

CMAG Lesson Planning Template

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I. Content of Lesson/ Topic: Pie Charts, fractions, and percents

Grade level: intermediate

NCTM National Standards:

What national standards, goals, & expectations does this lesson target? **work flexibly with fractions, decimals, and percents to solve problems**
 What are critical considerations regarding this content? Big ideas? **Fractions and percents are used in everyday life. Displaying data in a pie chart helps students understand how fractions are parts of a whole and that fractions can also be expressed as decimals and percents.**

Goal(s) of the Lesson:

What do you want the students to know and be able to do?
To use data to create a pie chart; to understand fraction and percent equivalencies; to create free-hand a pie chart with new data, then create one using an interactive pie chart on the web, and then compare the two.
 What overarching questions do you want them to be able to answer?
How can you create a pie chart? How do fractions and percents represent parts of a whole? How are they similar?

Assessment Targets and Methods:

Describe how you intend to assess to determine whether students achieved lesson goals.
Students will collect data and successfully create their own pie chart using both percents and fractions.

II. Pedagogical Considerations: Prior Knowledge, Differentiation, and Management

Prior Knowledge:

What should students know to engage in the lesson? How will you build on previous knowledge?
 What are common misconceptions regarding the content in this lesson?
They will already understand equivalent fractions and how to add and subtract fractions using manipulatives. They will already understand how cents as expressed with a decimal point are parts of a whole and can also be expressed as fractions of a dollar, e.g. \$.25 equals $\frac{1}{4}$ of a dollar.

Differentiation:

How will you meet the needs of all learners? (Consider learning styles, developing language, personal and social characteristics, and physical and emotional abilities)
Students will be paired up to compliment each other's strengths.

Classroom Management:

What management strategies will you utilize during the lesson?
Teacher will move closer to students who are off task; positive reinforcement for creative, on task work.

III. Technology Components/Considerations

What technology tools or resources you will use for this lesson?

Website of interactive pie chart: www.shodor.org

After going to website, do a search for “pie chart” and with one more click on “Pie Chart” on the left side of the page, you will be on the interactive page.

What are the limitations of the tool? How will you compensate for these limitations?

There is no place to label the sections. The chart can be printed after completion and then labeled.

LESSON DESCRIPTION

Preparation

What are the key features that should be highlighted when working with this lesson?

We would use each student’s genealogy to create a family tree and then a pie graph of the nationalities of each student.

The pie graph data would first be expressed in fractions, and then we would convert them to decimals and percents.

What type of preparation is needed before you can begin the lesson? What resources will you need?

First, I must determine if this is an appropriate activity for all the students in the class, which is usually only a few students in special education classes. A few days before the lesson, I would start talking about my own genealogy and discuss it in terms of fractions.

Usually the students pipe in and talk about their own ancestors. If I sense that any of the students are uncomfortable with the topic, I would use other data on which to base the lesson, e.g. students could survey their classmates re their favorite foods. Assuming the genealogy issue is OK, I would have the students gather the information about the nationality (European or Native) of their ancestors.

When they have as much information as they can gather, we would be ready to have this lesson.

	Lesson (steps of the lesson)	Questions for Learners	Notes / Reflections
Introduction	Students would make a family tree. I would put my own on the chalkboard and they would do their own on paper.	Ask students to recall from science how much of their DNA comes from each parent. Discuss it in terms of fractions.	Whenever easy fractions are used, such as a half, ask the students what percent that is. When appropriate, explain why each person is a “whole” and that the fractions have to add up to 100% when talking about their lineage.

	Lesson (steps of the lesson)	Questions for Learners	Notes / Reflections
Core Instruction	Have them draw a circle and divide it into fractional parts according to their ancestral origins. Convert their fraction into fractions of a hundred by using fraction and decimal number strips. Then go to the website (above) and use the fractions they have come up with and make their own pie charts. Click the percent button and convert the fraction into a percent. Print and label them.	How did the pie chart on the computer compare with your free-hand pie chart? How do you express a decimal as a percent? If necessary, use money to help them discover that \$.90, for example, is 90 parts of 100, or 90 out of 100, or 90 hundredths, or 90/100.	Let them see that we can't figure out what nationalities they are until we look into what nationalities their parents are – and their grandparents, and so on. Discuss the limitations of the data. I could use my own family tree to demonstrate this.
Closure	Talk about what other data they would like to use to create another pie chart the following day. Some students may enjoy going off on a tangent about how our ancestors skin color may not be the same as what ours are – and the change is not due to intermarriage! Go to http://www.npr.org/templates/story/story.php?storyId=100057939 to see the story.		