask students what 2 words from the story we could add to the pocket chart. Encourage students to name words that would relate to fractions.
2. Review unit vocabulary. Review prior knowledge of numerator and denominator. Add new vocabulary to the chart. Place one word at a time on to the chart. Discuss meaning and give examples. Make sure students understand that the denominator is not a whole number. Denominators tell how many **parts** the **whole** is divided into. (More parts = smaller parts) It is also important to point out that the numerator can not be larger than the denominator. The denominator is the **total number of parts**, and the numerator is the **portion of parts represented**. (the number of parts shaded, unshaded, red, blue, etc.) Practice recognizing the numerator and denominator by saying a fraction and asking students which number is the numerator and which is the denominator. Using the dry erase boards, have students write the fraction that is described. Check student work by calling on students to say the fraction name.
Example: Say “the numerator is 3 and the denominator is 4.” Students write $\frac{3}{4}$ on their dry erase boards. The correct verbal response would be “three-fourths”.
3. Have 5 students come up to the front of the class. Each of the 5 students is one part of a whole. Ask the class what fraction one student would be (one-fifth). Have this group follow commands. **Example:** “Two-fifths of you raise your left hand.” Two students should raise their hand. (The group will decide which two.) Continue with several more examples. Have 4 new students come up and repeat the same steps.
4. Divide class into teams of equal numbers. If there are an odd number of students, have a student keep the score on the board and/or write the answers on the board. Determine who the “Fraction Holder” for each team will be. Call out a fraction for each team to create. **Example:** “Create a fraction with $\frac{1}{2}$ red.” Check for meaning. Increase the difficulty by changing the commands. For instance, “Create a fraction with a numerator of 3.” Determine what the winning score will be, or at what point the game is over, prior to starting the game. Team members will work together to create the fraction and the “Fraction Holder” holds the Unifix Cube fractions model in the air when it is completed. The first team with the correct model earns a point.
5. Have students independently complete the Fraction Writing Strip activity (Appendix B). Students may use the Unifix Cubes if needed.

E. *Assessment/Evaluation*

1. Teacher observations of student performance
2. Completion of Fraction Writing Strip activity

Lesson Three: Mixed Numbers

A. *Daily Objectives*

1. Concept Objective(s)
 - a. The student develops an awareness of fraction names and symbols to describe fractional parts of whole objects or sets of objects. (TEKS Math 3.2)

2. Lesson Content
Fractions and Decimals (Page 78)
 - a. Write mixed numbers
 3. Skill Objective(s)
 - a. The student will write mixed numbers.
- B. *Materials*
1. Vocabulary pocket chart with vocabulary words written on sentence strips
 2. Number Line transparency (Appendix C)
 3. Four inch construction paper squares ... 3 for each student
 4. Masking tape
 5. Quilt squares (Appendix D) ... 3 squares for each student
 6. Crayons, colored pencils, or markers
 7. Large piece of construction paper
 8. Glue
 9. Marker
- C. *Key Vocabulary*
1. Whole number- any of the set of natural numbers together with zero
 2. Mixed number- a number composed of a whole number and a fraction
- D. *Procedures/Activities*
1. Review unit vocabulary. Add new vocabulary to the chart. Place one word at a time in the chart. Discuss meaning and give examples. Explain and illustrate the differences between whole and mixed numbers. It is also important to demonstrate the correct way to say a mixed number. The word **and** must be said when verbalizing a mixed number. Example: $4\frac{3}{4}$ would be “Four and three-fourths”. Write examples on the board and have students say them aloud. Continue until each student has had a turn.
 2. Show the Number Line transparency. (Appendix C) Point to the 0, 1, and 2. Ask students if these are whole or mixed numbers. One by one, add in the fractions $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$. Ask students if these are whole or mixed numbers. Next, add in the fractions $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ between the 1 and 2. Have students read these numbers aloud. ($1\frac{1}{4}$, $1\frac{1}{2}$, and $1\frac{3}{4}$) Make sure that students are saying them correctly with the word **and**. Continue if necessary by extending the number line and adding the fractions between whole numbers.
 3. Pass out the construction paper squares. Instruct students to place one square aside for now. Have students write any whole number in the center of one of the other two squares. Encourage this number to be written largely so that it is plainly seen. With the second square, have students fold the square into fourths, halves, or eighths. Next, have students cut one or more parts off this square. At least one part must be left. On the part(s) that is left, have students write the fraction left. Allow students to take turns showing their mixed numbers and verbalizing them for the class.
 4. Now, with the set aside construction paper square, have all students fold this square into fourths. Have students cut one or more parts off this square. At least one part must be left. Collect all fractions. Tape them next to each other on the board or on the floor. Guide the class to determine the total represented. This number will be a mixed or whole number.
 5. Give each student 3 quilt squares. (Appendix D) Instruct students to create 3 different quilt squares. Students should use only one color on all 3 squares. Emphasize that all parts should not be colored in. Assign students a partner and give

each pair a large piece of construction paper. Each pair is to assemble their quilt by gluing the squares into the shape of a rectangle onto the center of the construction paper. Student pairs are then to tally up the total number of squares on all quilt squares. Then, have them tally up the total number of squares that have been colored in. Student pairs are then to write the mixed or whole number represented by the quilt model. Display these quilts as a class quilt or individually in the hall or on a bulletin board. This will serve as a visual cue to students as they continue their work on this unit.

E. *Assessment/Evaluation*

1. Teacher observations of student performance

A. **Lesson Four: Equivalent Fractions**

1. Concept Objective(s)
 - a. The student develops an awareness of fraction names and symbols to describe fractional parts of whole objects or sets of objects. (TEKS Math 3.2)
2. Lesson Content
Fractions and Decimals (Page 78)
 - a. Recognize equivalent fractions
3. Skill Objective(s)
 - a. The student will construct concrete models of equivalent fractions for fractional parts of whole objects. (TEKS Math 3.2D)

B. *Materials.*

1. Vocabulary pocket chart with vocabulary words written on sentence strips
2. Set of fraction stamps
3. Overhead fraction manipulatives
4. Flip book master (Appendix E) ... one copy per student
5. 8 ½" x 11" colored paper ... 5 sheets per student
6. Stapler
7. Glue and scissors
8. Equivalent Fractions graphic organizer (Appendix F)
9. Overhead fraction dice
10. Individual dry erase boards
11. One dry erase marker and eraser for each student
12. Crayon or colored pencil

C. *Key Vocabulary*

1. Equivalent- alike or equal in number, value or meaning

D. *Procedures/Activities*

1. Review unit vocabulary. Add new vocabulary to the chart. Discuss meaning. Brainstorm things that are equivalent (pair of shoes, pair of hands, etc.) Emphasize that the two objects MUST be identical in order to be equivalent.
2. Demonstrate equivalence by using the overhead fraction manipulatives. Show the one-half next to three-sixths, two-fourths, etc. Put one-half with three-sixths for students to see one whole. Continue by having students come up and create equivalent fractions.
3. Pass out the colored paper and flip book master to each student. Have students stack the colored papers in front of them vertically. Then, have students separate the pages

so there is an inch between the bases of each page. Next, instruct students to fold the pages to create a flip book. Finish the book by putting two staples across the top right under the fold. This process is best done as a demonstration. Teacher should create an example to use during the instructional process. Now, have students label the strips on the flip book master. Labeling should start with ***1 whole*** and proceed down. Each box should have a label. For example, $\frac{1}{2}$ will be written twice, $\frac{1}{4}$ will be written four times, etc. Once the labeling is completed, students should cut the strips apart. The individual boxes should not be cut out, only the horizontal strips. The strips are now to be glued onto the base of each flip. Align the left end of the strips with the left side of the paper. Start with gluing the ***1 whole*** on the top flap and work down so that the strip with one-tenth is glued onto the bottom flap. Cut off the excess paper that will be to the right of the strips. Finally, make vertical cuts on each flap on the vertical lines. For example, the flap with $\frac{1}{4}$ will have 3 cuts in order to show four-fourths. Have students experiment with the flip book and determine as many equivalent fractions as possible. Students should keep a record of all found by writing them on the dry erase boards. After students have had ample time to work, discuss their findings as a class.

4. Choose 2 stamps from the set of fraction stamps. (thirds and sixths; halves and fourths; halves and sixths; fourths and eighths; fifths and tenths) Stamp onto the back of each flip book. The stamping may be the same for each student or different. Have students color the stamps in order to create equal fractions. NOTE: Students should not color the whole stamp. The coloring must be a model of a fraction. You can extend this activity by having students use the stamps to illustrate equivalent fractions. Students need to be able to identify equivalent fractions. In third grade, this is done through the use of fraction models.
5. Pass out the Equivalent Fractions graphic organizer. (Appendix F) Have students write numbers 1-5 on the back. Students will now write equivalent fractions. Teacher will roll the overhead fraction dice. Using their flip books, students will chose a fraction that is equivalent to the fraction rolled. Students are to write the fraction rolled, an equal sign, and the equivalent fraction. When they have completed this part, have them complete the graphic organizer. Students should write $\frac{1}{2}$ in the star. Then, students are to write all the fractions that are equal to $\frac{1}{2}$ in the squares.

E. *Assessment/Evaluation*

1. Teacher observations of student performance
2. Completion of flip book
3. Completion of graphic organizer and the writing of equivalent fractions

Lesson Five: Comparing Fractions with Like Denominators

A. *Daily Objectives*

1. Concept Objective(s)
 - a. The student will compare fractional parts of whole objects or sets of objects in a problem situation using concrete models. (TEKS Math 3.2B)
2. Lesson Content

Fractions and Decimals (Page 78)

 - a. Compare fractions with like denominators using $<$, $>$, and $=$.
3. Skill Objective(s)
 - a. The student develops an awareness of fraction names and symbols to describe fractional parts of whole objects or sets of objects. (TEKS Math 3.2)

B. *Materials*

1. Vocabulary pocket chart
2. Butcher paper ... long enough for 11 students to stand shoulder to shoulder
3. Set of Cuisenaire Rods for each student (10 rods)
4. Make fraction riddle cards using the "Fraction Riddles" in *Using Cuisenaire Rods: Fractions & Decimals* (Pages 44-46)
5. Copy of "Riddle Blanks" for each student (*Using Cuisenaire Rods: Fractions & Decimals* page 47)
6. Students' flip books from previous lesson
7. 3 x 5 note cards with whole numbers 0 to 10 and fractions one-half to one-tenth written largely
8. Music
9. Stop watch or clock with second hand
10. An apple and an orange
11. Copy of "Name that Fraction" (*Using Cuisenaire Rods: Fractions & Decimals* page 18) for each student
11. Word Puzzle (Appendix G)

C. *Key Vocabulary*

1. None for this lesson

D. *Procedures/Activities*

1. Review vocabulary for this unit. Have students give you definitions, examples, etc. If time allows, play a short game, such as bingo, with the vocabulary words.
2. Review the following symbols: $<$, $>$, and $=$.
3. Lay the butcher paper flat on the floor. Pass out the 3 x 5 note cards with the whole numbers to 11 students. While the music is going, have students walk around the butcher paper. When the music stops, students are to line themselves from 0 to 10. Time students and encourage them to beat their previous time. (Make sure students line up least to greatest facing the rest of the class.) Continue as time allows and change students so that all can participate. Repeat this activity using the fraction note cards.
4. Have one group of students remain on the butcher paper with the fraction cards. Ask students which fraction is largest and smallest. Make certain students recognize that the fraction one-tenth ended in the opposite position that ten did. Ask students if the denominator indicates a larger fraction or a small fraction. At this point, review the fact that the denominator signifies how many total parts something is divided into. Therefore, a larger denominator will necessitate smaller parts and a smaller denominator will produce larger parts.
5. Hold up an apple in one hand and an orange in another. Ask students which fruit is better. Allow students to discuss the pros and cons of oranges and apples. It should be realized by students that you can not appropriately compare these two fruits because they are *not alike*. Write the fractions two-thirds and two-fifths on the board or overhead. Ask students which one is larger. Students will make guesses but will not know for sure which one is larger or smaller. Explain to students that in order to correctly compare fractions, the denominators must be the same. Write the fractions one-third and two-thirds on the board or overhead. Ask students which one is larger. When the denominators are the same, compare fractions by comparing the numerators. Students should not need to use a picture to compare fractions with like denominators.
6. Pass out the Cuisenaire Rod sets to students. Allow students time to experiment with

the rods in order to become familiar with them. Next, have students line the rods up from greatest to least (tallest to shortest). Ask students to share any observations they made during their experimenting time. Encourage observations that pertain to math especially those that pertain to fractions. If not observed, point out that the white rod is one-tenth, the red rod is two-tenths, the light green rod is three-tenths, and so on. Have students take away the orange rod. Ask students what the white rod now represents. The largest rod always represents one whole. Continue removing rods one or two at a time to illustrate this. Now, have students put the yellow rod on top of the orange rod. Ask students, “If the orange rod is one whole, what fraction is the yellow rod?” (one-half) Continue with more examples like this. **Example:** Using the orange rod and the dark green rod, the dark green would be one-third. Have students work with a partner to complete “Name That Fraction”. Check answers when all are completed. (“Fraction Hunt” on page 39 can be used as an extension/enrichment to this activity.)

7. Complete the Word Puzzle (Appendix G) as a class. Have students create their own word puzzle. Teacher will grade this by completing the puzzle.

E. *Assessment/Evaluation*

1. Teacher observations of student performance
2. Completion of word puzzle

Lesson Six: Decimal Equivalents and Decimals to the Hundredths

A. *Daily Objectives*

1. Concept Objective(s)
 - a. The student understands place value to represent whole numbers and decimals. (TEKS Math 4.1)
2. Lesson Content
Fractions and Decimals
 - a. Know and write decimals equivalents to $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$.
3. Skill Objective(s)
 - a. The student will use place value to read, write, compare, and order decimals involving tenths and hundredths, including money, using concrete models. (TEKS Math 4.1B)

B. *Materials*

1. Vocabulary pocket chart with vocabulary words written on sentence strips
2. Four quarters for each student
3. Individual dry erase boards
4. One dry erase marker and eraser for each student
5. Pocket Card Mats and Laminated number strips (Appendix H)
6. A copy of Decimal Writing (Appendix I) for each student

C. *Key Vocabulary*

1. Decimal – any number that uses places to the right of the decimal point to show a fraction
2. Decimal point – the period to the right of the ones place
3. Tenths- the first place value after the decimal point
4. Hundredths – the second place value after the decimal point

D. *Procedures/Activities*

1. Review unit vocabulary. Add new vocabulary to the chart. Place one word at a time on the chart. Discuss meaning and give examples.
2. Pass out four quarters to each student. Ask students, “What is the total of these quarters?” (\$1.00) Explain to students that since it takes four quarters to make **one whole** dollar, one quarter is **one part** of the dollar. Ask students, “What fraction of a dollar would one quarter be?” ($\frac{1}{4}$) Continue this pattern by using two quarters and then three quarters.
3. Ask students how many ways there are to write a number. (4 – standard, word, expanded, and sketch) Explain to students that there are two ways to write a fraction. Writing a number as a decimal is another way to write a fraction. Students must be able to write $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ as a decimal. Write the following on the board: $\frac{1}{4} = 0.25$; $\frac{1}{2} = 0.50$; $\frac{3}{4} = 0.75$. Students should be able to connect these fractions to decimals by relating back to the money demonstration.
4. Review place value by having students draw the place value chart (ones to hundred thousands) on their dry erase boards. Walk around and make sure all students are correctly drawing the place value chart. Now, draw the place value chart on the board. Reiterate that these places are all whole numbers. Erase thousands through millions. Draw the decimal point after the ones place. Explain to students that the decimal point separates whole numbers from values less than whole numbers. Next, add the tenths and hundredths place to the place value chart. Write a number for each of the places and demonstrate how to read the number. The decimal point represents the word **and** when verbalizing these numbers. Make sure to emphasize saying the word **and** when reading the number. Make the connection that these numbers are read in the same way as money. Continue writing different numbers and have students say them. Repeat until all students have a turn to verbalize these numbers.
5. Pass out the Pocket Card Mats and number strips. Teacher will say numbers and students will create that number using these manipulatives. Students do this by inserting the number strips in the appropriate pocket card. Walk around and observe students. Carry on with this activity until students have mastered this concept. Students can also work with a partner to extend their comprehension of this concept. One student can say a number while the other is creating that number on the mat.
6. Have students independently complete Decimal Writing. (Appendix I)

E. *Assessment/Evaluation*

1. Teacher observations of student performance
2. Completion of Decimal Writing

VI. CULMINATING ACTIVITIES (Optional)

- A. Make pudding treats. Make a batch of pudding as a demonstration. (There should be enough pudding for each student to have $\frac{1}{2}$ a cup.) Have students clap twice when a fraction is said. Be very deliberate in showing students how to measure correctly. The four items for the treats are: pudding, crushed Oreos®, Cool Whip®, and gummy worms. Each student will make and measure their own pudding treat! Each student will need one cup. Use clear 12 ounce cups. The first ingredient will be to add one-half a cup of pudding. The next ingredient added will be one-third a cup of crushed Oreos®. The third

ingredient is one-fourth a cup of Cool Whip®. Each student will then top off their pudding treat with 2 gummy worms cut into half.

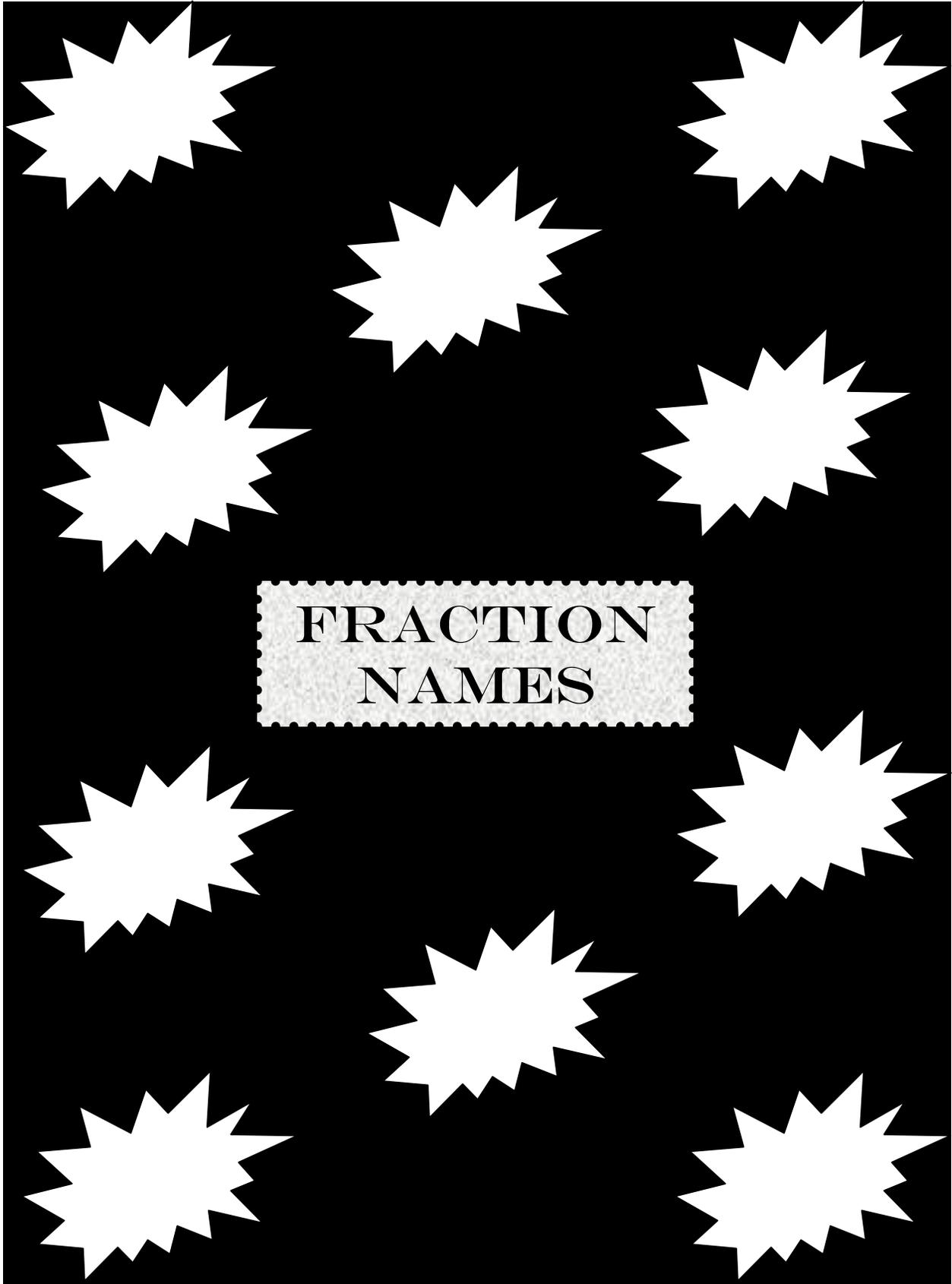
HANDOUTS/WORKSHEETS

1. Appendix A: Fraction Names
2. Appendix B: Fraction Writing Strips
3. Appendix C: Number Line
4. Appendix D: Quilt Squares
5. Appendix E: Flip Book Master
6. Appendix F: Equivalent Fractions
7. Appendix G: Word Puzzle
8. Appendix H: Pocket Card Mats
9. Appendix I: Decimal Writing

VII. BIBLIOGRAPHY

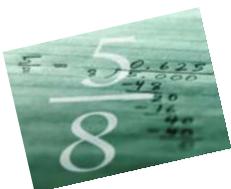
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Appendix A
Fraction Names

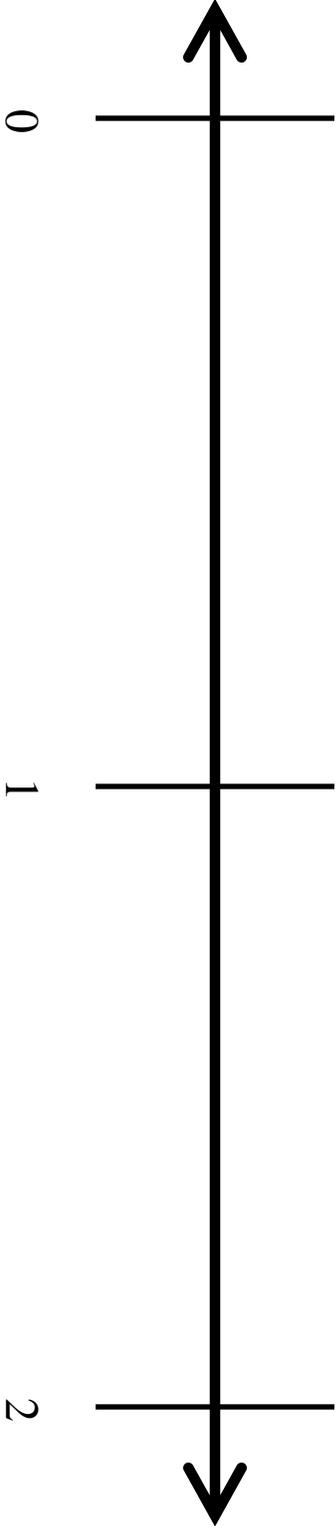


Fraction Writing Strips

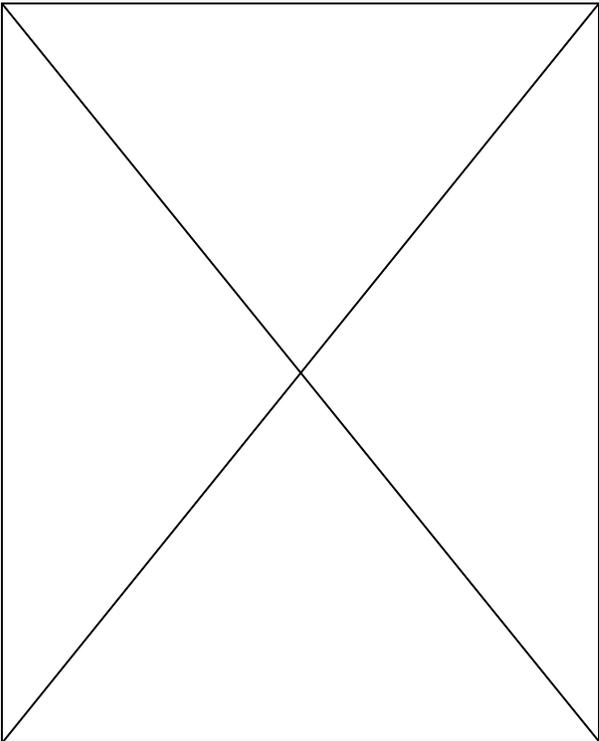
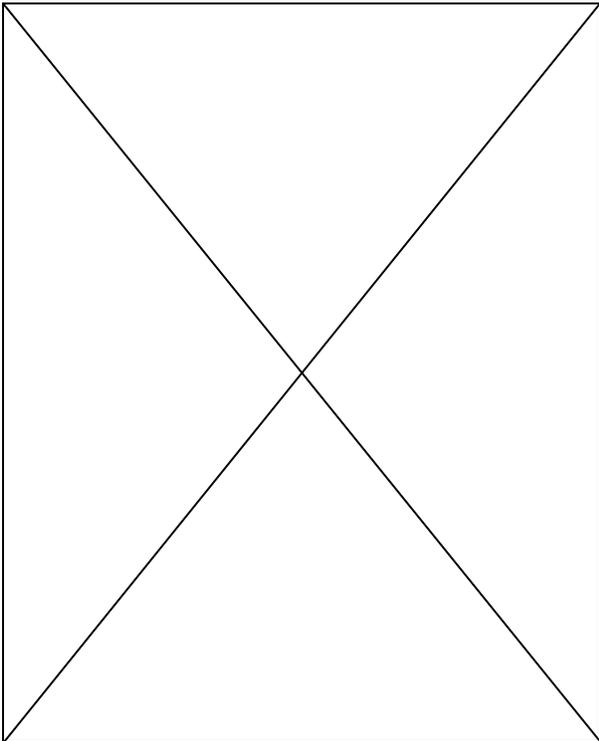
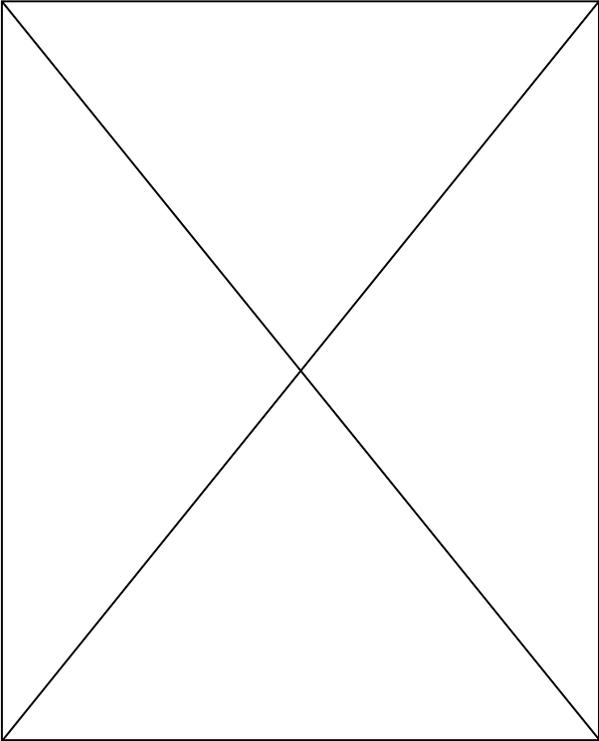
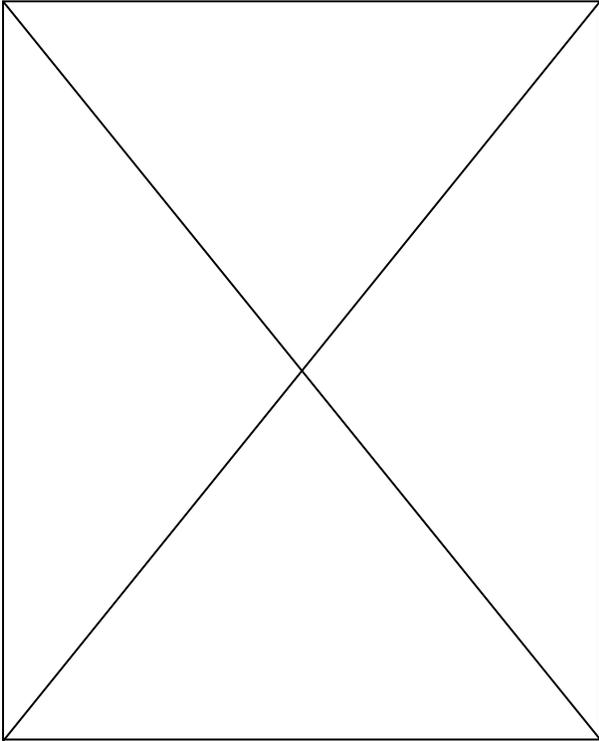
1. Write a fraction with **10** as the denominator. _____
2. Write a fraction with **4** as the numerator. _____
3. Write a fraction with **8** as the numerator. _____
4. Write a fraction with **2** as the denominator. _____
5. Write a fraction with **3** as the denominator. _____
6. Write a fraction with **6** as the denominator. _____
7. Write a fraction with **1** as the numerator. _____
8. Write a fraction with **9** as the denominator. _____
9. Write a fraction with **5** as the numerator. _____
10. Write a fraction with **7** as the denominator. _____



Appendix C
Number Line



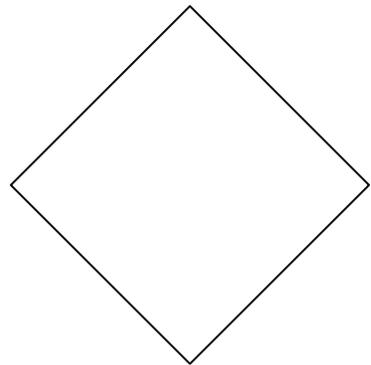
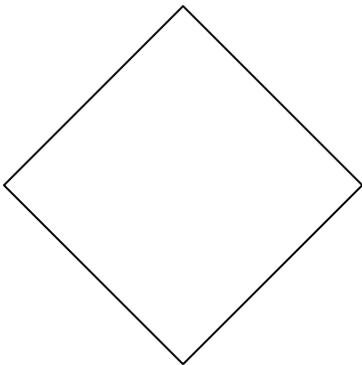
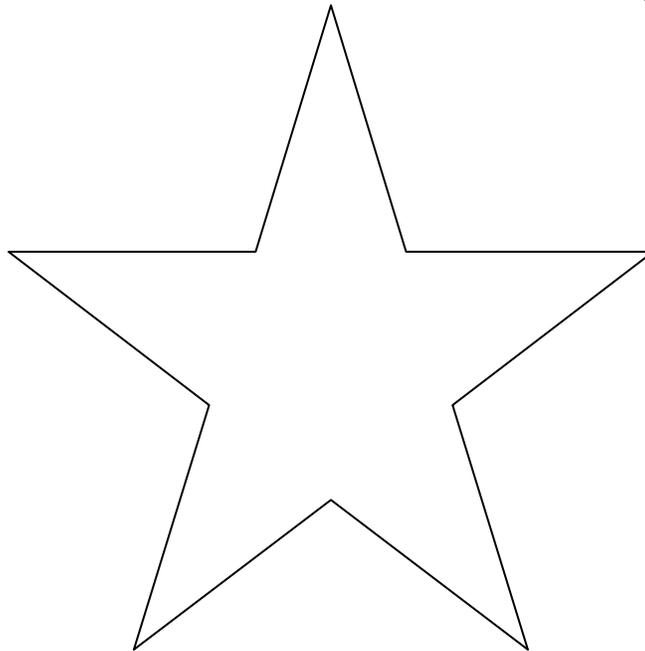
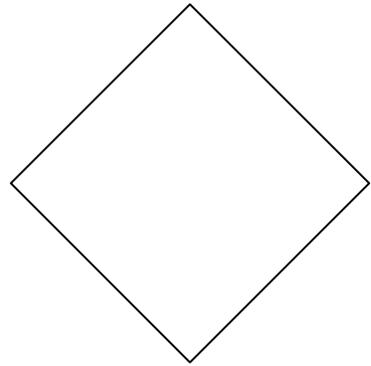
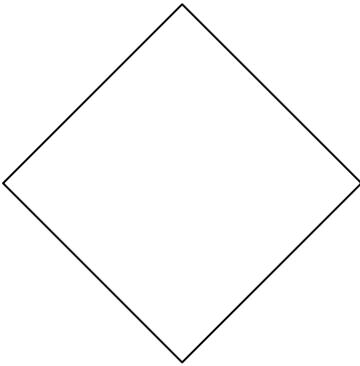
Appendix D
Quilt Squares



Appendix E
Flip Book Master

Appendix F
Equivalent Fractions

Equivalent Fractions



Word Puzzle

1. Circle the first $\frac{1}{6}$ of FACTOR.
2. Circle the last $\frac{1}{9}$ of NUMERATOR.
3. Circle the first $\frac{1}{3}$ of ADD.
4. Circle the first $\frac{1}{9}$ of CALCULATE.
5. Circle the last $\frac{1}{10}$ of EQUIVALENT.
6. Circle the last $\frac{3}{8}$ of DIVISION.
7. Circle the last $\frac{1}{6}$ of GRAPHS.

Write the circled letters in order, starting with number 1, on the lines below.

Appendix H
Pocket Card Mats

Materials:

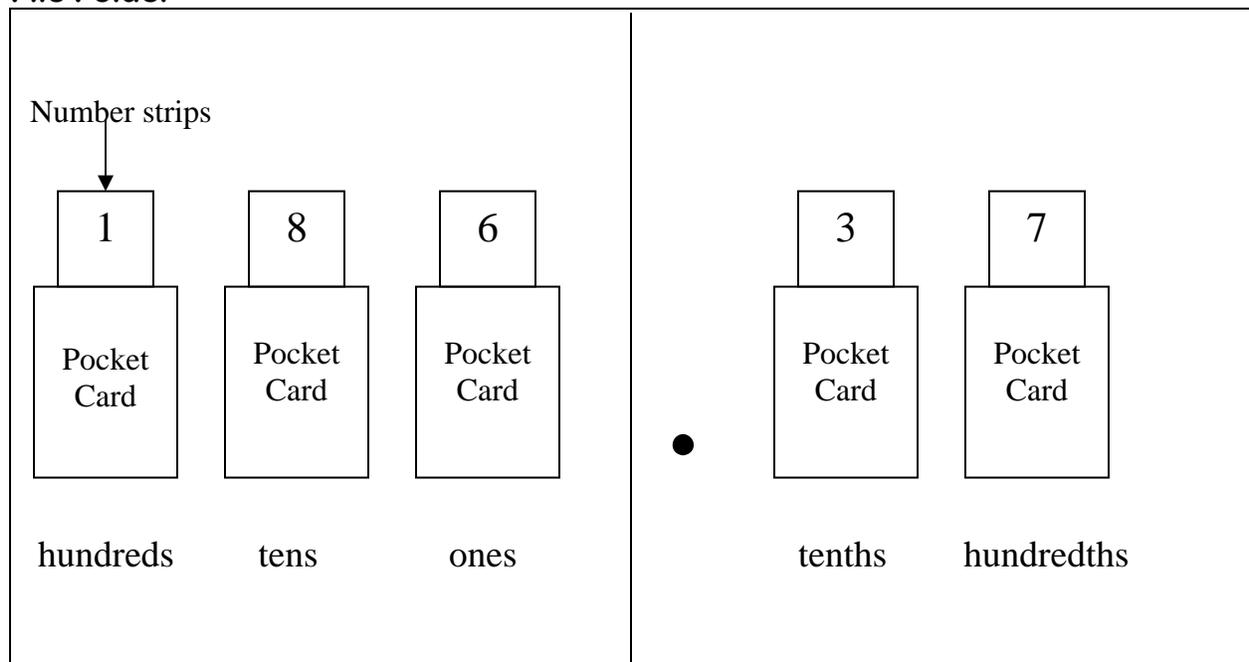
1. 1 file folder for each student
2. 5 pocket cards for each student
3. 10 strips of construction paper for each student
4. Marker to label OR computer generated numbers, decimal points and place value labels

Instructions:

1. Glue 5 pocket cards to the inside of the file folder in a straight line.
2. Underneath the cards, label the place value. Then, make a decimal point between the ones and the tenths place.
3. Write or glue the numbers 0-9 on each set of construction paper strips. One number will be on each strip and should be close to the top of the strip so the number will be visible when the strip is inserted into the pocket chart. Laminate these for durability.

Diagram:

File Folder



Appendix I
Decimal Writing

Decimal Writing

Directions: Write the following numbers in word form. Use the word bank to help you spell the numbers correctly.

326.3 _____

49.68 _____

741.5 _____

208.7 _____

82.04 _____

90.3 _____

618.14 _____

15.6 _____

WORD BANK

eighteen

eighty

eleven

fifty

forty

fourteen

fifteen

hundred

hundredths

nineteen

ninety

one

seventeen

seventy

sixteen

sixty

ten

tenths

thirteen

thirty

twelve

twenty