An Aspire Public School

California College Preparatory Academy

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Dear Parents and Families,

The time has come for 7th Grade students to begin their annual exhibition project. **Completion of this project is a requirement for promotion to the 8th grade.** This year, 7th graders will complete a mathematics project to show their understanding of measurement and geometry topics covered throughout the year. These topics include classifying shapes, applying the Pythagorean Theorem and various formulas for area, determining the areas of complex figures. Students will also apply the concept of ratio and proportion.

For this project students will be expected to design a series of miniature golf holes and build both two-dimensional and three-dimensional models of some of these designs. Students will present these models to a panel of judges comprised of staff, community members, and students.

Students will be receiving instruction to build the knowledge base needed to complete this project over the next months of school. Although some in class time will be devoted to working on aspects of this project, much work will be expected to be completed at home, and brought in for peer review.

During winter break, students will being the first steps of their project by starting on research which may include the attached sources.

We are looking forward to seeing the **final presentations during March 2007.**

Thank you in advance for you support on this project.

Respectfully,

Ms. Sarah Salazar and Mr. Stacy Thomas

The final project will be composed of:

- A poster detailing a minimum of 2 mini-golf holes.
    - The poster should include their name, grade, title, etc.
    - A 2D scale drawing of each hole must be annotated with all dimensions.
        - Each mini-golf hole should include a minimum of 3 different shapes making up the bulk of its shape.
        - At least one of the designs should include the use of one 3D shape.
    - Students must find the surface area of each mini-golf hole. (The amount of felt needed to top the hole).
        - All work should be organized and easy to follow.
        - All formulas used should be clearly written and labeled.
- A 3D model of one of the above mini-golf holes.
    - The 3D model must also be made to scale.
- A set of notes that students will use to present their projects.
    - These notes may take the form of an outline or note cards.

7th Grade Exhibition
Mini-Golf Design Project
California State Standards Covered

Measurement and Geometry

1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:

1.2 Construct and read drawings and models to scale.

2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale:

2.1 Use formulas routinely for finding the perimeter and area of basic two- dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.

2.2 Estimate and compute the area of more complex or irregular two- and three- dimensional figures by breaking the figures down into more basic geometric objects.

3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:

3.1 Identify and construct basic elements of geometric figures (e.g., altitudes, midpoints, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge.

3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.

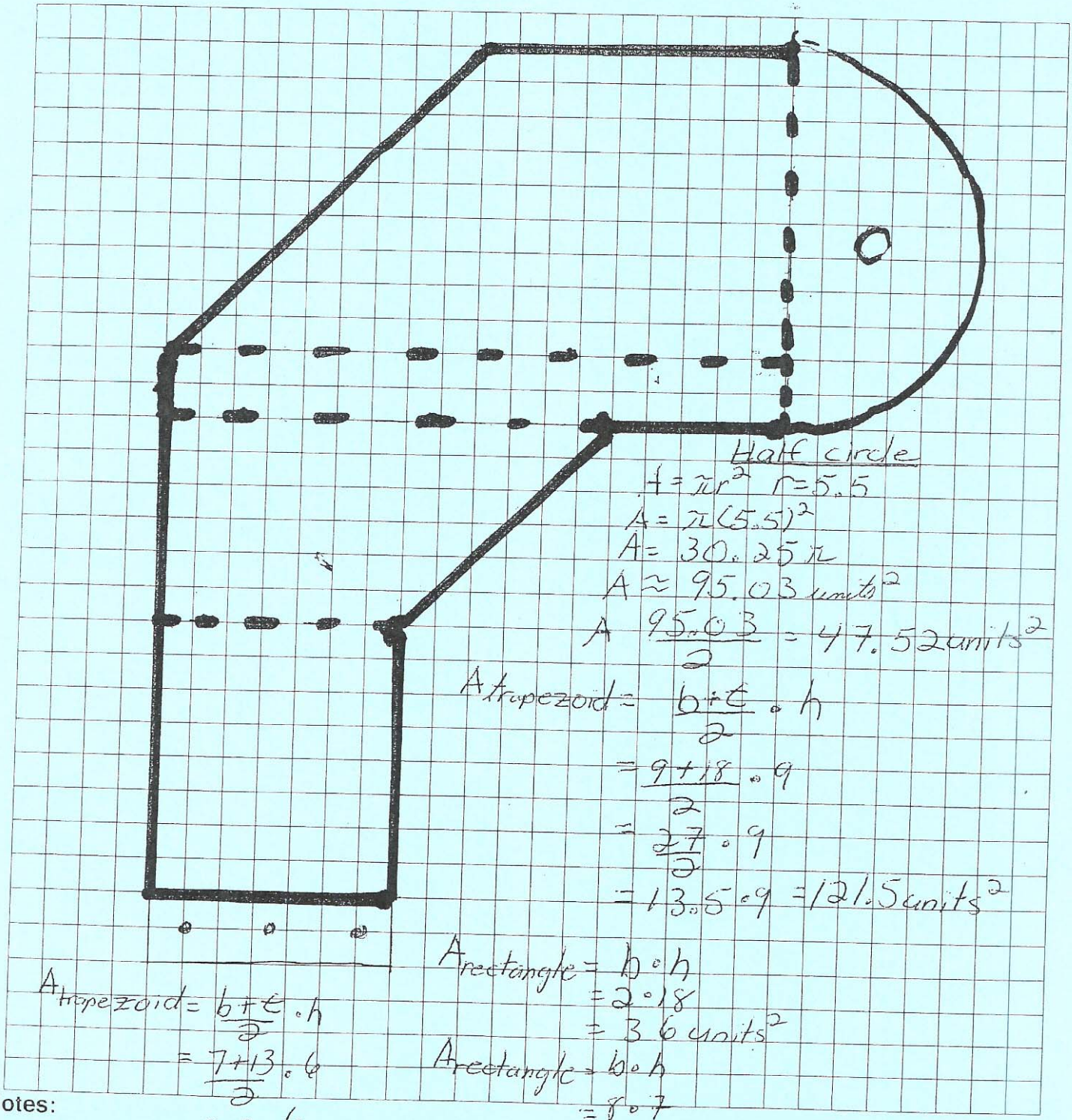
3.3 Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.

3.4 Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures.

Week	Date	Major Goals this Week
1	12/12 Tues	Students will be introduced to the exhibition project.
	12/13 Wed	Students will be expected to complete a short activity in which they will find the area of a mini-golf hole designed by their teachers.
2 to 4 WINTER BREAK	12/18 Mon	Students will be expected to design a 6-hole mini-golf course. Expectations for this will be distributed before students leave for break
	12/25	
	1/1	
5	1/8 Monday	6 Hole Mini-Golf Course Sketches Due.
6	1/16 Tuesday	Revisions and additions to Mini-Golf Course Sketches Due.
7	1/22 Monday	
8	1/29 Monday	Intermediate design choices due (Peer Feedback!) These should include area calculations and explanations.
9	2/5 Monday	Students should begin to add 3D shapes to their designs. (Barriers, slopes, etc)
10	2/12 Monday	
11	2/20 Tuesday	Final design choices due. (Sketches okay! Modifications allowed until 3/5)
12	2/26 Monday	Final Calculations due. (Peer Review!)
13	3/5 Monday	Poster Articles (Banners, etc) and Draft of Speech Notes Due for Peer Feedback
	3/9 Friday	Final Poster Due
14	3/12 Monday	Model Draft and Notes Due
	3/16 Friday	Final Model Due
15	3/19 Thursday	Exhibition Presentation Outline/Note Cards Final Draft Due
	3/21 - 3/23	Exhibition Presentations - Students will be informed of their presentation date and time.

Name:
Date:
Period:

Assignment: □ = 1 square foot



Half circle

$A = \pi r^2$ $r = 5.5$

$A = \pi (5.5)^2$

$A = 30.25\pi$

$A \approx 95.03 \text{ units}^2$

$A \frac{95.03}{2} = 47.52 \text{ units}^2$

$A_{trapezoid} = \frac{b+c}{2} \cdot h$

$= \frac{9+18}{2} \cdot 9$

$= \frac{27}{2} \cdot 9$

$= 13.5 \cdot 9 = 121.5 \text{ units}^2$

$A_{rectangle} = b \cdot h$

$= 2 \cdot 18$

$= 36 \text{ units}^2$

$A_{rectangle} = b \cdot h$

$= 8 \cdot 7$

$= 56 \text{ units}^2$

$A_{trapezoid} = \frac{b+c}{2} \cdot h$

$= \frac{7+13}{2} \cdot 6$

$= \frac{20}{2} \cdot 6$

$= 10 \cdot 6$

$= 60 \text{ units}^2$

Notes:

Total Surface Area

$(47.52) + (121.5) + (36) + (56) + (60) =$

321.02 units^2