Subject: Indirect Measurement
Grade: 8
Author: Irving, Texas
Approximate Time: 90 minutes (for 2 days)
Date: Fall 2008

Topic/Theme: Proportions, Similar Figures and Indirect Measurement

Note: The students have previously learned about writing ratios using words and numbers and writing and solving proportions in word problems. They have been introduced to similar figures, however not in the context of indirect measurement.

Objectives:

Content: The students will learn about and practice using indirect measurement to find missing sides of polygons and missing measurements in real life situations.

Language: The students will watch and listen to a Brain Pop video on similar figures and indirect measurement; listen and takes notes during class; complete required investigation assignment; lastly, write about their favorite content or related word of the week using the RAFT strategy.

Vocabulary:

Content Specific:
- ratio
- equivalent ratio
- proportion
- similar figures
- indirect measurement
- equation
- hypotenuse

Related:
- solve
- solution
- shadow
- flagpole
- correspond

Materials:
pencil, journal, note folder, Brain Pop video on similar figures and indirect measurement, investigation worksheet, RAFT brainstorming sheet, construction paper, markers, map pencils, crayons

Activities:

- After the Daily Focus, introduce the content and language objectives for the 2 day lesson.
- Students will watch Brain Pop video on similar figures and indirect measurement. Teacher and students will read orally and answer Brain Pop quiz questions at the conclusion of the video.
- Introduce content and related “words of the week” that will be discussed during the two day lesson. Students will write definitions of content words on their note folder. Words (their Spanish form) and helpful pictures are posted on the Word Wall.
- As a class, discussion occurs on the examples given in the Brain Pop video regarding indirect measurement in the real world (flagpoles, buildings, shadows, etc.)
- Teacher and students will practice reading word problems, drawing helpful pictures, setting up the needed proportion, and solving for the correct answer.
- Independent “content assessment” (see below)
- Cooperative group “extension” (see below)
- Review objectives with students and close class.

**Closing Discussion:**

**Thinking out-of-the-box:**
Teacher will ask students the following discussion questions… In your own words, tell me how indirect measurement is used? Why is this important and how can it be used to solve “real world” problems?

**Review & Assessment:**

**Vocabulary:**
As their “ticket out of class” on each day, students will write a sentence explaining what they learned that day. They will include at least 1(one) of our “words of the week.”

**Content:**
Students will independently complete the investigation worksheet. They will be given 6 “real world” problems involving indirect measurement. They will choose 4 to complete. They will draw and label pictures to accompany the problem and write and solve the corresponding proportion.

**Extension:**
After the completion of the investigation worksheet, students will work with their cooperative groups. In their cooperative group, the students will use the RAFT strategy to write about their favorite content or related word of the week. The Roles they will pick from are singer, rapper, writer, poet or cheerleader. The Audience will be their classmates. The Format they pick will be a song, rap, short story, poem or cheer. The Topic will be their choice from our “words of the week” (includes this lesson and the 3 prior days’ lessons). Choose one word from the following list: square root, ratio, proportion, scientific notation, hypotenuse or similar figures.