



Percent Pictures

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6th Grade

Math/Visual Arts

Math, Ratios and Proportional

Relationships 3C: Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

Visual Arts, Standard 6.V.CR.3:

Demonstrate openness in trying new ideas, materials, methods, and approaches in making works of art and design.

Standard 6.V.R.4:

Interpret art by distinguishing relevant contextual information, and by analyzing subject matter, characteristics of form and structure, and use of media to identify ideas and mood conveyed.

Objective: Students will learn how to find the percent, fraction, and decimal form of different numbers that relate to a piece of art they create on a grid.

Materials:

- 1.5 pieces of 1cm graph paper per student
- 1 piece of white paper per student
- Math notebooks (or whatever is used to take math notes)
- Scissors
- Colored pencils or crayons
- Pencil or tracing marker
- Document camera

Procedure:

1. Students will need a 10x10 square of graph paper (can be cut from the $\frac{1}{2}$ sheet). I usually give one sheet to every 2 students so they can cut them out themselves. (If you want to save time, you can have these cut out beforehand.)
2. Students glue this into their notebooks on a blank page with the heading “Percent, Fraction, Decimal.” (You want to glue these just under the title so you have plenty of room for the measurements underneath.) Show this process and most of the following on the document camera.

3. Under the grid, make a table with the following headings:

Color	Percent	Fraction	Decimal

4. Explain that the grid represents one whole. Since there are 100 boxes on the grid, and 100% equals one whole, then each box is 1% of the whole grid. Choose a color and color in one box on the grid. On the table, write that color, 1 box, 1%, 1/100. When you discuss the decimal, ask how you would **say** the fraction, then as you say it, what does that number look like as a decimal.
5. Choose another color and color in an entire column. Explain that we have colored in 10 boxes, and each box is 1%, so we have colored in 10% of the entire grid with that color. Have students help fill out the other columns in the table. Make sure the fraction is written with a number over 100, but allow them to find equivalent fractions as well.
6. Choose a few other numbers to do as examples. Also do one that has $\frac{1}{2}$ of a square to see if they can figure out what that will look like in the table.
7. Go back to the decimal column.
8. Explain that each fraction is technically a division problem. Using a calculator (for time sake), do a few of the problems and see if the students see any tricks they can use to go straight from one to another without doing the division. (Using the percent, move the decimal two spaces to the left. 3%= 0.03)
9. Emphasize the fact that the decimal must move **two** spaces. 80% and 8% are **not** the same amount!
10. Hand out the other grid paper to the students.
11. Explain that they will be creating a picture using only 100 squares.

Requirements:

- EXACTLY 100 squares will be used, no more, no less!
 - At least **3** colors must be used
 - The squares must not be in just 1 large 10x10 square (This is my rule, you can take or leave it, or you can allow students with a math IEP to use a 10x10 square. Though, you may be surprised by what those kids can come up with!)
 - The image must be cut out and glued onto the white sheet of paper
 - A table must be included that has the color, percent, fraction, and decimal for each color that is used on the image.
12. Students can use $\frac{1}{2}$ squares or $\frac{1}{4}$ squares, as long as they are counted and recorded correctly. Make sure the students see an example of how to count these.

Example from a student math notebook.

