

# Improving Teacher Quality Program

## *Mathematics Within: Algebraic Processes and Its Connections to Geometry*

### Page 1 – Pre- planning: Teacher Lesson Plan

#### **Context of the lesson:**

- 1. To help me understand the context of the lesson, please explain where this lesson occurs within a unit or series of lessons. Describe what led up to this lesson and what will follow.**

This activity is the fourth of six activities that occur over four days (1 hour each day) Prior to this activity students made posters of things that come in groups (12 posters, numbered 2 through 12 and objects listed on each). Students selected a number and object, and then they drew a picture of a number of the object and wrote a description of the data. Following this activity, students will write their own riddles, then solve each other's riddles.

- 2. What is the purpose of this lesson?**

To provide prior experience with a riddle/puzzle format so that it reduces confusion when they create their own riddles.

- 3. What do you anticipate taking place?**

Students will use number lines as sources for 3 pieces of grouping data. They will answer questions, and in this way identify the data. They will work in small groups and report their solutions and strategies.

- 4. What strategies or techniques will you use to monitor learning?**

While students work in groups ask them to point out the jumps on the number line, the final number, and the size of each jump. I'll also know how well they are learning by the answers I get and the level of vocabulary, etc.

- 5. How will you know if students have achieved the objective(s)?**

If their own riddles need much less guidance than in past years, we will be successful.

## Improving Teacher Quality Program

### Mathematics Within: Algebraic Processes and Its Connections to Geometry

**Participant Name:** Dan Cavanaugh

**Broad Topic:** Multiplication  
come in groups

**Subtopic:** Things that

**Time:** 30 minutes

**Grade level:** 3

**Aim:** Provide a bridge between numbers of things in groups and groups, and Riddles using that data.

**Specific Objective(s):**

- Solve number line puzzles for multiplications
- Identify data for 3 riddles in a multiplication context.

**Materials/Supplies:**

- number line worksheet (student sheet 2a—see p. 3-4)
- scissors

**References: (text/handouts, etc)**

- Student generated lists of things that come in groups
- *Investigations* text, pages 12 and 14

**Lesson:**

- **Introduction**

This lesson is a “patch” that comes at the start of sessions [*Investigations*] in the *Investigations* curriculum

Review of previous 2 days work, I’ll also let them know that they will be writing Riddles about things that come in groups.

- **Body**

- In groups of 3 or 4 (Students receive page 1 of student sheet 2a-- number line riddles), students describe the number line.
- Then they read the 3 questions—(pages 3-4). They can cut on the dotted line and fold back on the bold line.
- Work together to answer the question, which basically gets them to identify the number line’s three pieces of data.
- Collect and discuss all answers and strategies. Ask “how is this like your pictures of things that come in groups?” (they also

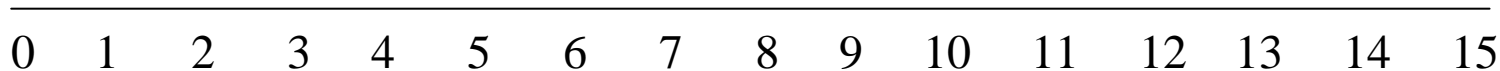
have 3 pieces of grouping data) How is it different? (There are questions. There are no pictures)

- Pass out page 2, (student sheet 2a). Solve, take answers, and sum strategies.
  - On the board draw 5 squares\* together and write 3 riddles for the data. If needed, provide them with the sentence for which they provide numbers. Leave this on the board as a model for their own upcoming riddles.  
\*(The data then is 5 squares, 4 corners each, and 20 total corners.)
- **Close**
    - Things that come in groups have 3 bits of data.
    - Riddles give 2 pieces of data
    - Ask students about the third.
  - **Application/assessment**
    - If they need little guidance writing their own, they will have learned the lesson.
    - A related checkpoint on the following day asks students, after being given 12 cubes, to show  $3 \times 4$  with cubes.

**Student Sheet 2a**

Name \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

Number Line Riddles (page 1 of 2)



**How big is each jump?**

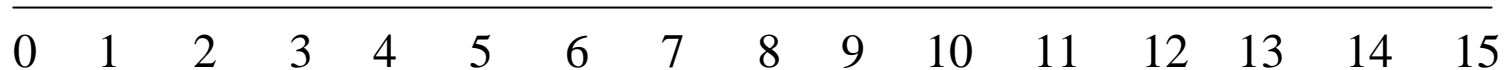
How many jumps are there?

On what number does the last jump land?

**Student Sheet 2a**

Name \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

Number Line Riddles (page 2 of 2)



**How big is each jump?**

How many jumps are there?

On what number does the last jump land?