Date: April 13, 2010 **Subject:** Geometry **Grade:** 7

Unit: Similarity and Transformation

Lesson: Solving Proportions

Source: Math Connects: Concepts, Skills, and Problem Solving by Day, et.al. (Volume 2, Teacher's Edition)

Student Teacher: Irma Crespo

Objective (Purpose):
Recognize and solve proportions.

GLCEs: **N.FL.07.05**

Materials:
pens, pencils, papers, practice worksheets, and calculators

Procedure:

Anticipatory Set

- The routine of homework checking is implemented.
- The teacher asks students to count off; the girls to count off; and makes a table:

	Number of Female Students	Number of Male Students	Number of Students
Initial Size			
Doubled Size			

- After the above tasks, the students are asked the number of male students based on the current data.
- Once completed, the teacher gives a review on ratios using the data collected.
- The class talks about various ways of comparing the quantities involving "initial size" on the table with ratios.
- This activity leads to the discussion on proportions.

Questions to Check for Understanding
Students are reviewed on ratios in terms of fractions. From this familiar level emanates the concept of proportions.

The key questions involve determining quantities being compared in the form of ratios and then, the idea extends to equivalent fractions that exhibit proportions. At this instance questions relating equivalent fractions to cross products is emphasized. Thus, students are asked to identify the relationships and solve them utilizing proportions.

Modeling/Guided and Independent Practice

- The teacher moves on to proportions by asking students to double the numbers of each column. Hence, completing the "doubled size" rows.
- The definition of proportions is introduced. The updated table is used to exemplify proportions.
- Next, the students are asked what other examples they can find from the table.
- From here, examples of cross products are shown. (4-5; page 210)
- Emphasis is given on the two ways to determine if a pair of ratios is proportional: show fraction equivalence or apply cross products.
- After the teacher models the computation, the students solve a few problems for recitation.
- Problem solving worksheets are distributed. A volunteer student reads a word problem before its solutions are discussed.
- The teacher demonstrates solving proportions on three word problems.
- Students solve the remaining word problems for recitation and discussion with the whole class.
- Students return the problem worksheets and picks up their individual practice worksheets for completion.
- The worksheets are submitted for grading.

Closure Activity

- The teacher summarizes the current lesson with recap of the main points.

Extension and Application

The corresponding "Practice" worksheet (4-5) on page 37 constitutes homework, which enhances the students' learning.

Behavior Management Strategy

- Mix of lecture, interactive discussion, and individual choice grouping for differentiated instruction.
- Note taking is routine during lectures, which keeps them focused.
- Students who are writing and discussing their solutions in front of the class improve confidence in mathematical discourse.

Assessment of Objectives

1. ***Evaluation of Student Learning***

   The teacher evaluates how much the students learned through the practice worksheets, which fulfill the GLCE standards on geometric mean by solving proportions.

Attachments: Practice and activity worksheets.

Examples for Modeling Proportions

Proportionate or not proportionate?

½ = ¼

2/4 = 4/16

1/3 = 3/9

12/48 = 24/96

¾ = 75/100

9/27 = 18/81

a/b = c/d when cross multiplied becomes ad = bc

1.5/6 = 10/p (40)

41/x = 5/2 (16.4)

k/7 = 32/56 (4)

x/13 = 18/39 (6)

44/p = 11/5 (20)

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Problem Solving (Proportions)

1) TEMPERATURE After 2 hours, the air temperature had risen 7°Fahrenheit. Write and solve a proportion to find the amount of time it will take at this rate for the temperature to rise an additional 13°Fahrenheit.

2) BLOOD During a blood drive, the ratio of Type O donors to non-Type O donors was 37:43. About how many Type O donors would you expect in a group of 300 donors?

3) TEETH For every 7 people who say they floss daily, there are 18 people who say they do not. Write and solve a proportion to determine out of 65 people how many you would expect to say they floss daily.

4) TUTORING Amanda earns $28.50 tutoring for 3 hours. Write an equation relating her earnings ***m*** to the number of hours ***h*** she tutors. How much would Amanda earn tutoring for 2 hours? For 4.5 hours?

5) LIFE SCIENCE For every left-handed person, there are about 4 right-handed people. If there are 30 students in a class, write and solve a proportion to predict the number of students who are right-handed.