LIFE IN A GEOMETRICAL TOWN

CREATING A GEOMETRICAL TOWN OR COMMUNITY

Notes for the teacher:

In this project, students create a map that uses a variety of geometrical concepts. Students will demonstrate an understanding of the following geometrical mathematical terms: **parallel lines, perpendicular lines, intersecting lines, triangles, squares, rectangles, pentagon, hexagon, heptagon, octagon, nonagon, decagon, trapezoid, diameters, perimeter, area,** and **circumference**.

Students can work individually, with partners, or in small groups of three on this project. Students should first read through the directions, and create a rough draft of the map on notebook paper.

After teacher-review of the rough draft, students are given poster board to create their town. This project is lots of fun, and it helps kids to see how math is all around them.

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MATERIALS NEEDED

Pencil, notebook paper, rulers, yardsticks, markers, crayons, colored pencils, scissors, glue, poster board, construction paper

BEFORE YOU BEGIN

Carefully read the directions through before beginning, to gain an understanding of what you are going to do.

Before creating your final project, make a rough draft of your map on notebook paper. Use the rough draft to sketch out where things will go on the larger map. Then use your rough draft as a guide to help you create your map on a piece of poster board.

There are 10 requirements. Each is worth 10 points, for a total of 100 points.

DIRECTIONS

1. **Draw 3 parallel roads, and name them.** (The names can be real or made up. For example: Kid Avenue, Taylor Road, Williams Boulevard.) Your map will look much neater if you use a ruler to draw the lines for your roads. Also make sure that all roads are the same width.

   Hint: Your roads will look neater if you erase any solid lines where 2 or more roads meet. Make it look realistic. There are no lines where roads intersect.

2. **Draw 2 roads that are each perpendicular to at least one of the 3 parallel lines,** and **name these roads.**

3. **Draw 2 intersecting roads on your map.** They may intersect each other, or any of the other roads. These roads intersect, but are not perpendicular. **Name these roads.**

4. Take a sheet of construction paper. Place your ruler lengthwise on the paper. Make a mark at the 3", 6", and 9" measurements on both sides of the paper. Draw a straight line across the paper. Next, place the ruler across the top of your paper. Place a mark at the 3" and 6" measurements. Do this again at the bottom of the paper. Use these points to draw straight lines in a grid on the paper.

   You should now have 12 boxes on your sheet of construction paper that are each 3" x 3". You will use these boxes to **create 10 different polygon shapes**, which you will **cut out and glue onto your poster board**. The shapes that you need to create are:

TRIANGLE	**SQUARE**	**RECTANGLE**	**TRAPEZOID**	**PENTAGON**
HEXAGON	**HEPTAGON**	**OCTAGON**	**NONAGON**	**DECAGON**

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5. The polygons created in step 4 are the buildings in your town. **Each building needs to have a mathematical term in its name.**

   (Some examples are Optical Octagons, Triangular Tree Stands, Mathematical Market, Square Drugstore, Division Police Station, Addition Groceries, etc.)

6. In the **lower left hand corner** of your map, **create a park that meets these specific requirements**. The park is a square with an area of 25 square feet. Within this square draw a round sandbox with a one inch diameter. Draw a rectangular swimming pool that has a perimeter of 6 inches, a pond with a circumference of 6.28 inches. Finally, draw a right scalene triangle for the picnic area with a height of 2 inches, and a base of 1 ½ inches.

7. **Put 5 other things on your map**. Some possibilities are as follows:
   - Sliding board and swings for the park
   - Picnic tables in the picnic area of your park
   - Extra roads
   - Cars and trucks on the highways
   - Traffic signs
   - A railroad
   - A bus station
   - A river
   - Extra buildings

8. Use crayons, markers, or colored pencils to make your map colorful and attractive.

9. Give your town or community a name. Place the name at the top of your map. (it can be a combination of the names of the creators, a real place, or a made up name.)

10. Add a map key or legend in the lower right hand corner of your map. It should include a scale of miles, symbols to stand for your roads, etc.

***Before you begin drawing, think about the areas that need to be reserved for specific things in your town, particularly the park, the legend and the title.*

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GRADE SHEET FOR GEOMETRICAL TOWN OR COMMUNITY MAP

This sheet should be submitted with your final project.

NAME(S)_____

REQUIREMENTS	POINTS POSSIBLE	POINTS EARNED
3 NAMED PARALLEL ROADS	10	_____
2 NAMED PERPENDICULAR ROADS	10	_____
2 NAMED INTERSECTING ROADS	10	_____
10 REQUIRED POLYGONS	10	_____
MATHEMATICAL TERMS USED IN THE NAMES OF THE 10 BUILDINGS	10	_____
25 SQUARE FOOT PARK WITH 1" DIAMETER SANDBOX, PERIMETER OF 6 INCHES ON A RECTANGULAR POOL, RIGHT SCALENE TRIANGLE WITH A BASE OF 1 ½" AND A HEIGHT OF 2", AND A POND WITH A CIRCUMFERNCE OF 6.28, LOCATED IN LOWER LEFT OF MAP	10	_____
5 OTHER THINGS ARE ADDED ON MAP	10	_____
MAP IS COLORFUL AND ATTRACTIVE	10	_____
MAP IS NAMED AND AT THE TOP OF THE MAP	10	_____
MAP KEY IS IN LOWER RIGHT WITH A SCALE OF MILES AND SYMBOLS	10	_____
TOTAL	**POSSIBLE POINTS: 100**	**TOTAL POINT EARNED:** _____