#1 Geometry – Hustle
2014 MAΘ National Convention

Khondaker creates a 3-D figure by revolving $(x-3)^2 + y^2 = 4$ 360° about the x-axis. What is the volume of this figure?

Answer : _____

Round   1   2   3   4   5

#2 Geometry – Hustle
2014 MAΘ National Convention

What is the area of a triangle with side lengths 11, 60, and 61?

Answer : _____

Round   1   2   3   4   5

#3 Geometry – Hustle
2014 MAΘ National Convention

Mr. Dalal Trololol inscribes a sphere in a cube, which he inscribes in another sphere, which he inscribes in another cube. Find the ratio of the side length of the large cube to the radius of the small sphere. Express your answer as a fraction.

Answer : _____

Round   1   2   3   4   5

#4 Geometry – Hustle
2014 MAΘ National Convention

A circle is circumscribed about a triangle with side lengths 5, 12, and 13. What is the radius of this circle?

Answer : _____

Round   1   2   3   4   5

#5 Geometry – Hustle
2014 MAΘ National Convention

A circle has 2 cords AB and CD that intersect to form four right angles at E. Given that AE = 4, BE = 5, CE = 10, and DE = 2, find the radius of the circle.

Answer : _____

Round   1   2   3   4   5

#6 Geometry – Hustle
2014 MAΘ National Convention

Can all angles be trisected using only a straight edge and a compass? [Yes or No]

Answer : _____

Round   1   2   3   4   5

#7 Geometry – Hustle
2014 MAΘ National Convention

A circle has a radius of 10. What is the area of a sector subtending an arc of angle 5 degrees.

Answer : _____

Round   1   2   3   4   5

#8 Geometry – Hustle
2014 MAΘ National Convention

An isosceles trapezoid has bases of lengths 11 and 9 and legs of length 7. What is the area of this trapezoid?

Answer : _____

Round   1   2   3   4   5

#9 Geometry – Hustle
2014 MAΘ National Convention

The side lengths of a right triangle are x+1, x+8, and x+9. Find the smallest integral value possible for x.

Answer : _____

Round   1   2   3   4   5

#10 Geometry – Hustle
2014 MAΘ National Convention

What is the area bounded by
$|x| + |y| \leq 2014$?

Answer : _____

Round   1   2   3   4   5

#11 Geometry – Hustle
2014 MAΘ National Convention

Four basketballs of the same size can be placed in such a way that each ball is touching the other three. Is it possible to arrange five circular coins of the same size so that each touches the other four? [Yes/No]

Answer : _____

Round   1   2   3   4   5

#12 Geometry – Hustle
2014 MAΘ National Convention

Tennessee Danny, the only ten I see, loves rock climbing volumes that are pyramids with bases that are equilateral triangles. Given that the height of a certain volume is 10 and the length of the equilateral triangular base is 10, find the volume of the rock climbing volume.

Answer : _____

Round   1   2   3   4   5

#13 Geometry – Hustle
2014 MAΘ National Convention

A circle is inscribed in a triangle with side lengths 5, 12, and 13. What is the radius of this circle?

Answer : _____

Round   1   2   3   4   5

#15 Geometry – Hustle
2014 MAΘ National Convention

How many diagonals does a 21-gon have?

Answer : _____

Round   1   2   3   4   5

#14 Geometry – Hustle
2014 MAΘ National Convention

What is the ratio of the volume of a cube to the lateral surface area of the same cube? Express your answer as a fraction and let s be the side length of the cube.

Answer : _____

Round   1   2   3   4   5

#16 Geometry – Hustle
2014 MAΘ National Convention

Given three non-overlapping squares each with one vertex at the origin and all other sides parallel to either of the coordinate axis, find the largest possible perimeter of the resulting figure if the squares have side lengths 1, 4, and 5.

Answer : _____

Round   1   2   3   4   5

#17 Geometry – Hustle
2014 MAΘ National Convention

A square has an apothem of length 4.
Find the area of the square.

Answer : _____

Round   1   2   3   4   5

#18 Geometry – Hustle
2014 MAΘ National Convention

Ice cream lover Viet loves ice cream
sandwiches. A certain box of ice cream
sandwiches contains 10 ice cream
sandwiches, each with dimensions of 10 x
2 x 1. Find the total volume of ice cream
sandwiches in each box.

Answer : _____

Round   1   2   3   4   5

#19 Geometry – Hustle
2014 MAΘ National Convention

A 4x4x4 cube is painted red on all sides
and then cut into 64 1x1x1 cubes. How
many 1x1x1 cubes have fewer than two
sides with red paint on them.

Answer : _____

Round   1   2   3   4   5

#20 Geometry – Hustle
2014 MAΘ National Convention

A sphere and a cube have the same
volume. What is the ratio of the surface
area of the sphere to the surface area of
the cube? Express your answer as a
fraction.

Answer : _____

Round   1   2   3   4   5

#21 Geometry – Hustle
2014 MAΘ National Convention

A convex polyhedron has 30 edges and 20 faces. Find the number of vertices of the polyhedron.

Answer : _____

Round   1   2   3   4   5

#22 Geometry – Hustle
2014 MAΘ National Convention

Find the lateral surface area of a cone with both diameter and height of 10.

Answer : _____

Round   1   2   3   4   5

#23 Geometry – Hustle
2014 MAΘ National Convention

What is the distance between (1,2,3) and (2012, 2013, and 2014).

Answer : _____

Round   1   2   3   4   5

#24 Geometry – Hustle
2014 MAΘ National Convention

The globe in front of Universal Studios has a radius of 50 Lions. Find the volume of the globe in terms of Lions^3.

Answer : _____

Round   1   2   3   4   5

Find the sum of the number of edges,
vertices, and faces of a dodecahedron.

Answer : _____

Round   1   2   3   4   5