

NEH: Shifting Power on the Plains

Joseph Stark, Walthill Public Schools

Lesson: Rates, Ratios, and Percents

Objectives: 1) Use rates and ratios to model and solve real-life problems
2) Use percents to model and solve real-life problems

Procedure: 1) Discuss the terms rate, ratio and percent
2) Give examples of problems involving rate
3) Show how to use rates from the examples to determine unit rates
4) Discuss what the unit rates represent
5) Demonstrate how to use unit rates to determine percentages
6) Display percents visually in a pie chart (circle graph)

Guided Practice: research the size of promised Sioux reservation 1851 and present day size of the combined Sioux reservations

- 1) Write the result of research as a rate (1851:present).
- 2) Rewrite this rate as a unit rate. (???? Acres: 1 Acre)
- 3) Write what this unit rate represents in a sentence.
- 4) Use the unit rate to write what percentage the current reservation size is Compared to the original reservation size
- 5) Display the percentage as a piece of a pie chart

Independent Practice: research the original size of Omaha reservation and the present day size of the Omaha Reservation

- 1) Write the result of research as a rate
- 2) Rewrite this rate as a unit rate
- 3) Write what this unit rate represents in a sentence
- 4) Use the unit rate to write what percentage the current reservation size is Compared to the original reservation size
- 5) Display the percentage as a piece of a pie chart

For Further Discussion: Compare and contrast the unit rates determined in the guided practice and independent practice. Given the reality of the situation at the time, do you believe any other outcome was possible?

Entering this workshop I was really looking for ways that I could integrate any of what was learned into my high school mathematics curriculum. There were many themes presented and I discovered several ways that I could integrate and bring relevancy to many of the topics we cover throughout our studies. The presentation on the treaties at Ft. Laramie really struck a chord, I could easily see a way for this integration to occur. We discussed the reality of the land lost through the treaties, I immediately thought of how I could apply this when we discuss rates, ratio, percent and proportion.

The objectives of this lesson are to use rates and ratios to model and solve real-life problems, and to use percents to model and solve real-life problems. Although these objectives are strictly math objectives they tie in to what we learned through this course and will fulfill the “real-life” problem quite nicely. Not only do they satisfy this requirement, they also provide cross-curricular relevancy and cultural relevancy. As a vast majority of my students are Omaha Indians, the cultural relevancy brought about through this lesson should help what we learn stick.

This lesson will allow students to gain a perspective as to the reality of the land lost and the reality of the times for Native peoples. Sometimes when I talk about a situation in my math class without support from evidence in other disciplines, students have difficulty accepting or seeing the big picture. I believe that seeing the pure mathematics behind the situation, it will enable them to see the gravity of the time and situation for both their tribe and the Sioux tribe at the time.

Overall, I believe that this lesson will cover the content objectives as have been laid out, but will also provide students cross-curricular and cultural relevancy. The students will be able to see the reality of the situation and can come to data-driven

conclusions. They will also be able to, through discussion, decide if the reality of the times could have lead to any other outcome.