**Instructor: Baljinder Singh Time Frame: 60 minutes**

**Subject: Pre Algebra Date: 05/24/2013**

**Proportions**

**Essential Questions:**

* What is ratio? Where can examples of ratios and rates be found?
* How is a ratio or rate used to compare two quantities or values?
* What is a proportion?
* Is it possible to use ratio and proportions to make estimation of certain population?

**Objective (s)**: The student will be able to use ratios and proportions to solve real life problems.

**Outcomes:** The student will be able to use graphs, tables, and symbols to model and solve problems involving rates of change and ratios.

**Materials:** Bag of black beans, bag of red beans, large container, bubble gum, ratio and proportions worksheet, and PowerPoint presentation.

**Anticipatory Set:** To engage and motivate students I will begin my lesson by doing the blowing bubble activity. Students will be given a bubblegum to blow as many bubbles as they can in one minute. Then we will discuss the ratio and rate or blowing bubbles per minute.

**Differentiation:** The lesson will be differentiated by various means. Students will receive direct instruction from the teacher followed by guided practice. Students will have hands on activity to do at the end of the lesson. Students will then explore the topic further on their own using APEX online learning software.

**Lesson Part 1:**

Begin the lesson by doing the blowing bubble contest. See blowing bubble contest worksheet.

Once students are done with blowing bubbles contest start the discussion of ratio and rate.

A **rate** is a special kind of ratio. When we need to use a rate, we use words like **per, each, or at (@).** Explain that rates are used when the two items being compared in a ratio are different measure or units. For example, comparing the number of green apples to red apples, boys to girls, or trucks to cars on the road does not require us to use different measure just different numbers. However, comparing the number of CD’s to the cost of CD’s is comparing numbers measures to money measure. Comparing miles to gallons also required different unit measure. Have students come up with examples of other ratios.

Proportion show that two ratios have equivalent value. Show students how to set up and solve proportion using cross product method. Work through the ratio-proportion worksheet and have the students do practice problem. Walk around the classroom to assist students as needed.

**Lesson Part 2:**

Students will then explore one of the essential questions through hands on activity. (Is it possible to use ratio and proportions to make estimation of certain population?) See **estimating beans activity** worksheet.

**Closure:** Once the student complete hands on activity discuss their finding. Answer the essential question and summarize the ratios, rates, and proportion. Ask students following questions.

* What is ratio and when do we use them?
* What is proportion?
* Can you estimate a population using ratios and proportion?
* What is cross product and when will you use it?

**Assessment**: Students will be assessed using both formative assessment and summative assessment. Assess students as they do practice problems. Ask questions during the lesson. Collect the worksheet they had been working on during class. There will be a follow up quiz on APEX.

**Reflection:**