

# Review Game: Geometry

December 10, 2023

A circle and two distinct lines are drawn on a sheet of paper. What is the largest possible number of points of intersection of these figures? **(1 point)**

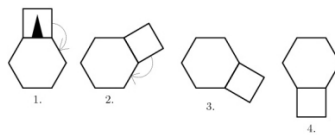
- (A) 2                      (B) 3                      (C) 4                      (D) 5                      (E) 6

A piece of paper containing six joined squares labeled as shown in the diagram below is folded along the edges of the squares to form a cube. What is the label of the face opposite X? **(1 point)**



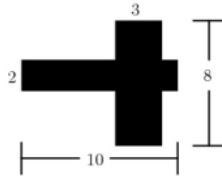
- (A) U                      (B) V                      (C) W                      (D) Y                      (E) Z

The square in the first diagram "rolls" clockwise around the fixed regular hexagon until it reaches the bottom. In which position will the solid triangle be in diagram 4? **(1 point)**



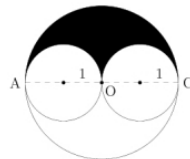
- (A) (B) (C) (D) (E)

Find the area (in square units) of the shaded region formed by the two intersecting perpendicular rectangles shown below. **(2 points)**



- (A) 23      (B) 38      (C) 44      (D) 46      (E) unable to be determined

The large circle has diameter AC. The two small circles have their centers on AC and just touch at O, the center of the large circle. If each small circle has radius 1, what is the value of the ratio of the area of the shaded region to the area of one of the small circles? **(2 points)**



- (A) between  $\frac{1}{2}$  and 1 (B) 1 (C) between 1 and  $\frac{3}{2}$  (D) between  $\frac{3}{2}$  and 2 (E) cannot be determined

Points R, S, T are vertices of an equilateral triangle, and points X, Y, Z are midpoints of its sides. How many noncongruent triangles can be drawn using any 3 of the 6 points as vertices? **(3 points)**

- (A) 1      (B) 2      (C) 3      (D) 4      (E) 20

Isosceles right triangle ABC encloses a semicircle of area 2. The circle has its center O on hypotenuse AB and is tangent to sides AC and BC. What is the area of triangle ABC? **(3 points)**

- (A) 6      (B) 8      (C)  $3\pi$       (D) 10      (E)  $4\pi$