

# EISENHOWER PROFESSIONAL DEVELOPMENT PROGRAM

## Mathematics Within: Shape, Space & Measurement

### Teacher Lesson

**Participant Name:** Steve Zamzo

**School District:** VCC

**Broad Topic:** Transformation

**Specific Topic:** Translation

**Aim:**

*Explore concepts using translation without rotation.*

**Objectives:**

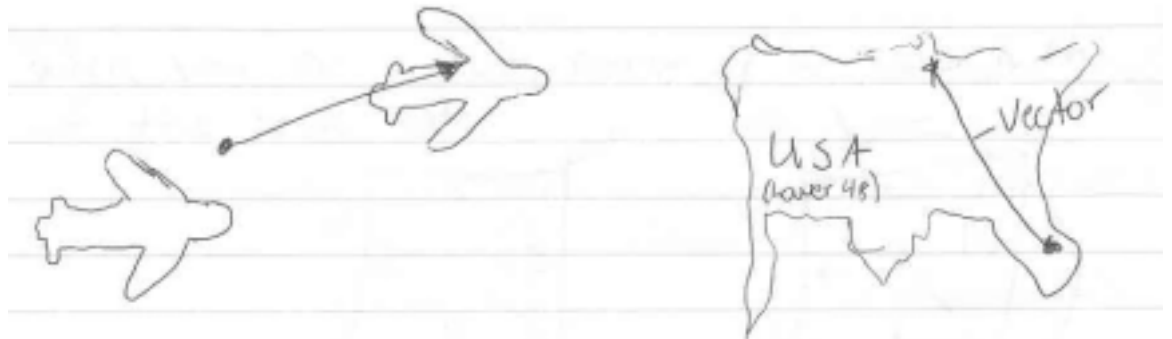
- o Introduce vocabulary of vectors.
- o Practice translations by doing a tessellation.
- o Determine direction and distance using vectors.

**Materials & Supplies:**

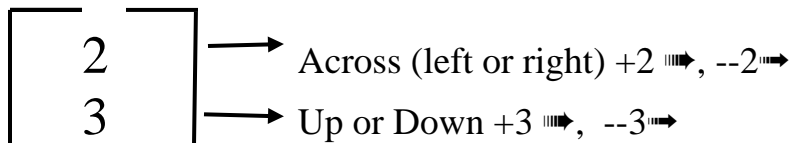
- o Giant grid – I used a shower curtain and made a 10x10 grid. A sheet will also work.
- o 4x4 tag board
- o Paper
- o 11x16 paper

**Lesson:**

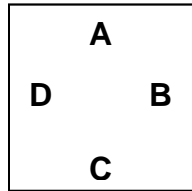
- o Explain a tessellation. All sides must meet and fit like a puzzle.
- o Translating – sliding a shape without rotating it.
- o Opening questions: Vector
  - o Anyone flown before?
  - o Anyone want to be a pilot or know one?
  - o How do you think they know how to get to \_\_\_\_\_ from \_\_\_\_\_? (Figure 1)
- o Teacher demo:
  - o Vector shows the distance and direction



- o Column vector describes the direction of where the shape will translate.

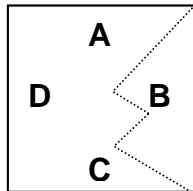


- o Activity Practice: Using the giant grid, practice some column vectors. Pick a spot and stand on grid. Have another student give a column vector and the student should move to that spot. Check with students. (See the worksheet on page 2 for students to practice and check with partner.)
- o M.C. Escher tessellation – Look at tessellation examples. What do you notice? Explain a tessellation. All sides must fit like a puzzle.
- o Take a square shape and label the sides A, B, C, and D.

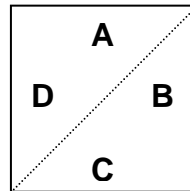


- o Cut a shape from the corner of one side to the corner of the same side.

*Keep the shape that is cut whole*

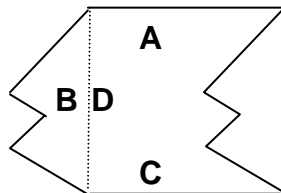


**YES**



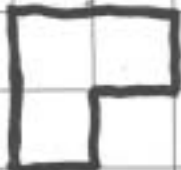
**NO**

- o Cut and tape the shape to the translated side (B moves to D, or A moves to C, or D moves to B, or C moves to A.)



- o Trace on 11x16 paper and color.

①



$$\begin{bmatrix} 3 \\ 1 \end{bmatrix}$$



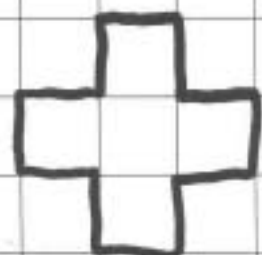
$$\begin{bmatrix} 2 \\ 3 \end{bmatrix}$$



$$\begin{bmatrix} 8 \\ 4 \end{bmatrix}$$



$$\begin{bmatrix} -4 \\ -6 \end{bmatrix}$$



$$\begin{bmatrix} -3 \\ 7 \end{bmatrix}$$