MIXING COLORS
Teaching Guidelines

Subject: Mathematics

Topics: Percent (equivalence)

Grades: 4 - 7

Concepts:

- Percent

Knowledge and Skills:

- Can convert between percent notation and fraction notation
- Knows that 100% is the same as "all"

Subject: Art

Topics: Visual Arts

Grades: 4 - 7

Knowledge and Skills:

- Can mix colors to create a desired color

Materials:

For each student:

- An old large shirt which the student can wear as a smock.

For each team of students:

- Six plastic squeeze dropper bottles, each filled with a 50/50 mixture of food coloring and distilled water (two bottles with red, two with blue, and two with yellow food coloring, all labeled)
- 15 coffee stirrers
- 15 small paper cups (the kind in which condiments are dispensed)
- Several paper towels

Procedure:

This activity is best done with students working in teams of two or three.

Begin by showing students a large picture of a richly colored painting. Ask students to describe it, guiding the discussion toward the number of colors used. Ask students if they know how artists create the colors they paint with, and talk about how colors are mixed. Demonstrate this by combining yellow and blue solutions to produce green.

Discuss what factors lead to the exact shade of color produced when you combine other colors, and guide discussion to the idea that it is the percent of each starting color that determines the final color.

Review the meaning of "percent".

Tell students that their project today is to create colors. Tell them that they will be mixing the colors red, yellow and blue, and that in all cases they will put in a total of 20 drops of these colors. Work through this question with the class: "If 10% of the drops are yellow, how many drops are yellow?" (*10% is the same as 1/10, and 1/10 of 20 is 2*). Write down "10% = 2 drops". Then ask how many drops would be 5%, work through to the answer of 1 drop, and write down "5% = 1 drop" on the board. Continue this, creating a chart on the blackboard that shows the number of drops equivalent to 5%, 10%, 15%, 20%, 25%, etc. up to 100%. (Alternatively, you may wish to have students create their own charts as an activity.)

Distribute the "Colors" chart and other supplies (if possible, the supplies should already be in bins on their tables). Have students don their "smocks",

Tell students they are to make colors by using the percents given on the "Colors" handout. They are to mix their colors in the little cups provided, and use the coffee stirrers to take out one drop of the mixture and put it in the correct place on charts. Then go on to the next combination.

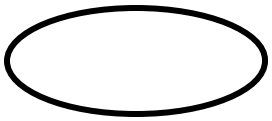
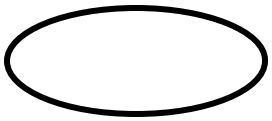
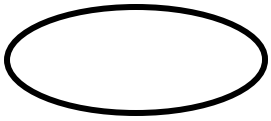
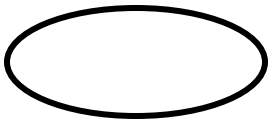
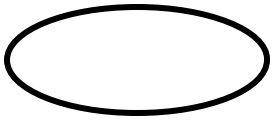
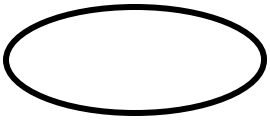
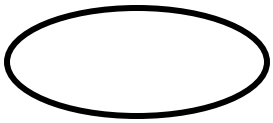
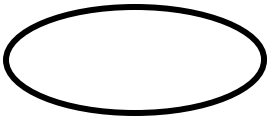
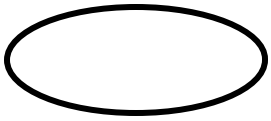
Once students have mixed all of the given combinations, they may make two combinations of their own choosing, in the spaces provided at the bottom of the charts.

Circulate, observe, and help as needed while students do the activity. When students start mixing their own colors, ensure that they first select the percentages of red, blue, and yellow food coloring that they will use, and that the total of those percents add up to 100.

When the teams are finished, have them show off their colors, reviewing the fact that in all cases the total of all percents of all colors used is 1

Name_____

Colors

Red	Yellow	Blue	Results
100%	0%	0%	
40%	60%	0%	
0%	100%	0%	
0%	95%	5%	
0%	70%	30%	
0%	5%	95%	
0%	0%	100%	
30%	0%	70%	
___%	___%	___%	
___%	___%	___%