#1 Geometry – Hustle
MAΘ National Convention 2011

What is the inverse of the contrapositive of the statement $p \rightarrow \sim q$?

Answer : _____

Round 1 2 3 4 5

#1 Geometry – Hustle
MAΘ National Convention 2011

What is the inverse of the contrapositive of the statement $p \rightarrow \sim q$?

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Round 1 2 3 4 5

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MAΘ National Convention 2011

What is the inverse of the contrapositive of the statement $p \rightarrow \sim q$?

Answer : _____

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2011

The two shorter sides of a scalene triangle have lengths of 5 and 3. What is the sum of all possible integral lengths of the third side?

Answer : _____

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2011

The two shorter sides of a scalene triangle have lengths of 5 and 3. What is the sum of all possible integral lengths of the third side?

Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

#2 Geometry – Hustle
MAΘ National Convention 2011

The two shorter sides of a scalene triangle have lengths of 5 and 3. What is the sum of all possible integral lengths of the third side?

Answer : _____

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2011

Segment AB is a diameter of a circle,
point C is on the circle and segment CD is
perpendicular to segment AB at the point D.
If AD = 4 and AB = 12, then CD =?

Answer : _____

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2011

Segment AB is a diameter of a circle,
point C is on the circle and segment CD is
perpendicular to segment AB at the point D.
If AD = 4 and AB = 12, then CD =?

Answer : _____

Round 1 2 3 4 5

#3 Geometry – Hustle
MAΘ National Convention 2011

Segment AB is a diameter of a circle,
point C is on the circle and segment CD is
perpendicular to segment AB at the point D.
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Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2011

Segment AB is a diameter of a circle,
point C is on the circle and segment CD is
perpendicular to segment AB at the point D.
If AD = 4 and AB = 12, then CD =?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2011

What is the degree measure of the complement of one exterior angle of a regular decagon?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2011

What is the degree measure of the complement of one exterior angle of a regular decagon?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2011

What is the degree measure of the complement of one exterior angle of a regular decagon?

Answer : _____

Round 1 2 3 4 5

#4 Geometry – Hustle
MAΘ National Convention 2011

What is the degree measure of the complement of one exterior angle of a regular decagon?

Answer : _____

Round 1 2 3 4 5

#5 Geometry – Hustle
MAΘ National Convention 2011

Point A is not on circle O; points B, C, and D are on circle O. Segment AC is a secant and intersects circle O at point B, segment AD is a tangent. If the measure of arc BC is 100° and the measure of angle CBD is 80°, what is the measure of angle CAD?

Answer : _____

Round 1 2 3 4 5

#5 Geometry – Hustle
MAΘ National Convention 2011

Point A is not on circle O; points B, C, and D are on circle O. Segment AC is a secant and intersects circle O at point B, segment AD is a tangent. If the measure of arc BC is 100° and the measure of angle CBD is 80°, what is the measure of angle CAD?

Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2011

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Round 1 2 3 4 5

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MAΘ National Convention 2011

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Answer : _____

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2011

Assume that p and q are true statements and that r is a false statement.
What is the truth column for $(p \wedge q) \rightarrow r$?

Answer : _____

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2011

Assume that p and q are true statements and that r is a false statement.
What is the truth column for $(p \wedge q) \rightarrow r$?

Answer : _____

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2011

Assume that p and q are true statements and that r is a false statement.
What is the truth column for $(p \wedge q) \rightarrow r$?

Answer : _____

Round 1 2 3 4 5

#6 Geometry – Hustle
MAΘ National Convention 2011

Assume that p and q are true statements and that r is a false statement.
What is the truth column for $(p \wedge q) \rightarrow r$?

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2011

Consecutive exterior angles of parallel lines have measures x^2 and $8x$ degrees. Find the value of x.

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2011

Consecutive exterior angles of parallel lines have measures x^2 and $8x$ degrees. Find the value of x.

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2011

Consecutive exterior angles of parallel lines have measures x^2 and $8x$ degrees. Find the value of x.

Answer : _____

Round 1 2 3 4 5

#7 Geometry – Hustle
MAΘ National Convention 2011

Consecutive exterior angles of parallel lines have measures x^2 and $8x$ degrees. Find the value of x.

Answer : _____

Round 1 2 3 4 5

#8 Geometry – Hustle
MAΘ National Convention 2011

The measures of the exterior angles of an octagon are in the ratio of 1:2:3:4:5:6:7:8. Find the degree measure of the largest interior angle.

Answer : _____

Round 1 2 3 4 5

#8 Geometry – Hustle
MAΘ National Convention 2011

The measures of the exterior angles of an octagon are in the ratio of 1:2:3:4:5:6:7:8. Find the degree measure of the largest interior angle.

Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2011

The measures of the exterior angles of an octagon are in the ratio of 1:2:3:4:5:6:7:8. Find the degree measure of the largest interior angle.

Answer : _____

Round 1 2 3 4 5

#9 Geometry – Hustle
MAΘ National Convention 2011

The perimeter of an isosceles triangle is 47. The length of the base is 3 greater than one-fifth the length of a leg. Find the length of the base.

Answer : _____

Round 1 2 3 4 5

#9 Geometry – Hustle
MAΘ National Convention 2011

The perimeter of an isosceles triangle is 47. The length of the base is 3 greater than one-fifth the length of a leg. Find the length of the base.

Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2011

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Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2011

The perimeter of an isosceles triangle is 47. The length of the base is 3 greater than one-fifth the length of a leg. Find the length of the base.

Answer : _____

Round 1 2 3 4 5

#10 Geometry – Hustle
MAΘ National Convention 2011

An exterior angle of a triangle has measure $(7x-13)^\circ$. The remote interior angles have measures $(2x)^\circ$ and $(3x)^\circ$. Find the degree measure of the smallest of the three interior angles of the triangle.

Answer : _____

Round 1 2 3 4 5

#10 Geometry – Hustle
MAΘ National Convention 2011

An exterior angle of a triangle has measure $(7x-13)^\circ$. The remote interior angles have measures $(2x)^\circ$ and $(3x)^\circ$. Find the degree measure of the smallest of the three interior angles of the triangle.

Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2011

What is the measure of an angle inscribed in a 160° arc ?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2011

What is the measure of an angle inscribed in a 160° arc ?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2011

What is the measure of an angle inscribed in a 160° arc ?

Answer : _____

Round 1 2 3 4 5

#11 Geometry – Hustle
MAΘ National Convention 2011

What is the measure of an angle inscribed in a 160° arc ?

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2011

A man walks 100 feet north, 250 feet east, 50 feet south, 50 feet east and finally 75 feet north. How many feet is he from his starting point?

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2011

A man walks 100 feet north, 250 feet east, 50 feet south, 50 feet east and finally 75 feet north. How many feet is he from his starting point?

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2011

A man walks 100 feet north, 250 feet east, 50 feet south, 50 feet east and finally 75 feet north. How many feet is he from his starting point?

Answer : _____

Round 1 2 3 4 5

#12 Geometry – Hustle
MAΘ National Convention 2011

A man walks 100 feet north, 250 feet east, 50 feet south, 50 feet east and finally 75 feet north. How many feet is he from his starting point?

Answer : _____

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2011

Find the length of the space diagonal for a rectangular solid whose edges have lengths 9, 6, and 3.

Answer : _____

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2011

Find the length of the space diagonal for a rectangular solid whose edges have lengths 9, 6, and 3.

Answer : _____

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2011

Find the length of the space diagonal for a rectangular solid whose edges have lengths 9, 6, and 3.

Answer : _____

Round 1 2 3 4 5

#13 Geometry – Hustle
MAΘ National Convention 2011

Find the length of the space diagonal for a rectangular solid whose edges have lengths 9, 6, and 3.

Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2011

Find the slant height of a regular square pyramid whose base is an 18 by 18 square and whose altitude has length 40.

Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2011

Find the slant height of a regular square pyramid whose base is an 18 by 18 square and whose altitude has length 40.

Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2011

Find the slant height of a regular square pyramid whose base is an 18 by 18 square and whose altitude has length 40.

Answer : _____

Round 1 2 3 4 5

#14 Geometry – Hustle
MAΘ National Convention 2011

Find the slant height of a regular square pyramid whose base is an 18 by 18 square and whose altitude has length 40.

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2011

A circular hole of radius 8 is cut in a flat board. A sphere of radius 10 fits against the rim of the hole. How far from the center of the hole is the most remote point of the sphere?

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2011

A circular hole of radius 8 is cut in a flat board. A sphere of radius 10 fits against the rim of the hole. How far from the center of the hole is the most remote point of the sphere?

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2011

A circular hole of radius 8 is cut in a flat board. A sphere of radius 10 fits against the rim of the hole. How far from the center of the hole is the most remote point of the sphere?

Answer : _____

Round 1 2 3 4 5

#15 Geometry – Hustle
MAΘ National Convention 2011

A circular hole of radius 8 is cut in a flat board. A sphere of radius 10 fits against the rim of the hole. How far from the center of the hole is the most remote point of the sphere?

Answer : _____

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2011

Point (a,b) is the center and r is the length of the radius of the circle whose equation is $x^2+y^2-4y-2=0$. What is the value of $a+b+r$?

Answer : _____

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2011

Point (a,b) is the center and r is the length of the radius of the circle whose equation is $x^2+y^2-4y-2=0$. What is the value of $a+b+r$?

Answer : _____

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2011

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Answer : _____

Round 1 2 3 4 5

#16 Geometry – Hustle
MAΘ National Convention 2011

Point (a,b) is the center and r is the length of the radius of the circle whose equation is $x^2+y^2-4y-2=0$. What is the value of $a+b+r$?

Answer : _____

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the volume of a sphere to the volume of its circumscribed cube?

Answer : _____

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the volume of a sphere to the volume of its circumscribed cube?

Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2011

What is the ratio of the volume of a sphere to the volume of its circumscribed cube?

Answer : _____

Round 1 2 3 4 5

#17 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the volume of a sphere to the volume of its circumscribed cube?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the diameter of a circle to that circle's circumference?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the diameter of a circle to that circle's circumference?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the diameter of a circle to that circle's circumference?

Answer : _____

Round 1 2 3 4 5

#18 Geometry – Hustle
MAΘ National Convention 2011

What is the ratio of the diameter of a circle to that circle's circumference?

Answer : _____

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2011

Two similar pentagons have areas of $2k^2$ and $18k^2$. What is the proper fraction ratio of their perimeters?

Answer : _____

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2011

Two similar pentagons have areas of $2k^2$ and $18k^2$. What is the proper fraction ratio of their perimeters?

Answer : _____

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2011

Two similar pentagons have areas of $2k^2$ and $18k^2$. What is the proper fraction ratio of their perimeters?

Answer : _____

Round 1 2 3 4 5

#19 Geometry – Hustle
MAΘ National Convention 2011

Two similar pentagons have areas of $2k^2$ and $18k^2$. What is the proper fraction ratio of their perimeters?

Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2011

What is the length of the altitude of a trapezoid whose area is 26 and has bases of length 5 and 8?

Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2011

What is the length of the altitude of a trapezoid whose area is 26 and has bases of length 5 and 8?

Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2011

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Answer : _____

Round 1 2 3 4 5

#20 Geometry – Hustle
MAΘ National Convention 2011

What is the length of the altitude of a trapezoid whose area is 26 and has bases of length 5 and 8?

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAΘ National Convention 2011

Find the volume of a frustum whose height is 6 and whose bases are equilateral triangles with sides of length 4 and 6.

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAΘ National Convention 2011

Find the volume of a frustum whose height is 6 and whose bases are equilateral triangles with sides of length 4 and 6.

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAΘ National Convention 2011

Find the volume of a frustum whose height is 6 and whose bases are equilateral triangles with sides of length 4 and 6.

Answer : _____

Round 1 2 3 4 5

#21 Geometry – Hustle
MAΘ National Convention 2011

Find the volume of a frustum whose height is 6 and whose bases are equilateral triangles with sides of length 4 and 6.

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2011

Two non-congruent externally tangent circles have a common external tangent of length 8. If the radius of the smaller circle is 2, what is the area of the larger circle?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2011

Two non-congruent externally tangent circles have a common external tangent of length 8. If the radius of the smaller circle is 2, what is the area of the larger circle?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2011

Two non-congruent externally tangent circles have a common external tangent of length 8. If the radius of the smaller circle is 2, what is the area of the larger circle?

Answer : _____

Round 1 2 3 4 5

#22 Geometry – Hustle
MAΘ National Convention 2011

Two non-congruent externally tangent circles have a common external tangent of length 8. If the radius of the smaller circle is 2, what is the area of the larger circle?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2011

A right circular cylinder of volume 320π and total surface area of $80\pi + 32\pi\sqrt{10}$ has height of 8. What is the length of its radius?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2011

A right circular cylinder of volume 320π and total surface area of $80\pi + 32\pi\sqrt{10}$ has height of 8. What is the length of its radius?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2011

A right circular cylinder of volume 320π and total surface area of $80\pi + 32\pi\sqrt{10}$ has height of 8. What is the length of its radius?

Answer : _____

Round 1 2 3 4 5

#23 Geometry – Hustle
MAΘ National Convention 2011

A right circular cylinder of volume 320π and total surface area of $80\pi + 32\pi\sqrt{10}$ has height of 8. What is the length of its radius?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2011

A segment joining the midpoints of two sides of a triangle divides it into a triangle and a trapezoid whose areas have what proper fraction as their ratio?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2011

A segment joining the midpoints of two sides of a triangle divides it into a triangle and a trapezoid whose areas have what proper fraction as their ratio?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2011

A segment joining the midpoints of two sides of a triangle divides it into a triangle and a trapezoid whose areas have what proper fraction as their ratio?

Answer : _____

Round 1 2 3 4 5

#24 Geometry – Hustle
MAΘ National Convention 2011

A segment joining the midpoints of two sides of a triangle divides it into a triangle and a trapezoid whose areas have what proper fraction as their ratio?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2011

The sides of a triangle are 15, 12, and 9. What is the length (in fraction form) of the altitude to the side whose length is 15?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2011

The sides of a triangle are 15, 12, and 9. What is the length (in fraction form) of the altitude to the side whose length is 15?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2011

The sides of a triangle are 15, 12, and 9. What is the length (in fraction form) of the altitude to the side whose length is 15?

Answer : _____

Round 1 2 3 4 5

#25 Geometry – Hustle
MAΘ National Convention 2011

The sides of a triangle are 15, 12, and 9. What is the length (in fraction form) of the altitude to the side whose length is 15?

Answer : _____

Round 1 2 3 4 5