

EISENHOWER PROFESSIONAL DEVELOPMENT PROGRAM

Mathematics Within: Algebraic Patterns

Lesson Plan -- Part 1 (Part 2-Laurel Kuhner Berker)

Participant Name: Jan Barnes

Broad Topic: Linear Equations

Subtopic: Forming equations based on number patterns

Aim:

To discover the equation of a line.

Specific Objective(s):

- o Students will accurately record data collected from the game, "You're On A Roll." See page 3.
- o Students will create number sentences by rolling dice.
- o Students will be able to choose their own values for the multiplication and addition steps and collect data.

Materials/Supplies:

Student:

- o Dice (1 per child)
- o Recording sheet for "You're On A Roll". Pencil

Teacher:

- o Colored markers
- o Chart paper with sample recording sheets that are given to students.
- o Chart paper with directions on how to play the game

Lesson:

- o Introduction: 6 minutes
 - o Guided discovery of dice (part of "Responsive Classroom").
 - o Discuss what "we're on a roll" means? (Brief discussion). "We're going to play a game to generate number patterns."
- o Activity: 20 minutes
 - o Teacher explains and shows on chart paper a copy of the student-recording sheet for "You're On A Roll."
 - o Teacher reviews rules for game and displays steps on chart paper for reference. . Teacher models how to play game with one round and records data on chart paper.
 - o Check for questions to clarify how to play.
 - o Pass out student copy of recording sheet, "You're On A Roll," and one die per student. (They are in pairs for Part I, the top table.)
 - o Whole group, play one round and all record data.
 - o Students take turns rolling die and recording until all numbers on the die are used. (This is Part I of the game.)
 - o Students then use the bottom chart to create their own values for "X" and "+". (This is Part II of the game.)
 - o Students play; teacher monitors groups to make sure everyone is playing correctly.
 - o Game is over and students keep recording sheet, but turn in dice.

Directions for The Game:

Part I:

1. Partner A = Roll die (1 x)
2. Partner B = record results on recording sheet
3. Switch turns
4. Complete chart until all numbers on die are used.

Part II:

1. On a new table, create a new game with new variables for "*" (x) and "+" by rolling the die.
2. Individually, play the game by rolling a die and recording results.
3. Extra blank tables are available for extended play.

- o Closure: 4 minutes
 - o Regroup as a whole class and teacher guides students to help them discover an equation from their data. Examples:

$$X * \square + \square = y \qquad 4 * 2 + 3 = 11 \qquad \square * 2 + 3 = \square$$

- o Possible Extensions:
 - o Create an equation with fractions.
 - o Create number sentences with subtraction rather than addition.
 - o Create a NON-line equation...of: $x * 2 + x = y$. Discuss/discover the difference.

Text or Website References:

- o "You're On A Roll" game was created as an enrichment activity growing out of completion of "What's my Rule" tables in [Everyday Math](#). Grade 5. It does not use [Everyday Math](#) materials.

