#1 Geometry – Hustle
MAΘ National Convention 2007

What is the area of a circle with a diameter of 12?

Answer : _____

Round 1 2 3 4 5

#1 Geometry – Hustle
MAΘ National Convention 2007

What is the area of a circle with a diameter of 12?

Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2007

What is the area of a circle with a diameter of 12?

Answer : _____

Round 1 2 3 4 5

#1 Geometry – Hustle
MAΘ National Convention 2007

What is the area of a circle with a diameter of 12?

Answer : _____

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2007

A right triangle has one leg of length 16, and the other leg and hypotenuse have lengths which are consecutive odd integers. What is the perimeter of the triangle?

Answer : _____________

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2007

A right triangle has one leg of length 16, and the other leg and hypotenuse have lengths which are consecutive odd integers. What is the perimeter of the triangle?

Answer : _____________

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2007

A right triangle has one leg of length 16, and the other leg and hypotenuse have lengths which are consecutive odd integers. What is the perimeter of the triangle?

Answer : _____________

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2007

A right triangle has one leg of length 16, and the other leg and hypotenuse have lengths which are consecutive odd integers. What is the perimeter of the triangle?

Answer : _____________

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2007

Eight different points lie on a circle. How many different lines can be drawn which pass through exactly two of these points?

Answer : _____

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2007

Eight different points lie on a circle. How many different lines can be drawn which pass through exactly two of these points?

Answer : _____

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2007

Eight different points lie on a circle. How many different lines can be drawn which pass through exactly two of these points?

Answer : _____

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2007

Eight different points lie on a circle. How many different lines can be drawn which pass through exactly two of these points?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2007

If the perimeter of a 30-60-90 triangle is $18+18\sqrt{3}$, how long is the hypotenuse of the triangle?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2007

If the perimeter of a 30-60-90 triangle is $18+18\sqrt{3}$, how long is the hypotenuse of the triangle?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2007

If the perimeter of a 30-60-90 triangle is $18+18\sqrt{3}$, how long is the hypotenuse of the triangle?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2007

If the perimeter of a 30-60-90 triangle is $18+18\sqrt{3}$, how long is the hypotenuse of the triangle?

Answer : _____

Round 1 2 3 4 5

#5 Geometry – Hustle
MAΘ National Convention 2007

A segment of length 25 is divided into 2 parts which are in a 4:11 ratio. These two parts become two sides of a triangle with third side length K, where K is an integer. What is the sum of the smallest and largest possible values of K?

Answer : _____

Round 1 2 3 4 5

#5 Geometry – Hustle
MAΘ National Convention 2007

A segment of length 25 is divided into 2 parts which are in a 4:11 ratio. These two parts become two sides of a triangle with third side length K, where K is an integer. What is the sum of the smallest and largest possible values of K?

Answer : _____

Round 1 2 3 4 5

#5 Geometry – Hustle
MAΘ National Convention 2007

A segment of length 25 is divided into 2 parts which are in a 4:11 ratio. These two parts become two sides of a triangle with third side length K, where K is an integer. What is the sum of the smallest and largest possible values of K?

Answer : _____

Round 1 2 3 4 5

#5 Geometry – Hustle
MAΘ National Convention 2007

A segment of length 25 is divided into 2 parts which are in a 4:11 ratio. These two parts become two sides of a triangle with third side length K, where K is an integer. What is the sum of the smallest and largest possible values of K?

Answer : _____

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2007

A circle is inscribed in a regular hexagon with side length 20. What is the area of this circle?

Answer : ______________

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2007

A circle is inscribed in a regular hexagon with side length 20. What is the area of this circle?

Answer : ______________

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2007

A circle is inscribed in a regular hexagon with side length 20. What is the area of this circle?

Answer : ______________

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2007

A circle is inscribed in a regular hexagon with side length 20. What is the area of this circle?

Answer : ______________

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2007

A cylinder has a volume of V. A second cylinder with volume KV has $\frac{1}{6}$ the radius and 9 times the height of the first cylinder. What is the value of K?

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2007

A cylinder has a volume of V. A second cylinder with volume KV has $\frac{1}{6}$ the radius and 9 times the height of the first cylinder. What is the value of K?

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2007

A cylinder has a volume of V. A second cylinder with volume KV has $\frac{1}{6}$ the radius and 9 times the height of the first cylinder. What is the value of K?

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2007

A cylinder has a volume of V. A second cylinder with volume KV has $\frac{1}{6}$ the radius and 9 times the height of the first cylinder. What is the value of K?

Answer : _____

Round 1 2 3 4 5

#8 Geometry – Hustle
MAΘ National Convention 2007

What is the greatest number of sides a regular polygon can have so that the degree measure of each of its interior angles is an even integer?

Answer : _____________

Round 1 2 3 4 5

#8 Geometry – Hustle
MAΘ National Convention 2007

What is the greatest number of sides a regular polygon can have so that the degree measure of each of its interior angles is an even integer?

Answer : _____________

Round 1 2 3 4 5

#8 Geometry – Hustle
MAΘ National Convention 2007

What is the greatest number of sides a regular polygon can have so that the degree measure of each of its interior angles is an even integer?

Answer : _____________

Round 1 2 3 4 5

#8 Geometry – Hustle
MAΘ National Convention 2007

What is the greatest number of sides a regular polygon can have so that the degree measure of each of its interior angles is an even integer?

Answer : _____________

Round 1 2 3 4 5

#9 Geometry – Hustle
MAΘ National Convention 2007

A quadrilateral has angles of 70, 80, 90, and 120 degrees. A second quadrilateral similar to the first one has sides which are twice as long as the first quadrilateral. What is the degree measure of the largest angle of this second quadrilateral?

Answer : _____________

Round 1 2 3 4 5

#9 Geometry – Hustle
MAΘ National Convention 2007

A quadrilateral has angles of 70, 80, 90, and 120 degrees. A second quadrilateral similar to the first one has sides which are twice as long as the first quadrilateral. What is the degree measure of the largest angle of this second quadrilateral

Answer : _____________

Round 1 2 3 4 5

#9 Geometry – Hustle
MAΘ National Convention 2007

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Answer : _____________

Round 1 2 3 4 5

#9 Geometry – Hustle
MAΘ National Convention 2007

A quadrilateral has angles of 70, 80, 90, and 120 degrees. A second quadrilateral similar to the first one has sides which are twice as long as the first quadrilateral. What is the degree measure of the largest angle of this second quadrilateral

Answer : _____________

Round 1 2 3 4 5

#10 Geometry – Hustle
MAΘ National Convention 2007

What is the measure of the angle formed by the hour hand and minute hand of a clock at 4:04?

Answer : _____

Round 1 2 3 4 5

#10 Geometry – Hustle
MAΘ National Convention 2007

What is the measure of the angle formed by the hour hand and minute hand of a clock at 4:04?

Answer : _____

Round 1 2 3 4 5

#10 Geometry – Hustle
MAΘ National Convention 2007

What is the measure of the angle formed by the hour hand and minute hand of a clock at 4:04?

Answer : _____

Round 1 2 3 4 5

#10 Geometry – Hustle
MAΘ National Convention 2007

What is the measure of the angle formed by the hour hand and minute hand of a clock at 4:04?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2007

What is the volume of a right circular cone with a radius of 2 and a slant height of 3?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2007

What is the volume of a right circular cone with a radius of 2 and a slant height of 3?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2007

What is the volume of a right circular cone with a radius of 2 and a slant height of 3?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2007

What is the volume of a right circular cone with a radius of 2 and a slant height of 3?

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2007

Given the five logical statements:
$: Q \rightarrow: R \quad : S \rightarrow R \quad T$
$Q \rightarrow: P \quad S \rightarrow: T$
How many of the following are valid conclusions using the five statements?
P Q R S T

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2007

Given the five logical statements:
$: Q \rightarrow: R \quad : S \rightarrow R \quad T$
$Q \rightarrow: P \quad S \rightarrow: T$
How many of the following are valid conclusions using the five statements?
P Q R S T

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2007

Given the five logical statements:
$: Q \rightarrow: R \quad : S \rightarrow R \quad T$
$Q \rightarrow: P \quad S \rightarrow: T$
How many of the following are valid conclusions using the five statements?
P Q R S T

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2007

Given the five logical statements:
$: Q \rightarrow: R \quad : S \rightarrow R \quad T$
$Q \rightarrow: P \quad S \rightarrow: T$
How many of the following are valid conclusions using the five statements?
P Q R S T

Answer : _____

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2007

One angle of an isosceles triangle measures 62 degrees. What is the greatest possible degree measure of another angle of this triangle?

Answer : ______________

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2007

One angle of an isosceles triangle measures 62 degrees. What is the greatest possible degree measure of another angle of this triangle?

Answer : ______________

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2007

One angle of an isosceles triangle measures 62 degrees. What is the greatest possible degree measure of another angle of this triangle?

Answer : ______________

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2007

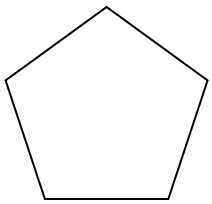
One angle of an isosceles triangle measures 62 degrees. What is the greatest possible degree measure of another angle of this triangle?

Answer : ______________

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2007

In a regular pentagon, two nonconsecutive angles are bisected. The bisectors intersect inside the pentagon and divide the pentagon into four polygons. What is the degree measure of the largest angle of the quadrilateral formed inside the pentagon?

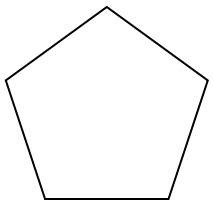


Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2007

In a regular pentagon, two nonconsecutive angles are bisected. The bisectors intersect inside the pentagon and divide the pentagon into four polygons. What is the degree measure of the largest angle of the quadrilateral formed inside the pentagon?

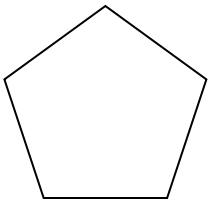


Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2007

In a regular pentagon, two nonconsecutive angles are bisected. The bisectors intersect inside the pentagon and divide the pentagon into four polygons. What is the degree measure of the largest angle of the quadrilateral formed inside the pentagon?

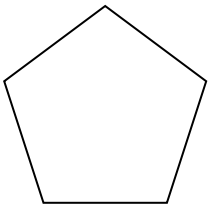


Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2007

In a regular pentagon, two nonconsecutive angles are bisected. The bisectors intersect inside the pentagon and divide the pentagon into four polygons. What is the degree measure of the largest angle of the quadrilateral formed inside the pentagon?



Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2007

A cube with an edge length of 6 rests on the ground on one of its faces (call this the base). A balloon is tied to a corner of the base with a string of length 4. What is the total volume of space which the balloon can occupy?

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2007

A cube with an edge length of 6 rests on the ground on one of its faces (call this the base). A balloon is tied to a corner of the base with a string of length 4. What is the total volume of space which the balloon can occupy?

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2007

A cube with an edge length of 6 rests on the ground on one of its faces (call this the base). A balloon is tied to a corner of the base with a string of length 4. What is the total volume of space which the balloon can occupy?

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2007

A cube with an edge length of 6 rests on the ground on one of its faces (call this the base). A balloon is tied to a corner of the base with a string of length 4. What is the total volume of space which the balloon can occupy?

Answer : _____

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2007

Triangle ABC is a 3-4-5 triangle with smallest angle A.
Evaluate sin A + cos A.

Answer : ______________

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2007

Triangle ABC is a 3-4-5 triangle with smallest angle A.
Evaluate sin A + cos A.

Answer : ______________

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2007

Triangle ABC is a 3-4-5 triangle with smallest angle A.
Evaluate sin A + cos A.

Answer : ______________

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2007

Triangle ABC is a 3-4-5 triangle with smallest angle A.
Evaluate sin A + cos A.

Answer : ______________

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2007

The surface areas of two similar cylinders are in a ratio of 4:9. The volume of the smaller cylinder is 8000. What is the volume of the larger cylinder?

Answer : _____

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2007

The surface areas of two similar cylinders are in a ratio of 4:9. The volume of the smaller cylinder is 8000. What is the volume of the larger cylinder?

Answer : _____

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2007

The surface areas of two similar cylinders are in a ratio of 4:9. The volume of the smaller cylinder is 8000. What is the volume of the larger cylinder?

Answer : _____

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2007

The surface areas of two similar cylinders are in a ratio of 4:9. The volume of the smaller cylinder is 8000. What is the volume of the larger cylinder?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2007

The diagonal of a square is 20.
What is the area of the square?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2007

The diagonal of a square is 20.
What is the area of the square?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2007

The diagonal of a square is 20.
What is the area of the square?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2007

The diagonal of a square is 20.
What is the area of the square?

Answer : _____

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2007

What is the degree measure of an exterior angle of a regular dodecagon?

Answer : ______________

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2007

What is the degree measure of an exterior angle of a regular dodecagon?

Answer : ______________

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2007

What is the degree measure of an exterior angle of a regular dodecagon?

Answer : ______________

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2007

What is the degree measure of an exterior angle of a regular dodecagon?

Answer : ______________

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2007

A triangle has sides whose lengths are 3, 5, and 7. What is the cosine of the largest angle of this triangle?

Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2007

A triangle has sides whose lengths are 3, 5, and 7. What is the cosine of the largest angle of this triangle?

Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2007

A triangle has sides whose lengths are 3, 5, and 7. What is the cosine of the largest angle of this triangle?

Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2007

A triangle has sides whose lengths are 3, 5, and 7. What is the cosine of the largest angle of this triangle?

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAΘ National Convention 2007

What is the area of a 40-degree sector of a circle with radius 6?

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAΘ National Convention 2007

What is the area of a 40-degree sector of a circle with radius 6?

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAQ National Convention 2007

What is the area of a 40-degree sector of a circle with radius 6?

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAQ National Convention 2007

What is the area of a 40-degree sector of a circle with radius 6?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2007

In parallelogram ABCD, $m\angle A = 47^{o}$.
What is $m\angle C$?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2007

In parallelogram ABCD, $m\angle A = 47^{o}$.
What is $m\angle C$?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2007

In parallelogram ABCD, $m\angle A = 47^{o}$.
What is $m\angle C$?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2007

In parallelogram ABCD, $m\angle A = 47^{o}$.
What is $m\angle C$?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2007

The point $(-5, y)$ is on the perpendicular bisector of $\overline{AB}$ with endpoints A(2, 6) and B(8, – 4). What is the value of y?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2007

The point $(-5, y)$ is on the perpendicular bisector of $\overline{AB}$ with endpoints A(2, 6) and B(8, – 4). What is the value of y?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2007

The point $(-5, y)$ is on the perpendicular bisector of $\overline{AB}$ with endpoints A(2, 6) and B(8, – 4). What is the value of y?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2007

The point $(-5, y)$ is on the perpendicular bisector of $\overline{AB}$ with endpoints A(2, 6) and B(8, – 4). What is the value of y?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2007

Of the circumcenter, incenter, centroid, and orthocenter, which point of concurrency of a scalene triangle is **not** always on the Euler line of the triangle?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2007

Of the circumcenter, incenter, centroid, and orthocenter, which point of concurrency of a scalene triangle is **not** always on the Euler line of the triangle?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2007

Of the circumcenter, incenter, centroid, and orthocenter, which point of concurrency of a scalene triangle is **not** always on the Euler line of the triangle?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2007

Of the circumcenter, incenter, centroid, and orthocenter, which point of concurrency of a scalene triangle is **not** always on the Euler line of the triangle?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2007

What is the area of the convex quadrilateral with vertices (1, 5), (– 3, – 8), (– 7, 10), and (4, – 3)?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2007

What is the area of the convex quadrilateral with vertices (1, 5), (– 3, – 8), (– 7, 10), and (4, – 3)?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2007

What is the area of the convex quadrilateral with vertices (1, 5), (– 3, – 8), (– 7, 10), and (4, – 3)?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2007

What is the area of the convex quadrilateral with vertices (1, 5), (– 3, – 8), (– 7, 10), and (4, – 3)?

Answer : _____

Round 1 2 3 4 5