Grade 8
Geometry Review Game

Rationale

- The intent of this lesson is to review Geometry skills and concepts.

Goals

- To recognize and understand a variety of geometry formulas
- To become familiar with the reference sheet
- To recognize angles and their measurements
- To recognize transformations
- To be able to rely on memorization to play "Concentration"
- To create new questions for "Concentration" game

Standards

- **8.G.A** Understand congruence and similarity using physical models, transparencies, or geometry software.
- **8.G.B** Understand and apply the Pythagorean Theorem.
- **8.G.C** Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
- **MP.4** Model with mathematics.
- **MP.7** Look for and make use of structure.

Objectives

- Students will be able to identify and use formulas correctly.
- Students will be able to locate formulas on the reference sheet.
- Students will be able to identify specific angles and their measurements.
- Students will use the "RSL" strategy to respond to Open Response items.
- Students will practice and use memorization skills to locate cards that match on the game board.
- Students will apply knowledge of geometry skills and concepts to create new questions for "Concentration."

Materials

- "Concentration" game board
- Large Index Cards (5 × 8 blank)
- Blue Painters Tape (2 in.)
- Practice Worksheet
- **Calculator**

- Game Board questions (to be recorded on index cards)
- Colored Markers
- Protractor (1 for each student)
- Elmer's Tack (removable adhesive putty)
- Score sheet
- Small prizes for winners of "Concentration"
- PARCC Grade 8 Reference Sheet
http://www.parcconline.org/sites/parcc/files/ApprovedPARCCReferenceSheet_11%205%2014.pdf

Procedure

- **Prior to Day 1 of this lesson, make index cards using the Game Board Question sheet. First, number the cards from 1 – 24 using a black marker. Write the questions on the back of the cards. (Color coding the question on the cards will be helpful for visual learners.) Use Elmer's Tack to adhere the card to the board. (Place card numbers side up on the board.)**
- **Create the game board by making 6 columns and 4 rows on the chalk or white board using 2 inch painters tape to create the columns and rows. Each space should be 6 inches × 9 inches in order to accommodate the 5 × 8 index card. (This should be done in advance also.)**
- **In order to play the game successfully, students will have to match the specific formula with what the formula calculates, or the student will have to identify the type of angle with its measurement. (*A = L × W* will match with *The Formula for Finding the Area of a Rectangle*, or *> 90° <180°* matches *Obtuse Angle*.) This challenges the students to demonstrate understanding of the skill/concept rather than just visual memorization.**
- Review formulas used for finding perimeter of a polygon, area of a rectangle, circle, parallelogram and triangle, surface area, circumference, and volume of a figure.
- Provide a grade level appropriate copy of the reference sheet for each student and have the students locate formulas for perimeter, area, and volume of figures.
- Review types of triangles based on sides and angles.
- Review the measure of angles in relation to transversals and parallel lines.
- Have students complete the worksheet, in pairs, to practice and reinforce using the formulas and geometry concepts learned in this lesson. As the students complete the worksheet, correct them and provide feedback. (Determine if the students are making computation errors, or if they are not using the correct formula, or both; adjust the teaching if necessary.)
- Have the students sit in the front of the room so they can see the game board. Arrange the order in which the students will take turns, and begin the game. Remind students that even if it is not their turn, they should be very attentive and stay focused on the game board since they may need one of the cards turned over when it is their turn.
- A player calls out the #'s of the 2 cards they want to try to match. If the player makes a match, they get a point and the cards are removed from the board. If the player did not make the match, the cards are placed back on the board with the number side up. (The teacher or aide can tally points on the score sheet.)
- When all cards are off the board the game is over. The student with the most points wins the game. (You can award a prize to the winner.)

- If time permits, students can work in pairs to create new index cards for a second version of the game. Students can play the game if they have time.

Teacher & Teachers' Aide Observations

- Teachers should be noting which students are able to use the formulas correctly when completing the worksheet.
- Teachers should be noting which students are able to identify angles and formulas when completing a worksheet.
- Teachers should note whether students are having difficulty with games because of concentration or lack of geometry skills and concepts.

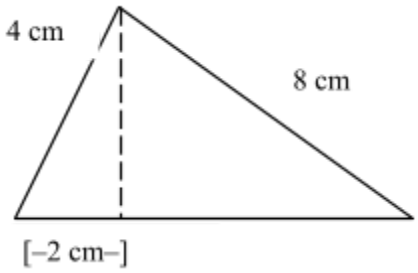
Assessment

- Completing a worksheet correctly or with few minor errors will display student mastery.
- Making matches in the Concentration Game will show student mastery.

Practice Worksheet

Complete the following assessment items.

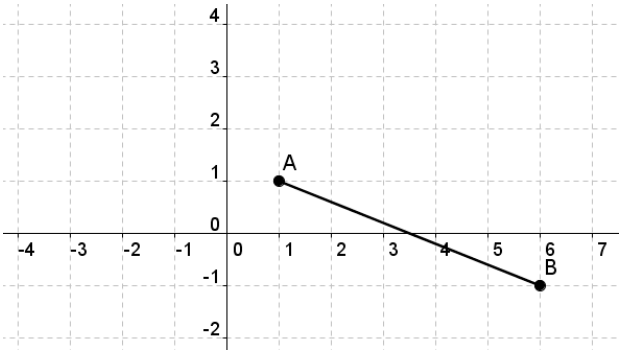
1. In the figure shown below, the dotted segment is the height of the triangle.



To the nearest tenth, what is the height of the triangle?

☐ centimeters

2. Select from the drop-down menu to complete the sentence.



To the nearest tenth, the length of AB is

Choose
2.7 units
5.4 units
7.0 units
7.2 units

.

3. A standard sugar cone has a diameter of 2 inches and a height of 5 inches. Which is the best estimate of the volume of a standard sugar cone? (use 3.14 as π)

Volume = ☐

4. A sphere has a diameter of 8 meters. What is the volume of the sphere? (express the exact answer with π) Write your answer in the box.

$V =$ ☐ m^3

5. Answer the following **Open Response** item. Be sure to use the "Restate question to include the answer with the label, support your answer by showing your work and responding to the prompt (sentence that describes how to support the answer), and use the language of math (vocabulary) effectively."

- My computer screen is 18 inches. This distance is the diagonal distance across the screen. If the screen measures 9 inches in height, what is the actual width of the screen to the nearest inch? Show your work and explain your answer.

- I am considering the purchase of a new computer. The screen on the new computer is 11 x 18 inches. How does the size of this screen compare to the computer you currently own? Which computer provides a larger screen? Justify your answer.

Game Board Questions

Number the 5 × 8 index cards 1 – 24. Write the following questions on the appropriate index card with a black marker. Use different color markers for each matching pair. (12 colors if possible)

Index cards 1 and 7 1. $a^2 + b^2 = c^2$ 7. Pythagorean Theorem Index cards 2 and 21 2. Angles with a sum of 90° 21. Complimentary Index cards 3 and 16 3. Angles with a sum of 180° 16. Supplementary Index cards 4 and 23 4. Sum of the measure of the interior angles of a triangle 23. 180° Index cards 5 and 13 5. Area of a Circle formula 13. $A = \pi r^2$ Index cards 6 and 19 6. Figures of the same size and shape 19. Congruent	Index cards 7 and 14 7. Volume of a general prism 14. $V = Bh$ Index cards 8 and 20 8. Figures of different sizes but with the same shape 20. Similar Index cards 9 and 17 9. Formula for finding area of a triangle 17. Area = ½ (base × height) Index cards 10 and 15 10. approximate value of π 15. 3.14 or 22/7 Index cards 11 and 24 11. Volume of a cone 24. $V = 1/3\ \pi r^2 h$ Index card 12 and 22 12. Circumference 22. $C = \pi d$ or $\pi(2r)$

Concentration Score Sheet

Student Name	Tally points	Final Score

