

<b>LessonTitle: Fractions with Tiles, Rods and Pattern Blocks Pre 2.0a, b, c</b>	
<b>Utah State Core Standard and Indicators</b> Pre-Algebra Standards 1, 3.1 Process Standards 1-5	
<b>Summary</b>	
In 2.0a, students create rectangles with different colored tiles—the colors are different fractional values of the whole rectangle. They problem solve, build, record and explain the numbers of different colored tiles in the rectangles. In 2.0b, students examine the fractional relationships using Cuisenaire rods. They record these relationships algebraically and explain their equations. In 2.0c students use pattern blocks to model proper and improper fractions. They assign different shape units as the “whole” and then relate the different pattern blocks to that “whole.” Students express answers in both mixed and improper fractions. In 2.0d, students should use fractions and algebraic representation to solve the assessment question.	
<b>Enduring Understanding</b>	<b>Essential Questions</b>
Mathematics enables us to describe fractional parts of a whole whether the whole is numbers, geometric shapes, lines, or area.	How do fractions work? How do we represent parts of a whole whether the whole be geometric shapes, area, lines, or numbers?
<b>Skill Focus</b>	<b>Vocabulary Focus</b>
<ul style="list-style-type: none"> <li>• Problem solving with fractions</li> <li>• Improper and mixed fractions</li> </ul>	
<b>Assessment</b>	
<b>Materials:</b> Pattern blocks, Color Tiles, Cuisenaire rods	
<b>Launch</b>	
<b>Explore</b>	
<b>Summarize</b>	
<ul style="list-style-type: none"> <li>• How do you decide how many tiles you need to build different rectangles with certain fractional color specifications?</li> <li>• How do you represent fractional relationships using algebra?</li> <li>• What happens to fractional parts when the definition of the whole changes?</li> </ul>	
<b>Apply</b>	

**Directions:**

For 2.0a, model 1 or 2 problems with the students. Then allow the group members to work out the problems.

For 2.0b, model the problem with the students and ask the students question at the beginning of each section.

For 2.0c, Pattern Block Fractions, guide the students through a few of the problems, especially changing the value of the whole. Guide the students by questioning instead of doing it for them.

In 2.0d, the assessment question, students will probably use fractions and algebraic representation to help solve the problem. They may not. The important thing is that they explain their reasoning, communicate their solution to the class, and listen and reflect upon the different groups’ solution strategies.

## Pre 2.0a

## Tile Rectangle Fractions

1. Build a rectangle that is  $\frac{1}{2}$  blue,  $\frac{1}{4}$  green, and  $\frac{1}{4}$  yellow. This may or may not be the same as the rectangle your neighbor is building. Draw the rectangle on graph paper. Label the fractions. Observe your neighbors rectangles.

Build the following rectangles. Build and draw in at least two ways. Be certain to label!

1.  $\frac{1}{2}$  red,  $\frac{1}{4}$  yellow,  $\frac{1}{8}$  blue,  $\frac{1}{8}$  green
2.  $\frac{1}{8}$  red,  $\frac{3}{8}$  green,  $\frac{1}{2}$  yellow
3.  $\frac{2}{5}$  red,  $\frac{3}{5}$  blue
4.  $\frac{1}{3}$  yellow,  $\frac{2}{3}$  red
5.  $\frac{1}{3}$  blue,  $\frac{1}{3}$  green,  $\frac{1}{6}$  yellow,  $\frac{1}{6}$  red

Build the following rectangles. This time it is up to you to define the missing fraction and the number of tiles needed. **Build, draw and label** two possible rectangles for each example below.

6. The rectangle is  $\frac{1}{2}$  blue,  $\frac{1}{3}$  yellow, \_\_\_\_\_ green.
7. The rectangle is  $\frac{2}{5}$  blue. The rest is yellow and red but not in equal numbers.  
\_\_\_\_\_ is yellow. \_\_\_\_\_ is red.
8. The rectangle is  $\frac{1}{2}$  yellow,  $\frac{2}{5}$  green, and uses all four colors.  
\_\_\_\_\_ blue, \_\_\_\_\_ red.

10) Each person in your group should make up a riddle. Then trade riddles. Record the riddles and solutions on your graph paper. Label them a), b), c), d).