Purpose
The purpose of this project is to apply some of the skills, and to review the main concepts learned this semester.

Group selection
You will be in a group of either 4 or 5 people selected by your teacher.

Description
Your group will create a new Geometry-based board game and two videos: one that describes the game and shows how to play it, and another one with a commercial that promotes the game.

Directions and requirements
Game board and parts thereof

- Create an original board game with your team. You may borrow ideas from three or more board games that already exist, but you may not just replicate a board game or combine two into one (i.e., you may not just create a "Geometry Trivial Pursuit" or "Geometry Pictionary Chess").
- You need to **build the actual board game, an advancing device** (something that tells players either how many spaces to move or how many times to move – e.g., a die, a spinner, etc.), **the game pieces** that the players will be using (at least four), and **at least 50 cards** with review questions from semester 1. The cards could ask players, to define a term, to act out or draw a concept, to solve a problem, or to do something that will help them review the semester. You may also have reward cards, penalty cards, and anything (appropriate and clean) that you think would make the game helpful and exciting to the players.
- You have to have **at least one square, a rectangle, a rhombus, a pair of vertical angles, and a pair of congruent triangles** represented on the actual board game (having them as questions or tasks in the cards only does not count). You may have different type of cards have different shapes, for example. The shapes have to be drawn or built by hand. You may not use a poster board or a piece of construction paper, for example, and consider that to be your board. You have to use the properties of these shapes to build them yourselves.
- **You have to construct the entire board game and its components yourself**. You may not use any pre-made objects.
- The board has to be **larger than** an **8 ½" x 11"** sheet, but **smaller than** the student desk (**23 ½" x 16"**).
- You have to design a **pamphlet** with the instructions for the game. It may either be a bi-fold or a tri-fold no larger than an 8 ½" x 11" sheet (you may use regular paper for this – you do not have to build your own rectangle for this part). The pamphlet has to have a cover page with the name and the logo on it, and have the following **sections**: 1) number of players and age requirements 2) contents (type and number of pieces) 3) object of the game 4) setup (where to lay the cards, where pieces go, etc.) 5) how to play the game (be as clear as possible, and include examples if necessary) 6) winning the game (who wins the game and how, and how to break ties, if ties could occur) 7) game variations (if applicable) 8) how to obtain replacement parts (e.g., by sending certain amount to a certain address). You may bring your laptop to class to work on the pamphlet if you wish. You may add diagrams to clarify directions, if needed. The pamphlet will be used during the in-class presentation, and it will be submitted at the end to be displayed in the classroom.

Concepts and topics that must be covered on the review cards

A. Triangles:
   a. Equilateral (Equiangular), isosceles, scalene, obtuse, acute, right
   b. Perpendicular bisectors meet at the circumcenter
   c. Medians meet at the centroid
   d. Angle bisectors meet at the incenter
   e. Altitudes meet at the orthocenter
   f. Triangle inequality theorem
B. Congruent Triangles: SSS, SAS, AAS, ASA
C. Similar Triangles: AA, SSS, SAS
D. Properties of parallelograms
E. Properties of isosceles trapezoids
F. Points:
   a. Collinear
   b. Using the Segment Addition Postulate
   c. Distance between 2 points
   d. Midpoint between 2 points
   e. Slope between 2 points
G. Lines:
   a. Slopes of lines that are parallel or perpendicular
   b. Slope intercept equation
   c. Point-slope equation
H. Notation: Line, line segment, ray, measure of a line segment
I. Lines that are: coplanar, parallel, skew, perpendicular
J. Angles
   a. Complementary, supplementary
   b. Linear Pair
   c. vertical
   d. acute, obtuse, right, straight
   e. Exterior angle theorem
   f. Angle Addition Postulate
   g. Angles formed by parallel lines cut by a transversal: corresponding, alternate interior, alternate exterior, consecutive interior

Instructional video

The purpose of the video is to introduce and explain your board game, and to show how it is played. The video must be between **5 and 10 minutes long**, and everybody in the team must be in the video. In the video you have to:

1) State the name of your board game, and how you came up with it.
2) Show the logo, what it means, and what the Geometry in the logo is.
3) State the purpose and the rules of the game.
4) State and show how the game is played from the beginning to the end, and how a person wins. You do not have to play an entire game, you just have to show sample plays.

Commercial

In this video, you are trying to promote and "sell" your board game to your selected audience (Geometry students in high school and adults). You can be as creative as you wish (you may even use cartoons or other inanimate items, if you wish), but you have to keep the video appropriate and clean. The video has to be **at most 30 seconds long**. You must include the name of the game, and show the logo and the board game itself on camera so that the teacher evaluating the commercial can see what the game and logo look like.

In-class presentation

- After showing the videos in class, we will play the board games in groups of 4 or 5 in class. A member from each team will be selected at random to represent his/her team. The presenters selected will stay in their seats, and everybody else will seat in a different team. No two members of the same team may be in the same group.
- After groups are formed, the designated presenter will explain the purpose and the directions of the game, and will guide the other members of the group in a game amongst themselves. The presenter will act as a referee by making sure that the rules are being followed, and answering any questions that the other students might have.
- At the end of the game, the players will evaluate the presenter and the game. The evaluations from each group will be averaged, and that average will be the score that the presenter and his/her group receives.

Group collaboration

Every person in the team will evaluate the effort and collaboration of every team member – including him/herself. This evaluation will be submitted online so that every member could feel that he/she can be honest about everybody's collaboration in the team.

<u>Evaluation and due dates</u>

Your entire project will be worth 300 points, and the points will be distributed as follows:

- 50 points for the instructional video- evaluated by me – **due Monday, January 13th**
- 50 points for the commercial – evaluated by another teacher or adult – **due Monday, January 13th**
- 100 points for the board game and its components– evaluated by me – **due Wednesday, January 15th**
- 50 points for the in-class presentation – evaluated by the students who play your game in class- **completed on Wed, Jan 15th**
- 50 points for your effort and level of collaboration throughout the project – evaluated by your teammates and yourself – **due online by Thursday, January 16th**

<u>Rubrics</u>

Board game

1) It has at least…	**Yes: 10 points**	**Attempted it: 5**	**No: 0**
One square			
One rectangle			
One rhombus			
One pair of vertical angles			
One pair of congruent triangles			
One advancing device **and** at least four game pieces			

2) Number of cards:
·At least 50 cards: 10 pts
·45-49: 9pts ·20-24:4pts
·40-44: 8pts ·15-19: 3pts
·35-39: 7pts ·10-14:2pts
·30-34: 6pts ·5-9: 1 point
·25-29: 5pts ·Less than 5:0

3) Materials used:
Nothing was pre-made: 10 points One item/piece was pre-made: 5 points More than one item was pre-made: 0 points

4) Dimensions

- Stayed within the minimum and maximum required: 10 points
- Exceeded either the minimum or maximum by a little: 5 points
- Either too small or too big: 0 points

5) Pamphlet met minimum requirements: Yes: 10 Somewhat: 5 No: 0

Total for this part: ____/100

Video

	Yes: 10 points	**Somewhat: 5 points**	**No: 0 points**
Explains the geometric properties of the board game **and** the logo clearly			
Describes the construction process clearly (especially how members made sure that the shapes were actually the shapes they were supposed to be)			
Lasts within the allotted time limits (between 5-10 minutes)			
Explains the purpose and directions of the game clearly			
Shows a proper and easy to understand sample game being played			

Total for this part: ___50

Commercial

Please rate from a scale of 1 to 10 (1 being the lowest, and 10 being the highest), by circling your score.

Name for the game	10	9	8	7	6	5	4	3	2	1
Logo for the game	10	9	8	7	6	5	4	3	2	1
Appearance of the game	10	9	8	7	6	5	4	3	2	1
Creativity of the game	10	9	8	7	6	5	4	3	2	1
Appeal of the commercial for selected audience (geometry students – both high school age and adults)	10	9	8	7	6	5	4	3	2	1

If you were the owner of a big toy company, would you sell this game?

Yes, definitely. (+10 points) Yes; with some changes. (+5 points) No (+0 points)

Total for this part: ___50

Presentation and game with peers

	Yes: 10	**Somewhat: 5**	**Not at all: 0**
The presenter explained the directions clearly.			
The presenter was involved during the game, and made sure that the rules were followed and questions were answered.			
The game was helpful to review the concepts from this semester.			
The game kept me interested from beginning to end.			

I would buy this game if I had the chance: Yes: 5 points Maybe: 3 points No way: 1 point

Your overall rating of this game (a scale from 1-5; 1 being the lowest, and 5 being the highest): ____/5

Total for this part: ____/50

Effort and collaboration

Name of student: _____

	Always: 10 points	Most of the time: 7	Just a little: 3	Never: 0
Contributed with ideas for the game				
Helped build the game				
Helped with the video				
Helped with the commercial				
Completed work assigned /agreed upon				

Total for this part: ___/50