ROUND #1

University of North Georgia
Mathematics Tournament
April 2, 2016

Assuming that three people can fit on a surface of 10 square feet, how large would a square need to be so that the entire United States population (assume 321 million) would fit on it? Give the length of one side of that square, in miles, approximated to three decimal places.

If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #2

University of North Georgia
Mathematics Tournament
April 2, 2016

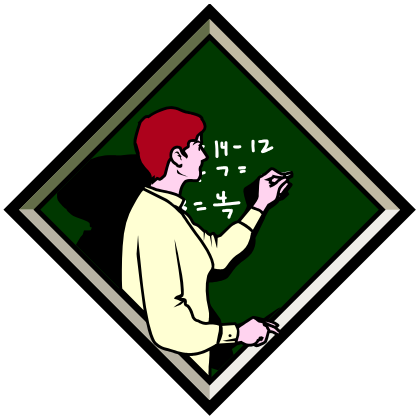
A copying machine can make copies that are 80%, 100%, or 150% as large as the original. By making copies of copies, what is the smallest number of times one must use the machine to obtain a copy that is 324% as large as the original?

If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #3

University of North Georgia
Mathematics Tournament
April 2, 2016

How many times, during a 24 hour period that begins and ends at midnight, will the hands of a clock (the hour hand and the minute hand) make a 90 degree angle?

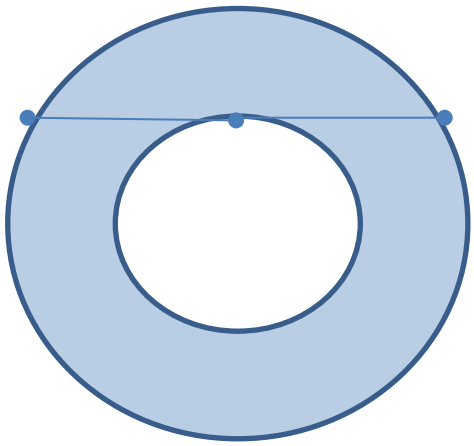


If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #4

University of North Georgia
Mathematics Tournament
April 2, 2016

Knowing that the segment shown in the picture is 8 inches long, calculate the shaded ring area between the two circles. Give the result in square inches, approximated to three decimal places.



If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #5

University of North Georgia
Mathematics Tournament
April 2, 2016

In a rectangle we increase the shorter side by 3 and it becomes a square having an area twice that of the original rectangle. What is the area of the original rectangle?

ROUND #6

University of North Georgia
Mathematics Tournament
April 2, 2016

The number P is equal to the minimum integer for which the equation

$100^x - 10^{x+\log 28} + 209 = P$ has exactly one real solution. Find the number P.

If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #7

University of North Georgia
Mathematics Tournament
April 2, 2016

What is the shortest distance between the point $(6, 5)$ and a point that lies on the line given by $y = 3x + 8$. Give the answer approximated to three decimal places.

If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #8

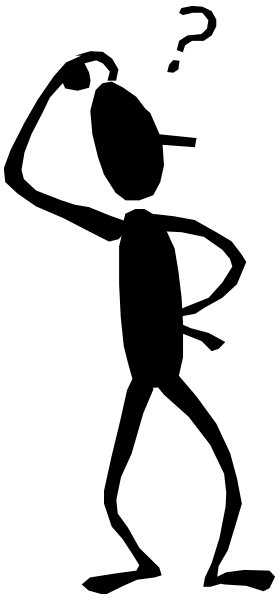
University of North Georgia
Mathematics Tournament
April 2, 2016

If $a^2+5a-2=0$, then find $a^2+\frac{10}{a}$.

If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #9

University of North Georgia
Mathematics Tournament
April 2, 2016



Solve the equation and find TWO integer solutions.

$$2\log_{18(x-1)^2(x-7)}\left(x^2-4x+3\right)+\log_{\left(x^2-4x+3\right)}\left(18(x-1)^2(x-7)\right)=3$$

If you need this document in another format, please email minsu.kim@ung.edu *or call 678-717-3546.*

ROUND #10

University of North Georgia
Mathematics Tournament
April 2, 2016

Find $\dfrac{6}{5+\dfrac{6}{5+\dfrac{6}{\vdots}}} + \dfrac{8}{16-\dfrac{64}{16-\dfrac{64}{\vdots}}}$.

If you need this document in another format, please email minsu.kim@ung.edu or call 678-717-3546.