Lesson Plan: Activities Prior to Ranking Data Sequence

Mathematics Content: The primary mathematics content of this lesson is the introduction of the notion of a rate. Rate will be introduced as a means of comparisons when situations are unequal such as dollars per person or deaths per 100,000 people.

Mathematical Goals: The primary goal of the lesson is for students to come to understand the notion of a rate and how it can be used. Tasks will be posed in which a rate is needed in order to answer a question or reconcile a situation. The purpose is to build a working understanding that will support the students' ability to engage in the problems in the upcoming lesson sequence. It is not intended to build a strong conceptual understanding of the multiplicative notion of rate.

Goals for Classroom Norms: The students are expected to listen to others, ask questions of each other, explain their thinking so that others can understand, and for all students to be involved in the lesson.

Materials: none

Discussion of Class Activities:

Whole Class: Begin by posing the first problem to the students in a whole-class setting. The task entails the students engaging in a newspaper recycling contest with another middle school. Students are asked to make a list of all the things they would want to know about before the contest begins.

It is anticipated that in the discussion they will raise the issue of the number of students in each school. This will be used to frame a discussion of a way to make a "fair" comparison between the two schools if the number of students in the two schools is not the same. The rate of pounds of newspaper per students is the rate that will be introduced.

A second task will ask the students to consider a contest to recycle phone books in which their class competes with the class next door.

Small Group: Students will work in small groups to develop the rate that they would be fair to use. The discussion should center around the idea of pounds per student or phone books per student.

Whole Class: Groups will discuss the rate they decided upon and the class will reach a consensus about which rate they want to use.

The final question will shift to looking at accidental deaths for fourteen-year-olds. Students will be asked to interpret data that is recorded in rates per 100,000 fourteen-year-olds. We will use this to project to a population of say 500,000 fourteen-year-olds.

This discussion will be used as a segue into data traffic fatalities which includes data on Nashville. This data is also in rates per 100,000 and is intended to be a first introduction to data

of this sort and will hopefully provide some grounding for the crime data to be introduced in subsequent problems.

Possible Questions to Ask to Prompt Students Thinking:
What would you want to know in making comparisons?
How could you make the comparisons fair?
How can you account for the different number of students in the two schools? in the two classes?
What other items could you use to form a rate?
Name other situations where rates are useful in making comparisons.

Assessing Students' Understandings:
How did students decide to make the contest fair?
What two indicators did the students consider in creating a "rate"?
How did they use the data on 100,000 14 year olds to talk about a population of 500,000 14 year olds?

Teaching Notes:

Remember to remind students of classroom norms.

It is important to gain an understanding of the students' current understandings of the notion of rate as this is critical to the upcoming lessons.

The purpose is to develop a "working" definition that allows them to make comparisons in unequal situations.