

Lines to Design (4-6)

Adapted from AIMS Education Foundation

- I. Objectives:** Use pattern blocks as a basis for looking at lines, angles & shapes; Compare and contrast properties of various 2-dimensional shapes
- II. MT Content and Performance Standard/s Addressed in This Lesson:**
Content Standard 4.1: Identify, describe, construct and compare plane and solid geometric figures.
- III. Materials Needed:** Pattern blocks, linguini pasta, tape, glue, ruler, Lines to Design worksheet, ruler, colored pencils
- IV. Lesson Plan:**
1. Review definitions with students – line: parallel, perpendicular; intersecting; angles – acute, obtuse and right; similarity and congruence
 2. State the lesson objectives: We are going to make designs using pattern blocks and linguini.
 3. Place a triangle pattern block on the overhead. Place one piece of linguini along one of the edges of the pattern block. Point out the fact that the linguini extends beyond the boundaries of the overhead. Relate this to the fact that lines continue on and on in the same plane.
 4. Add a second piece of linguini. Stop and discuss the types of lines and angles that have been formed by adding this second piece.
 5. Let students know that they are going to choose their own pattern block to outline with linguini. Then they will describe the types of lines and angles involved in their designs.
 6. Show students how to roll a piece of tape to put on the pattern block to tape it to their paper.
 7. Allow time for students to outline the pattern block and have them place spots of white glue on the pasta.
 8. Distribute the worksheet to the students. Let them know that they are going to duplicate their design onto a piece of paper. Demonstrate how to use the ruler to extend the lines past the pattern block.
 9. Have students look at the boxes that say Lines, Angles, Types of Shapes and Shapes. Assign them (or let them choose) one of the concepts to explore in their design.
 10. They will need to develop a color key that explains their designs.
- b. Connected Learning Questions**
1. How are lines different from line segments?
 2. How did this activity depict lines?
 3. How did you determine the different types of angles?
 4. Which type of angle did your design have the most of? The least of?
 5. In order to have a right angle, what type of lines did you have to have?
 6. Which pattern blocks have no parallel line segments?
 7. Does any pattern block have both parallel and perpendicular line segments? If so, which one(s)?
 8. What type of angles make up each pattern block?
 9. Are any of your line designs symmetrical? Explain.
 10. What kind of symmetry is in each? (line symmetry, rotational symmetry)
 11. What interesting things did you observe in this lesson?
 12. If you were to do this again, what would you do differently?
- V. Summary:** Restate the lesson objectives and summarize the learning that took place.
- VI. Assessment/s:** May include homework, questioning, observing, presentations, projects and/or journaling.

(Adapted from Northwest Regional Educational Laboratory Mathematics and Science Education Center, Planning the Research Lesson.)