



Cumberland County Schools

Objectives 1.05, 1.05a, and 1.05c – Fractions

Lesson Title: Fractions
Curriculum Area: Mathematics
Grade: Third
Time: 60 Minutes

1. PLAN

1. **NCSCS Goal 1:**
The learner will read, write and model whole numbers through 9,999.
1. **NCSCS Objectives:**
 - 1.05 - Use area or region models and set models of fractions to explore part-whole relationships.
 - 1.05a - Represent fractions concretely and symbolically (halves, thirds, fourths, sixths, eighths).
 - 1.05c - Model and describe common equivalent fractions, especially relationships among halves, thirds, sixths, fourths, eighths.
- C. **CCS Task Analysis:**
TLW: Define, identify, and compare equivalent fractions.
- D. **CCS Pacing Guide:**
Quarter: Third
Week(s): 3-6
- E. **Lesson Background:**
Strand: Number and Operations
Marzano Level: Applying
- F. **Materials:**
 - Note cards
 - Candy bars (amount depends on the size of the class)
 - Attachment A – Fraction Vocabulary Cards
 - Attachment B – fraction examples (use as an overhead)
 - 3 sheets of 8 1/2 x 11 white paper shaded to represent 1/2, 2/4, and 4/8
 - Cuisenaire Rods
 - 7 different colored pieces of 8 1/2 x 11 construction paper
 - Whiteboards or slates
 - 10 index cards per student
 - Attachment C – Equivalent Fraction Concentration
 - Fraction strips
- G. **Prerequisite Skills:**
 - Knowledge of denominator and numerator
 - Knowledge of multiplication and division
- H. **Essential Question(s):**
 - How can developing an understanding of fractions as parts of unit wholes or as parts of a collection assist in recognizing equivalent fractions?

II. IMPLEMENT

A. Anticipatory Set:

The teacher will tell the students that she/he has some candy bars and would like to give each student the same amount, which is an equal piece of the candy bar. Divide each bar into either $\frac{1}{2}$ or $\frac{2}{4}$ (when giving the $\frac{2}{4}$, make sure to divide the candy bar into the two $\frac{1}{4}$ pieces). Give each student a fractional piece of the candy bar, being sure to emphasize what fraction each student is receiving as you are passing them out. "This is $\frac{1}{2}$ and this is $\frac{2}{4}$. I notice a problem. Not everyone has the same amount of pieces – some of you have one piece of candy while others of you have two pieces of candy." Call two students to the front of the group and say, "Look, she/he has $\frac{1}{2}$ of a candy bar and he has $\frac{2}{4}$ of the candy bar. Look closely at the pieces. When they hold them up, they are the same size. Wow! You have $\frac{1}{2}$ and you have $\frac{2}{4}$, but you still have the same amount. That means that your fractions are equivalent."

B. Teacher Input:

"During our activity, we divided our candy bars into equal parts. Remember, when you divide an object into equal parts, you have a fraction. We have discussed fractions in the past. What we just noticed is that sometimes two different fractions may have the same amount. Today we are going to talk about equivalent fractions. First, let's add important vocabulary to our math journals." The teacher will write the vocabulary words and definitions listed below on the board or overhead for the students to copy into their math journals. As the teacher writes, she/he orally reads the words aloud to the students. The students write the terms and definitions as the teacher writes them. (Adding these terms to a word wall would further enhance the learning.)

- **fractions** – a way of representing part of a whole or part of a group by telling the number of equal parts in the whole and the number of those parts you are describing.
- **equivalent fractions** – fractions which have the same value.
- **numerator** – the quantity above the line in a fraction. It tells how many equal parts are described by the fraction.
- **denominator** – the quantity below the line in a fraction. It tells the number of equal parts into which a whole is divided.

Rehearsal: (Attachment A)

Have the students pair off as Student A and Student B. Give each student pair a set of vocabulary cards (Attachment A). Student A will match each term with the definition. If student A is correct, Student B will celebrate the correct answer. If needed, student B coaches and then celebrates. The roles are then switched. The students shuffle the cards and student B matches the terms with the correct definition. Student A celebrates. If necessary, student A coaches and then celebrates.

Teacher Input: (Attachment B)

"Let's review what we have learned thus far about fractions." Put the transparency (Attachment B) on the overhead and review fractions, using the first two examples. Cover the bottom two fractions (save the remaining two for student rehearsal). Review the parts of a fraction (numerator, denominator), how to write a fraction, and how to read a fraction.

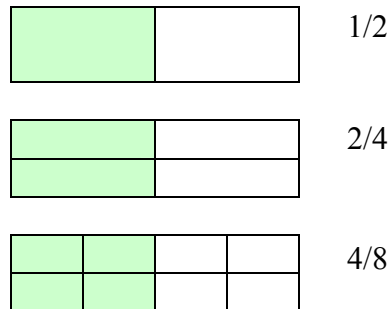
Rehearsal: (Attachment B) & Math Journal

Students will work in pairs, using Rally Coach. Student A will draw the third fraction from the overhead and shade the circle to represent $\frac{1}{2}$. Student A will also label the fraction. Student B will check the work, coach if needed, and then celebrate. Student B will draw the fourth fraction from the overhead and shade the circle to represent $\frac{2}{4}$. Student B will label the fraction. Student A will check the work, coach if needed, and then celebrate. The teacher will conduct a class check to ensure correct answers.

Teacher Input: Example of $\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$

"We are now going to continue our lesson by learning about equivalent fractions. If you will recall from our work with vocabulary, equivalent fractions are fractions with the same value. Let me show you an example." Prior to the lesson, create an example of $\frac{1}{2}$ by using a sheet of 8 $\frac{1}{2}$ x 11 white paper. On the same type of paper, create examples of $\frac{2}{4}$ and $\frac{4}{8}$. Show each sheet of paper to the class and review the fraction it represents. Attach each sheet to the board, being careful to line them

up to show that the same amount is colored in on each sheet. “Notice, boys and girls, that the first sheet is $\frac{1}{2}$, the second sheet is $\frac{2}{4}$, and the last sheet is $\frac{4}{8}$. With each of the three different fractions, the same amount is shaded in. Therefore, if I were to share my candy bar with you, I could give you $\frac{1}{2}$, $\frac{2}{4}$, or $\frac{4}{8}$ of the candy bar, and you would still get the same amount.” Use Cuisenaire Rods to show the students how equivalent fractions can be formed. Next, tell the students to find an equivalent fraction for $\frac{1}{3}$.



Rehearsal: (Math Journal)

Distribute the Cuisenaire Rods to pairs of students. Have the students place the Cuisenaire Rods in front of them to model $\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$. Direct the students to show $\frac{1}{3}$ by using the Cuisenaire Rods. Next, the students will explore with the Cuisenaire Rods to find that $\frac{2}{6}$ is equivalent to $\frac{1}{3}$. Each student will be responsible for drawing a model in his or her math journal showing $\frac{1}{3}$ and $\frac{2}{6}$.

C. Guided Practice:

Students will create two foldables (Layered-Look Book). Each student will need seven different colored pieces of $8\frac{1}{2} \times 11$ construction paper (tip – make sure all students put the colors in the same order, which will make referencing the fractions easier). Stack the sheets of paper so that the top edges are an equal distance apart. Bring the bottom edges up and align the sheets so that all of the layers are the same distance apart. Fold and crease well to form the Layered-Look Book. Use staples to hold the book together. Starting with the bottom tab, label one *whole*. Find the mid-point of the next tab and cut and label $\frac{1}{2}$ on each piece. On the next tab, cut to show $\frac{1}{4}$, and continue with cutting the remaining tab to show $\frac{1}{8}$. Create a second foldable in order to show $\frac{1}{3}$ and $\frac{1}{6}$.

Using the foldables, the students will work in pairs using RallyCoach. Student A will show student B an example of an equivalent fraction. Student B will confirm student A’s work, coach if needed, and celebrate. Students will then switch roles. The process will continue until the teacher calls time.

D. Closure:

The teacher will write a fraction on the board (i.e., $\frac{1}{2}$). On a white board or slate, the students will draw an example of $\frac{1}{2}$. Next, the teacher will have the students draw $\frac{2}{4}$ and $\frac{1}{3}$. Have the students complete the following statement: $\frac{1}{2} = ?$. Lastly, after confirming with the group that $\frac{1}{2} = \frac{2}{4}$, have the students draw a picture of an equivalent fraction for $\frac{1}{3}$ and complete the statement $\frac{1}{3} = \frac{2}{6}$. (Note that during this time, students will still have access to manipulatives and to the foldable created during guided practice).

E. Independent Practice: Differentiated Assignment

Advanced Learners:

In a math journal, the students will write a story that contains the fractions $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$, $\frac{1}{3}$, and $\frac{2}{6}$. The students will illustrate the story, being sure to use the fractions that were in the story (i.e., One-half of the ducks are swimming. The other $\frac{2}{4}$ of the ducks are eating the bread I threw to them.)

Proficient Learners:

Students will use index cards to create fraction cards. The students will write the following fractions on each card: $\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$, $\frac{1}{3}$, and $\frac{2}{6}$. On the remaining cards, the students will draw a model for each of the fractions written earlier. Be sure to remind students that the model must be the same shape for each family (i.e. a square for $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$). After constructing the cards, the students will play Equivalent Fraction Concentration.

Strategic Learners: Attachment C

Students will play Equivalent Fraction Concentration. During the game, students should have access to the foldables created earlier.

Intensive Learners:

Students will use fraction strips to model a contract representation of equivalent fractions. Each student will draw the models in his/her math journal.

III. ASSESS:

- A. **Products:**
- B. **Diagnostic (see background):**
- C. **Pre-Assessment:**
- D. **Post Assessment (EOG format plus 2 open-ended)**

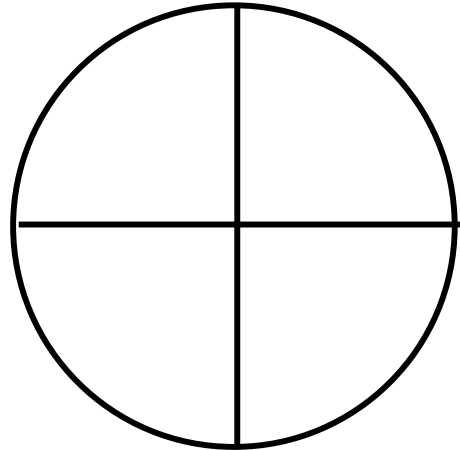
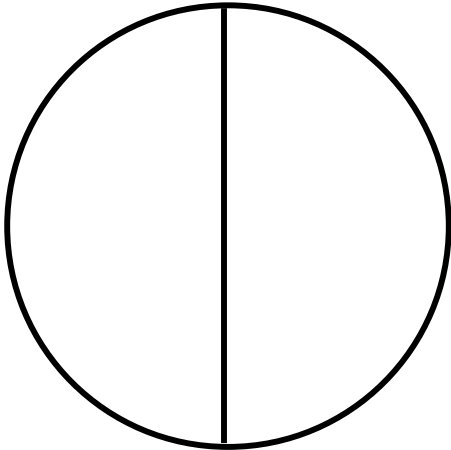
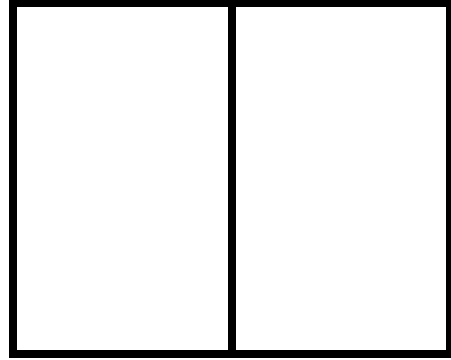
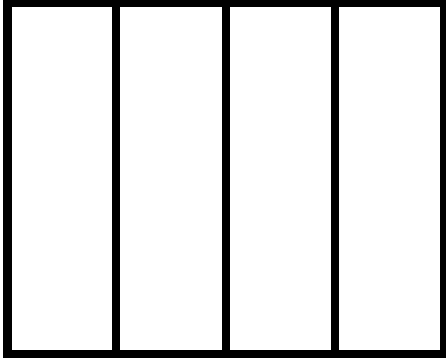
IV: RESOURCES:

- A. **Websites:**
 - <http://www.aaamath.com/B/fra42ax2.htm>
 - <http://illuminations.nctm.org/ActivityDetail.aspx?ID=80>
- B. **Materials:**
- C. **Professional Development Opportunities:**

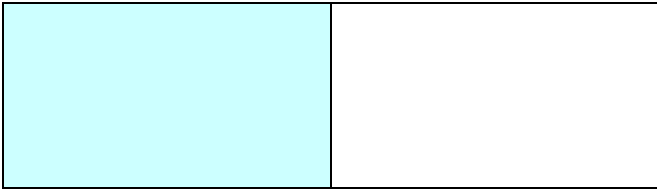
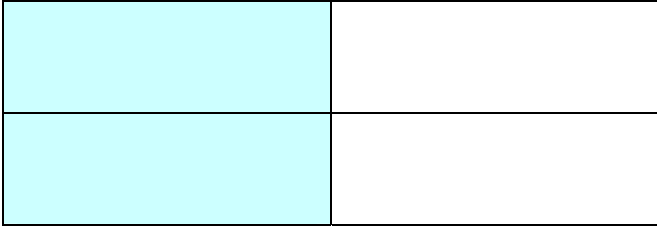
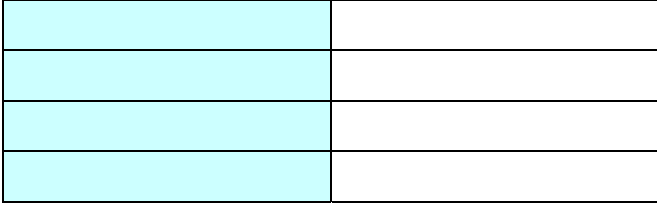

Vocabulary Cards

fractions	a way of representing part of a whole or part of a group by telling the number of equal parts in the whole and the number of those parts you are describing
equivalent fractions	fractions which have the same value
numerator	the quantity above the line in a fraction. It tells how many equal parts are described by the fraction.
denominator	the quantity below the line in a fraction. It tells the number of equal parts into which a whole is divided.

Fractions



Equivalent Fraction Concentration

$\frac{1}{2}$	
$\frac{2}{4}$	
$\frac{4}{8}$	
$\frac{1}{3}$	
$\frac{2}{6}$	