

# EISENHOWER PROFESSIONAL DEVELOPMENT PROGRAM

## Mathematics Within: Algebraic Patterns

### Lesson Plan

**Participant Name:** Jennie Piper-Bichinho

**Broad Topic:** Algebra

**Subtopic:** Slope

**Aim:**

*To introduce the concept of slope.*

**Specific Objective(s):**

- o Review use of coordinate grid.
- o Review plotting of points and lines.
- o Introduce vocabulary: slope, rise, run.
- o Introduce slope as a description of a line.

**Materials/Supplies:**

- o Transparencies with gridlines and coordinate grids
- o Visual aid to show risers and runner on a stairway
- o Small post-it notes, 2+ colors
- o Lengths of yarn, 2+ colors
- o 2 balloons or pictures of balloons, different colors
- o 1 small kite or picture of a kite
- o Copies of coordinate grid for students
- o Overhead projector
- o Copies of worksheets
- o Rulers

**Lesson:**

- o Introduce the lesson with a discussion of games played, using a grid, eg. Battleship, Knights and Queen search.
- o Refer to earlier lessons and activities using a grid to locate a point and to plot a line.
- o State the objective, to look at a way to describe a line of points.
- o Show and discuss visual of a stairway with terms riser and run (tread, step)
- o Present the scenario of balloons released on playgrounds (or soccer fields) and project a grid on a wall.
- o As a large group, plot points, using small post-it notes, of the balloon moving across the playground and into the air. For example, with certain air conditions, it moves forward 2 feet and upward 4 feet. Connect the points with a length of yarn. Ask students if they know a way to describe that line.
- o Repeat the plotting on the wall with a different balloon, using a different color balloon, post-its, and yarn. Have the balloon move farther but not as high as the 1<sup>st</sup> balloon. Elicit discussion, comparing the two lines.
- o Introduce the term slope. Refer back to the stairway and introduce the terms rise and run.
- o With one balloon's pathway, guide the students in determining the run and rise. Model the  $\frac{\text{rise}}{\text{run}}$  form for writing the slope. Repeat for the other balloon. Elicit discussion comparing the 2 numbers.
- o Distribute grid paper and a similar situation: a kite blowing up and across a field, with a run of 10 feet and a rise of 20 feet. Direct students to graph the kite's path and determine the slope. This can be done individually or in pairs. (See pages 2 & 3)
- o For closure, suggest situations where slope would be involved. **AND/OR**
- o Present students with a grid that has several lines plotted. For evaluation, ask them to determine which has a  $\frac{\text{rise}}{\text{run}}$  of a given number, say 2, and explain.

# K I T E

## PROBLEM

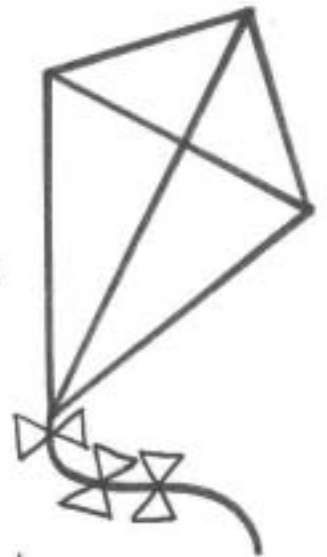
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1. Graph the pathway of a kite moving across an open field. The kite moves across the field 10 feet for every 20 feet it rises in the air.

2. Run = \_\_\_\_\_ Rise = \_\_\_\_\_

$\frac{\text{Rise}}{\text{Run}} = \underline{\hspace{2cm}}$  (This is the slope of the kite's pathway.)



3. EXTENSION: Plot the pathway of a different kite.

What is its  $\frac{\text{RISE}}{\text{RUN}}$ ?

4. EXTENSION: Besides balloons and kites, what other slopes or sloping pathways, might you plot on a graph?

