Name:_____

Geometry: A Community Redevelopment Project
(Due: Monday, Nov. 27th)

In this project you will be creating a poster-sized 2-dimensional drawing and a 3-D Google SketchUp of a structure on a parcel of land to construct for a community redevelopment plan of your choice. This structure will include everything and anything you desire. It will also include some of the geometrical shapes we have been studying in Pre-Algebra along with implementing sustainable elements learned in your Environmental Studies class. You will be the architect and the construction manager of this project and your budget for expenditures will be $150,000.

PART I: FLOOR PLAN DRAWING

The first part of your project will be to create a plan drawing of your structure on graph paper, then construct it on poster board. It must include distances and measurements, and must also include at least one of each of these types of shapes:

- Square
- Rectangle
- Triangle
- Circle (at least a portion of a circle, for example a semi-circle)

Your structure must be clearly labeled (what type of room and what type of shape) and neatly drawn.

You may choose from any of these plans to construct or choose a plan of your choice:

- Food Bank
- Homeless Shelter
- Educational Facility (after-school program that includes tutoring and sports center)
- Public Garden (includes a greenhouse and learning center)
- Animal Shelter & Pet Adoption Facility
- Plan of your choice (must be approved by Ms. Pritchet and Mr. Kline)

Your picture must be **large** and on **poster board**.

You must use **color** and make this structure **appealing**.

You will use a scale for your drawing so that your drawing is realistic and life-like.
e.g.: 1 cm = 5 feet

Your plan should have **realistic measurements**, and should be a structure that can accommodate the needs of the community.

Be CREATIVE! Have fun with the design and make it very imaginative.

PART 2: AREA CALCULATIONS

The second part of your project is to outfit your redevelopment plan. Your structure must have some type of flooring. You must choose **at least 2 different types of flooring** to use in your structure. In order to determine how much flooring you will need, you must **calculate the area of each space** and decide which type of flooring you will use for each space.

A) You will need to find the area of each space and clearly show all of your work!

Area Formulas:

- Area of a Square: $\mathbf{A = side^2}$
- Area of a Rectangle: $\mathbf{A = \ell w}$
- Area of a Triangle: $\mathbf{A = \frac{1}{2}bh}$
- Area of a Circle: $\mathbf{A = \pi r^2}$

(Round calculated areas to the nearest square foot.)

B) Using these areas and the prices for flooring listed below, choose your type of flooring and calculate how much it will cost. You must show all of your work!

- Carpet $4 per square foot
- Linoleum $2 per square foot
- Ceramic Tile $7 per square foot
- Hardwood Flooring $10 per square foot

C) Using these areas and the prices for windows listed below, choose your type of window and calculate how much it will cost. You must show all of your work!

- Triple pane vinyl glass (energy efficient, UV) windows (24in. x 36in. - $77/window)
- DuraPane laminated glass (LowE, UV, impact resistant) windows (36in. x 24in. - $94/window)

PART 3: PRESENTATION

The 3rd part of your project consists of a presentation to the class on the date it is due **(Mon., Nov. 27th).**

Presentation Criteria:

1. Show your poster and Google SketchUp.
2. Describe your floor plan and how your structure will look.
3. Explain (show calculations) how you found the area of each room.
4. Explain how you calculated the flooring cost.
5. One page description of the sustainable elements used in your project (see attached Environmental Studies Integration sheet).

See Attached Rubric for Possible Points

GEOMETRY PROJECT & GOOGLE SKETCH-UP
Final Grading Rubric

Name: _____
Date: _____

Category	Possible Points	Beginning	Developing	Accomplished	Advanced	Points
ENGINEERING DESIGN PROCESS -Floor Plan -Area Calculations -Flooring Cost Calculations -All house-flip calculations	30	• Students failed to follow and apply the steps of the Engineering Design Process **0-21 Points**	• Students followed and included most of the steps of the Engineering Design Process at a high level. **22-24 Points**	• Students followed and included all steps of the Engineering Design Process at a high level. **25-27 Points**	• Students went above and beyond while including all steps of the Engineering Design Process at a high level during this unit. **28-30 Points**	
GOOGLE SKETCHUP KNOWLEDGE AND ABILITY	30	• Students showed little or no understanding and little improvement in using Google SketchUp. **0-21 Points**	• Student showed an understanding of Google SketchUp but more practice is needed. **22-24 Points**	• Student showed an accomplished level of understanding and usage of Google SketchUp and improvement was shown. **25-27 Points**	• Student demonstrated a high level of understanding and usage of Google SketchUp and significant improvement was evident. **28-30 Points**	
PRESENTATION	20	• Presentation was not planned, incomplete, unorganized and more information needed. • Student did not use a clear voice and showed difficulty maintaining eye contact with audience. • Presentation is not completed within the time frame given (2-3 minutes). **0-14 Points**	• Presentation was somewhat planned, thorough, organized and informative. • Student used a clear voice most of the time and was inconsistent maintaining eye contact with the audience. • Presentation is completed within 1-2 minutes of the time frame given (2-3 minutes). **15-16 Points**	• Presentation was planned, thorough, organized and informative. • Student uses a clear voice most of the time and usually maintained eye contact with audience. • Presentation is completed within the time frame given (2-3 minutes). **17-18 Points**	• Presentation was extremely well planned, very thorough, well organized, and extremely informative. • Student always used a clear voice, and maintained eye contact with audience. • Presentation is completed within the time frame given (2-3 minutes). • High level of effort was shown **19-20 Points**	
OTHER -Participation -Effort -Attitude -Behavior -Followed Directions	20	• Student did not participate and showed little or no effort. • Students attitude and behavior needs improvement • Student failed to follow most or all directions. **0-14 Points**	• Student participated and showed good effort. • Student's attitude and behavior was good • Student usually followed directions **15-16 Points**	• Student always participated and showed great effort. • Student's attitude and behavior was very good • Student followed all directions **17-18 Points**	• Student always participated and showed great effort. • Student's attitude and behavior was exceptional • Student followed all directions at a high level. **19-20 Points**	
					TOTAL POINTS:	
					GRADE:	

Geometry Project

Environmental Studies Integration

When designing and building a home in the 21st Century there are many new technologies that you might consider in order to make your home more efficient and environmentally friendly. In Environmental Studies we will be exploring some of these new technologies.

As a way to integrate your Geometry Project with Environmental Studies each group member should do the following:

Include 1 energy efficient technology or component from each of these 3 categories:

- Renewable Energy
- Water Conservation
- Environmentally Friendly Material

These three components should be included in your design. Additionally please submit a 5-7 sentence paragraph describing each one. Be prepared to share and explain how they work in your final presentation.

Rubric for Environmental Studies Integration

Category Description	Included in Sketch Design	5-7 Sentence
Renewable Energy		
Water Conservation		
Environmentally Friendly Material		