Title: Understanding Fractions

Brief Overview:

Students will learn to identify equivalent fractions, write fractions in lowest terms, reduce improper fractions, and convert between improper fractions and mixed numbers.

NCTM Content Standard/National Science Education Standard:

Numbers and operations

Grade/Level:

Grade 6

Duration/Length:

Three 45-minute periods

Student Outcomes:

Students will:

- Describe and represent fractions.
- Learn to explain what the numerators and denominator describe in a fraction.
- Learn to identify equivalent fractions.
- Write a fraction in lowest terms
- Be able to convert between improper fractions and mixed numbers.

Materials and Resources:

- Scissors
- Colored paper
- Rulers
- Large plastic zip bags
- Colored pencils
- Overhead projector
- Transparency paper
- Student work sheets

Development/Procedures:

Lesson 1 - The student will learn to use fractions by expressing numbers as equal parts of the whole.

Preassessment - The students will be given the written verbal word and be asked to write the numeral form of the fraction (i.e. given one-half write ½)

Launch – Have the students from pre-made stripes cut out fraction stripes that model the halves, fourths, eighths, and sixteenths. Have them to find equivalent fractions by using their fraction stripes.

Teacher Facilitation – Teacher will model making fractions stripes from pre-made stripes using a transparency on the overhead. Teacher must stress that each of the students achieve congruency in cutting the pieces. The concept of denominator (showing the bottom number as the total parts that make up the whole) and numerator (showing the top number as the actual parts that are present) will be modeled. Teacher will demonstrate that two fractions can name the same amount and they are called equivalent fractions.

Student Application – Students will work cutting the first sheet of pre-made stripes into halves, thirds, fourths, and, sixths. The second sheet should be cut into eighths, ninths, and twelfths . Let the students overlay the strips to demonstrate where halves, fourths, eighths, and sixteenths are of equal value. Students will also demonstrate equivalent fractions by overlapping them.

Embedded Assessment – Collect, evaluate, and return the strips with suggestions to emphasize denominators (i.e. fourths are represented by the color red).

Reteaching/Extension –

- For those who have not completely understood the lesson, review the definitions of fraction , numerator, and denominator. Give examples .
- For those who have understood the lesson, take them to critical thinking problems.

Lesson 2

Preassessment- Students will find an equivalent fraction for each fraction that is given.

Launch - Teacher will write a fraction on the chalkboard and ask students to write a fraction in lowest terms.

Teacher Facilitation- Teacher will demonstrate finding a fraction in lowest terms by multiply and then by dividing. First, have students understand that to get

an equivalent fraction you multiply to get a bigger fraction. To create a fraction to lowest terms have students understand you divide to get a smaller fraction .i.e. $\frac{12 \otimes 2}{18 \otimes 2} = \frac{24}{36}$ equivalent fractions

$\frac{12 \div 2}{18 \div 2} = \frac{6}{9}$ lowest terms

The second day the teacher will once again model the concept of denominator and numerator by using the pre-made fraction stripes.

Student Application- Given ten fractions students will convert five fractions to equivalent fractions and five fractions to lowest terms.

Embedded Assessment- Students will exchange papers with fellow students and check papers for correct answers. Students will get assistance from teacher for clarity Teacher will collect papers and check answers

Reteaching/Extension- Teacher will distribute fraction sheet, changing fractions to equivalent fractions and lowest terms, to students for extra practice. A problems solving sheet will be distributed to students for enrichments.

Lesson 3

Preassessment- Students will circle fractions that are in lowest terms. Student work sheet will accompany.

Launch- Students will create mixed numbers by using geoboards to identify the part and the whole concept. Students will present and explain their geoboard to the class identifying the part and whole concept.

Teacher Facilitation- Review the concept that a proper fractions has a value between 0 and 1. Introduce to students that an improper fraction and mixed number have a value greater than one.. Give an example of an improper. Model that the denominator will be divide into the numerator. Point out that the quotient is the whole number and the remainder is the new numerator of the fraction.. Remind students that if possible they must reduce the fraction portion of the number.

Student Application- Students will create mixed numbers. They will demonstrate their understanding of the process by modeling them on the geoboard using the example given by the teacher.

Embedded Assessment- Students will exchange papers and check for correct answers. Teacher will collect the work sheets and grade them.

Reteaching/Extension- Those students who are not successful will be provided with a ruler. Using the notches on the ruler students will identify the numerals as a whole and the notches as a part of the whole. They will be asked to count notches to determine that parts have a whole inch and centimeters. Extension Activity (Critical thinking)- Students will create four of their own picture models demonstrating mixed numbers.

Summative Assessment:

Students will be required to pass a quiz. They will create mixed numbers on the geoboard.

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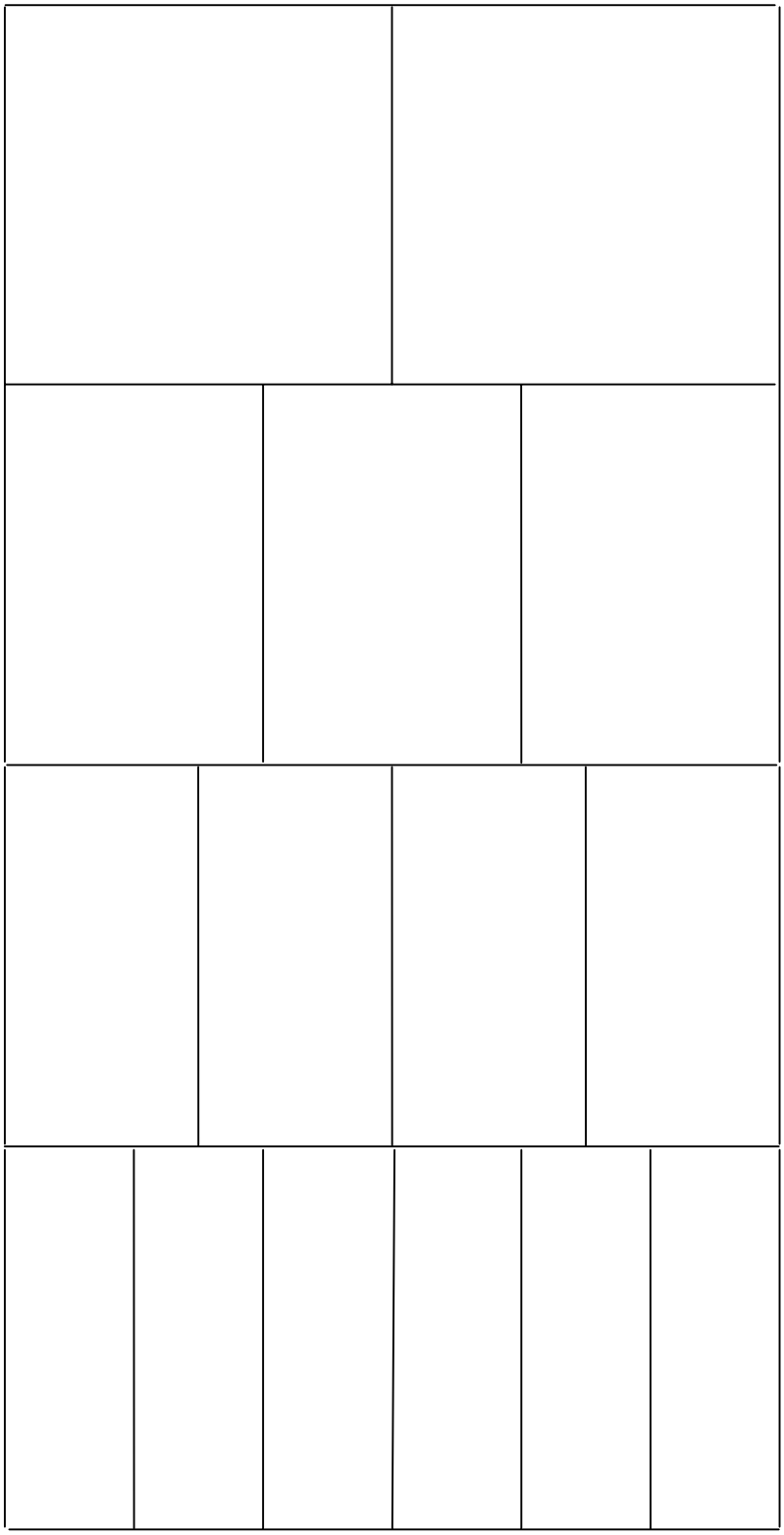
Fraction stripes: Lesson one -Launch



Halves

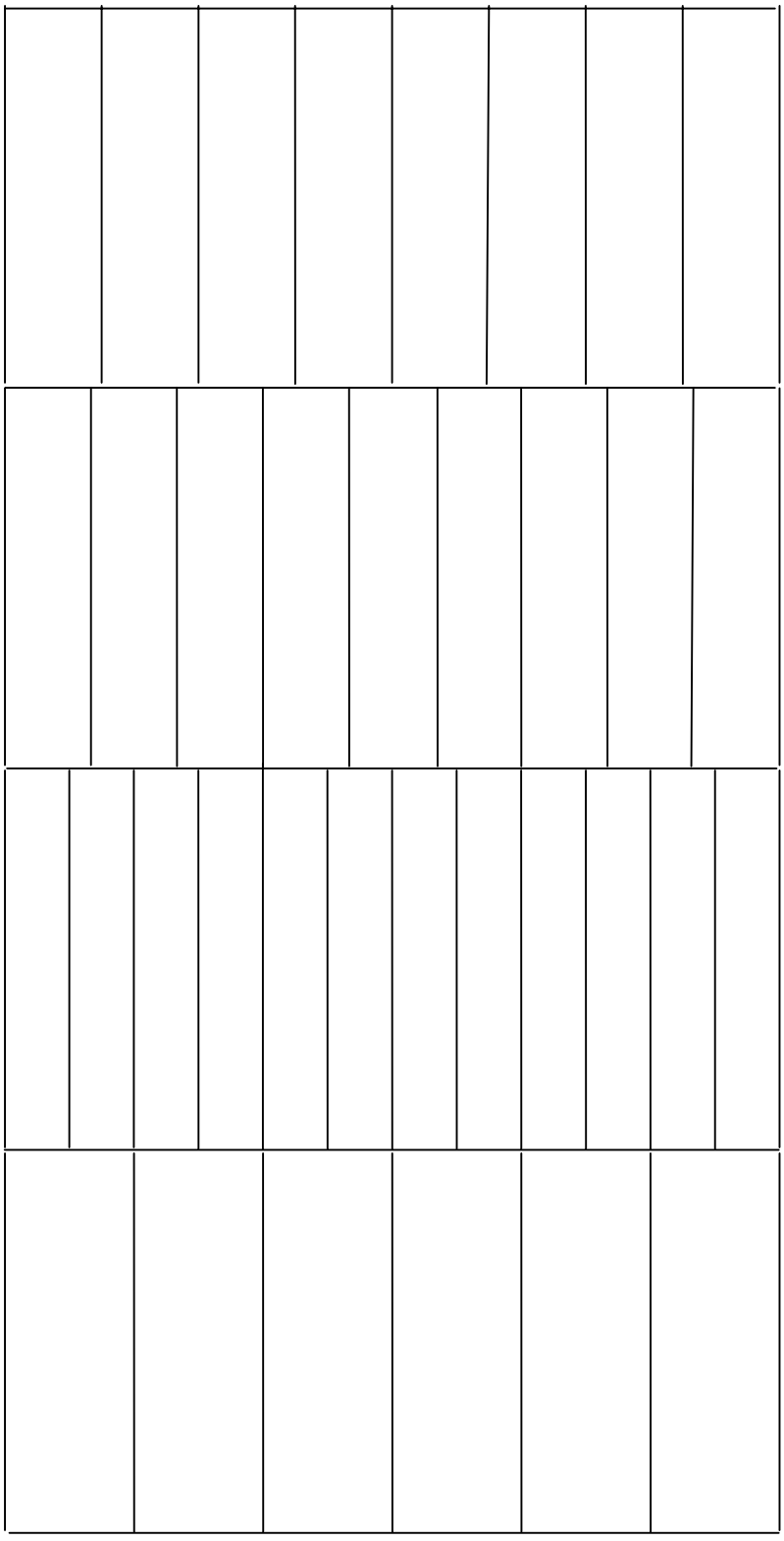
Thirds

Fourths

Sixths

Fold each row of fraction stripes (hamburger) Find the ones whose center lines are the same. What fraction does each of these represent? Find the strip with three lines. Find those fractions stripes that line up on the three lines. What fraction does this group represent? Make a list of as many equivalent fractions as you can using each fraction stripe sheet.

Lesson One page two
Launch



Eighths

Ninths

Twelfths

Sixths

Fold across (hamburger) and use these fraction stripes to line up with those on page one of lesson one launch

Preassment for Lesson three

Circle the fraction that is in lowest terms

1) $\frac{2}{4}$ 2) $\frac{9}{15}$ 3) $\frac{8}{12}$ 4) $\frac{2}{3}$ 5) $\frac{4}{6}$

Convert to lowest terms

6) $\frac{2}{8}$ 7) $\frac{10}{12}$ 8) $\frac{6}{9}$ 9) $\frac{3}{6}$ 10) $\frac{2}{10}$

Preassessment

Lesson one

Write the number for the word name given

1. Two –thirds
2. Three-fifths
3. One-fourth
4. Five-eights
5. One-half

Reteach Lesson 2 Student Application

Convert to equivalent fractions

1) $\frac{4}{8}$ 2) $\frac{48}{60}$ 3) $\frac{30}{45}$ 4) $\frac{18}{36}$ 5) $\frac{24}{48}$

Convert to lowest terms

6) $\frac{10}{15}$ 7) $\frac{8}{12}$ 8) $\frac{12}{15}$ 9) $\frac{27}{45}$ 10) $\frac{9}{18}$

Understanding Fractions Quiz Part One

G C Z O D P T H Z H W Q C Z T

R H D I E U Q A D Y O I O F N

E H K S N R N G F L U A M R E

A H J H O N G O J A R X M A L

T M R I M J U I I U C F O E A

E I P Q I T D M L T R T N D V

S X I N N G S X E A C Q O Y I

T E I C A R D E C R N A L R U

X D F H T P E T W U A A R Q Q

E U V A O S I P M O G T L F E

L X V V R O I B O I L I O Z A

F E K H N G E Y U R G B C R O

V J N S U R Y Y D Y P H O Q P

T E R M S J L Z V A U M A P G

O Q P G Y N X S S F H L I D F

COMMON FACTOR

DENOMINATOR

EQUIVALENT FRACTIONS

GREATEST

FRACTION

IMPROPER

LOWEST

MIXED NUMBER

NUMERATOR

TERMS

Quiz Part Two Equivalent and Lowest

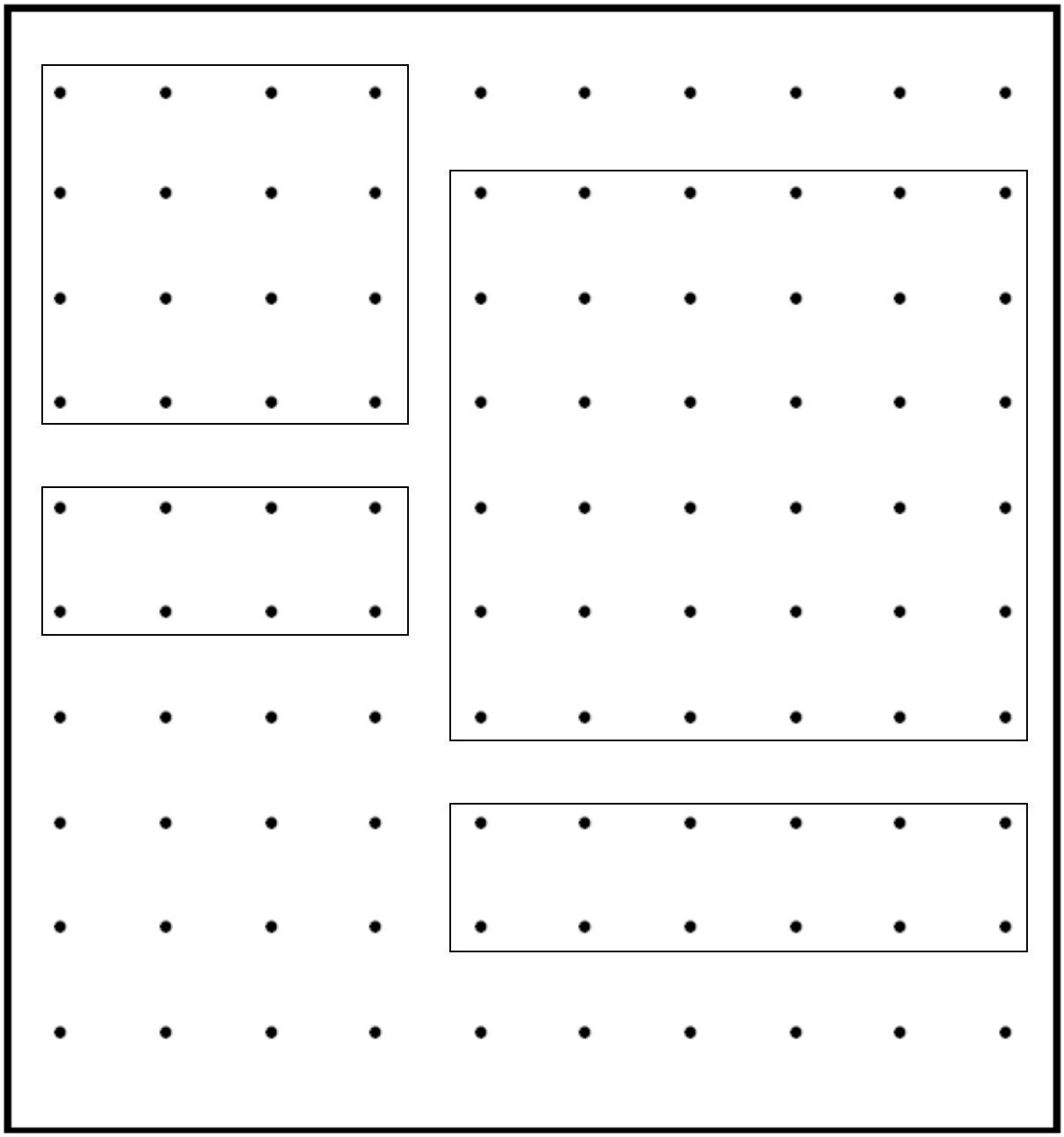
Convert to equivalent fractions

1) $\frac{2}{4}$ 2) $\frac{9}{15}$ 3) $\frac{8}{12}$ 4) $\frac{2}{3}$ 5) $\frac{4}{6}$

Convert to lowest terms

6) $\frac{2}{8}$ 7) $\frac{10}{12}$ 8) $\frac{6}{9}$ 9) $\frac{3}{6}$ 10) $\frac{2}{10}$

10 X 10 Geoboard Dot Paper



Model for 1 ½ and 1 1/3.

Lesson 3 Quiz

Model the following mixed fractions on your geoboard.

1) 2 1/3 2) 1 1/5 3) 3 2/3