**Subject: Geometry (Sophomores)**

**Room Project-** Students will apply formulas in a wide variety of theoretical and practical real-world applications involving perimeter and area through technology. Students will decorate a room by developing cost analysis charts and a blueprint through the use of area and perimeter formulas along with outside resources.

**Stage1:**

 **Identify desired results.**

What **Content Standards** are addressed?

* [CCSS.Math.Content.HSG-MG.A.1](http://www.corestandards.org/Math/Content/HSG/MG/A/1) Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
* [CCSS.Math.Content.HSG-MG.A.3](http://www.corestandards.org/Math/Content/HSG/MG/A/3) Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

What **Enduring Understandings** are desired?

* The students will understand when and how to apply formulas from geometry.

What **Essential Questions** will guide this unit and focus teaching/learning?

* How would you decorate a geometric room on a given budget?

**Stage 2:**

**Performance Task(s):**

* Students will compute the area of the floor and the walls using formulas.
* Students will compute the cost of painting the room.
* Students will compute the cost of flooring the room.
* Students will compute the cost of furnishing/decorating the room.
* Students will compute the total cost while staying in the budget.

What **acceptable evidence** will show that students understand?

* Room model (computer model, poster model, scale model)
* Cost analysis charts
* Presentation (speech)
* Video

**Student Self-Assessment**: How will students know if they are meeting the expectations?

* The students will have a rubric which acts as a checklist.

**Stage 3:**

What **sequences of teaching and learning experiences** will equip students to develop and demonstrate the desired understandings?

* Students will learn the formulas and how to apply them.
* Students will learn how to use Microsoft excel for any cost charts.
* Students will learn how to compare prices for paint, furniture, etc. online and newspaper advertisements. Students will also learn through comparing prices to look for bargains.
* Students could learn how to create models using proportions through computer programs, drafting, or scale modeling.
* Students can learn how to decide flooring and paints costs including installation by going to local hardware stores.
* Students will learn how to spend money according to a budget.

**Lesson Contributors:**

Jane Noard, Nickolas Stevenson, Jim Eustice, Scott Roseberg, Bonnie Claudnic, Carie Swanson

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| Teacher Name: **N S** Student Name:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |

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| CATEGORY  | **4**  | **3**  | **2**  | **1**  |
| **Mathematical Concepts**  | Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).  | Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).  | Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).  | Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.  |
| **Explanation**  | Explanation is detailed and clear.  | Explanation is clear.  | Explanation is a little difficult to understand, but includes critical components.  | Explanation is difficult to understand and is missing several components OR was not included.  |
| **Mathematical Terminology and Notation**  | Correct terminology and notation are always used, making it easy to understand what was done.  | Correct terminology and notation are usually used, making it fairly easy to understand what was done.  | Correct terminology and notation are used, but it is sometimes not easy to understand what was done.  | There is little use, or a lot of inappropriate use, of terminology and notation.  |
| **Diagrams and Sketches**  | Diagrams and/or sketches are clear and greatly add to the reader\'s understanding of the procedure(s).  | Diagrams and/or sketches are clear and easy to understand.  | Diagrams and/or sketches are somewhat difficult to understand.  | Diagrams and/or sketches are difficult to understand or are not used.  |
| **Neatness and Organization**  | The work is presented in a neat, clear, organized fashion that is easy to read.  | The work is presented in a neat and organized fashion that is usually easy to read.  | The work is presented in an organized fashion but may be hard to read at times.  | The work appears sloppy and unorganized. It is hard to know what information goes together.  |