





Hustle Geometry Test #643



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#### #1 Geometry – Hustle MAO National Convention 2018

A regular polygon has 54 total diagonals. What is the degree measure of one of its interior angles?

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Round 1 2 3 4 5

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#### #2 Geometry – Hustle MAO National Convention 2018

A geometric solid is formed by using only 4 triangles, 4 rectangles, and 4 pentagons. How many vertices will this solid have?

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#### **#3 Geometry – Hustle** MAO National Convention 2018

The base of an isosceles triangle has length 2 and lies on the line y = x + 4. If the legs intersect at the origin, what is the perimeter of the triangle?

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Round	1	2	3	4	5		]	Round	1	2	3	4	5

#### #4 Geometry – Hustle MAO National Convention 2018

The radius of a particular bicycle tire is  $\frac{3}{\pi}$  feet. How many revolutions will this tire make in a ride that is exactly one mile in length?

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Round 1 2 3 4	5	Round	1	2	3	4	5		

#### #5 Geometry – Hustle MAO National Convention 2018

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## #6 Geometry – Hustle MAΘ National Convention 2018

Find the value of *x* in the diagram below.



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Round	1	2	3	4	5	Rour	d	1	2	3	4	5	

#### #7 Geometry – Hustle MAO National Convention 2018

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#### #8 Geometry – Hustle MAO National Convention 2018

Four racquet balls of radius 1 inch are stacked on a table so that each of them is tangent to the 3 others, and 3 of the balls are tangent to the surface of the table. What is the maximum distance that a point on the surface of one of the balls can be from the surface of the table?

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Round	1	2	3	4	5	Round	1	2	3	4	5			

#### #10 Geometry – Hustle MAO National Convention 2018

A right triangle has two sides of length  $\sqrt{842}$  and  $\sqrt{58}$ . What is the sum of the two possible lengths for the third side?

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Round	1	2	3	4	5												]	Ro	unc	d	1	2	3		4	5	

#### #11 Geometry – Hustle MAO National Convention 2018

If two triangles are similar, what is the greatest number of pairs of corresponding parts (sides and angles) that can be congruent without the triangles themselves being congruent?

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#### #12 Geometry – Hustle MAO National Convention 2018

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#### #13 Geometry – Hustle MAO National Convention 2018

 $\triangle ABC \cong \triangle DEF$ . If  $m \angle A = 4x + 13$ ,  $m \angle B = 36$ , and  $m \angle F = 5x + 5$ . What is  $m \angle D$ , in degrees? All numbers are in degrees.

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Round 1 2 3 4 5

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 Round 1 2 3 4 5
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#### #14 Geometry – Hustle MAO National Convention 2018

The altitude drawn to the hypotenuse of a right triangle divides the hypotenuse into segments of length 10 and 12. What is the area of this right triangle?

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Answer	:						Answer	·:_
Round	1	2	3	4	5		Round	1

#### #15 Geometry – Hustle MAO National Convention 2018

Two distinct circles are given by the equations:  $(x + 7)^2 + (y - 5)^2 = 36$  and  $(x - 4)^2 + (y + 1)^2 = 16$ .

If A is a point on the first circle and B is a point on the second circle, what is the sum of the greatest and smallest possible values for the length of  $\overline{AB}$ ?

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Round 1 2 3 4 5

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Answer :						Answer :									
Round	1	2	3	4	5	Round	1	2	3	4	5				

#### **#16 Geometry – Hustle MAO** National Convention 2018

A kite has one diagonal which is divided by the other diagonal into segments of length 5 and 16. If the area of the kite is 252, what is its perimeter?

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Round 1 2 3 4 5

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5

Answer :						Answer :								
Round	1	2	3	4	5	Round	1	2	3	4				

#### #17 Geometry – Hustle MAO National Convention 2018

Quadrilateral ABCD is inscribed in circle P. The radius of circle P is 5 in.,  $m \angle A = 10x + 2$ ,  $m \angle B = 8x + 3$ ,  $m \angle C = 68$  and  $m \angle D = 6x + 23$ , where all measures are in degrees. Find the positive difference between the degree measures of arc AB and arc CD.

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Round 1 2 3 4 5

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Answer :						Answer :										
Round	1	2	3	4	5	Round	1	2	3	4	5					

#### #18 Geometry – Hustle MAO National Convention 2018

A right rectangular prism has faces with areas of 35 and 56. If the volume of the solid is 280, what is the surface area of this prism?

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Answer :		Answer	:				
<b>Round 1 2 3</b> 4	4 5	Round	1	2	3	4	5

#### #19 Geometry – Hustle MAO National Convention 2018

A  $45^{\circ}-45^{\circ}-90^{\circ}$  triangle and  $30^{\circ}-60^{\circ}-90^{\circ}$  triangle share a hypotenuse. What is the ratio of the larger triangle area to the smaller triangle area?

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A 45°-45°-90° triangle and 30°-60°-90° triangle share a hypotenuse. What is the ratio of the larger triangle area to the smaller triangle area?

Answer :					Answer :										
Round	1	2	3	4	5					Round	1	2	3	4	5

#### #20 Geometry – Hustle MAO National Convention 2018

An isosceles trapezoid has three sides of length 10 and one side of length 22. If this trapezoid is inscribed in a circle, how far is the center of the circle from the longer base?

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Round	1	2	3	4	5	Round	1	2	3	4	5

#### #21 Geometry – Hustle MAO National Convention 2018

A regular hexagon has side length 10. What is the enclosed area of the largest equilateral triangle which will fit inside this hexagon?

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Round 1 2 3 4 5

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#### #22 Geometry – Hustle MAO National Convention 2018

The supplement of an angle is 20 degrees less than three times the complement of the angle. Find the sum, in degrees, of the complement and the supplement of this angle.

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Answer	:					Answer	:					
Round	1	2	3	4	5	Round	1	2	3	4	5	

#### #23 Geometry – Hustle MAO National Convention 2018

Ali runs around a  $\frac{1}{4}$ -mile track at a constant rate of 2 minutes per lap. Benson runs the same track at a constant rate of 3.5 minutes per lap. How many seconds will it take Ali to catch Benson from behind (or "lap him") if they both start at the same place at the same time and run the same direction?

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Answer :						Answer :						
Round	1	2	3	4	5	Round	1	2	3	4	5	

#### #24 Geometry – Hustle MAO National Convention 2018

What is the length of the altitude drawn to the longest side of a triangle whose sides are length 7, 8, and 9?

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Round 1 2 3 4 5

#### #25 Geometry – Hustle MAO National Convention 2018

The surface area of a cone is  $200\pi$ . If the sum of the radius and slant height is 25, what is the ratio of the lateral area to the base area?

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Round 1 2 3 4 5

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Round	1	2	3	4	5	Round	1	2	3	4	5
Round	1	2	3	4	5	Round	1	2	3	4	5