Aim:
Explore concepts using translation without rotation.

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

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

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

M.C. Escher tessellation – Look at tessellation examples. What do you notice? Explain a tessellation. All sides must fit like a puzzle.

Take a square shape and label the sides A, B, C, and D.

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

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.)

Trace on 11x16 paper and color.