Activity: Proportional Reasoning: What Is It?

Format: Large group discussion
Partners

Objectives: Participants will compare and contrast situations involving proportional reasoning with those that do not.

Participants will create a sample student worksheet of proportional and non-proportional situations.

Participants will engage in a reading to learn activity.

Related 2009 SOL(s):

7.4 The student will solve single-step and multistep practical problems, using proportional reasoning.

8.3 a) The student will solve practical problems involving rational numbers, percents, ratios, and proportions.

NOTE: The overarching topic for the grade seven strands of number and number sense, computation and estimation, and measurement is proportional reasoning.

Materials: Worksheet “Which makes sense?”
Answer key to “Which makes sense?” (optional)
Article “Three balloons for two dollars”
Reading-To-Learn Activity handout

Time Required: 90 minutes

Directions:

1. Ask the participants to describe their students’ understanding of the concept of proportionality. If the discussion turns to discussing how well students can set up and solve proportions vs. the concept of proportionality, keep the discussion focused on the concept.

2. Have the participants work with a partner and write a definition of proportional reasoning. These will not be shared.

3. Pass out the worksheet, “Proportional Reasoning: What Is It?” Have the participants work in pairs to complete it.

4. Discuss the answers. After the discussion you may pass out the answer key if you wish.

5. Ask participants, “How do you think your students would do on this activity and why? What possible misconceptions might your students exhibit?” Lead a large group discussion on these questions.

6. Pass out the article and allow the participants 25-30 minutes to read using the Reading-To-Learn activity. Pass out the Reading-To-Learn explanation sheet. Explain to the
participants that as they read the article, they should mark it with symbols as per the sheet you hand out. Explain the marks such as, “if you read something that surprises you, make a ! in the margin. If it saddens you to hear a piece of research or a statement, draw a sad face in the margin, etc.

7. Have a large group discussion on the article after they complete the reading. Discussion questions can include: What are the different types of proportion problems? What are the levels of proportional reasoning? How might you use these levels in your classroom? What recommendations are made for teaching proportional reasoning in the classroom? How will you need to change what you do? How did you mark the article as you read?

8. Ask participants to work as partners and create a worksheet for their students similar to the one they completed earlier. Allow participants to create as many situations as possible in the time allotted.

9. Walk around as partners work to be sure they have accurate proportional reasoning examples.

10. When everyone is done, share some of the examples. No need to read all of them. If facilities exist, you can collect the work and make copies for everyone so they leave the workshop with many examples to use in their classrooms.

11. As a closure activity, have partners re-write their definitions of proportional reasoning. Collect and post on a common board of work from the workshop. Correct definitions express the concept: A proportion expresses the multiplicative relationship between two quantities.

**Closing and Debriefing:** Possible questions to ask:
- What did you learn from this session?
- How would you apply this to your classroom?
- What is still unclear?
- Comments and/or concerns?

**Reflection for Presenter:** (Please reflect on and complete the questions below immediately after delivering the session)

What specific examples of learning did you note?

What specific errors and/or misconceptions still need to be corrected?

Summarize the workshop evaluations.