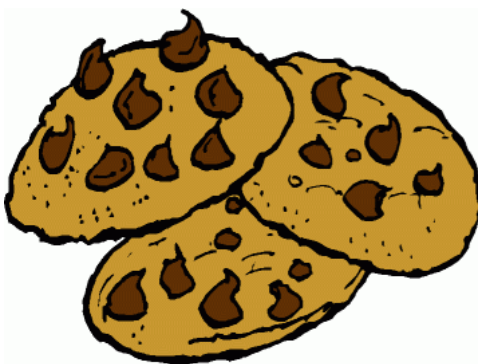


ROUND #1

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

You have 200 cookies. You give them to your friends in such a way that each friend gets at least one cookie and no two friends get the same number of cookies.

What is the largest number of friends that can receive cookies?

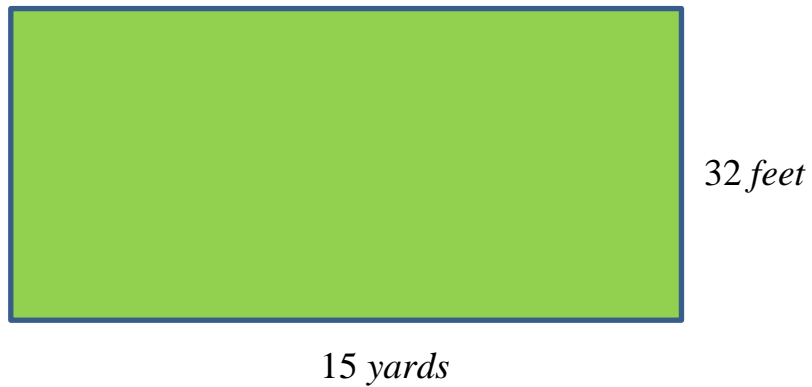


If you need this document in another format, please email minsukim@ung.edu or call 678-717-3546.

ROUND #2

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

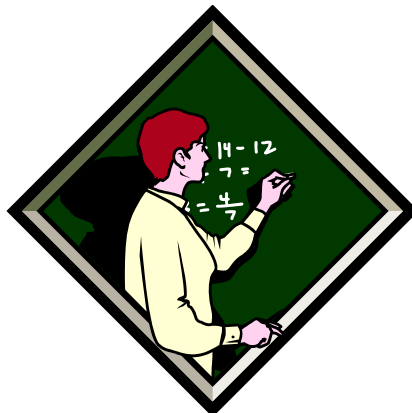
This lawn's area will be increased 15% in size. How many extra square *yards* will be added?



ROUND #3

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

Consider a sample of 10 marbles drawn from a bin that has red and green marbles. The probability that any marble we draw is red is $\mu = 0.55$ (independently, with replacement). We draw 656 independent samples. What is the probability that at least one of the samples has all green marbles? Give your answer to the nearest thousandth.



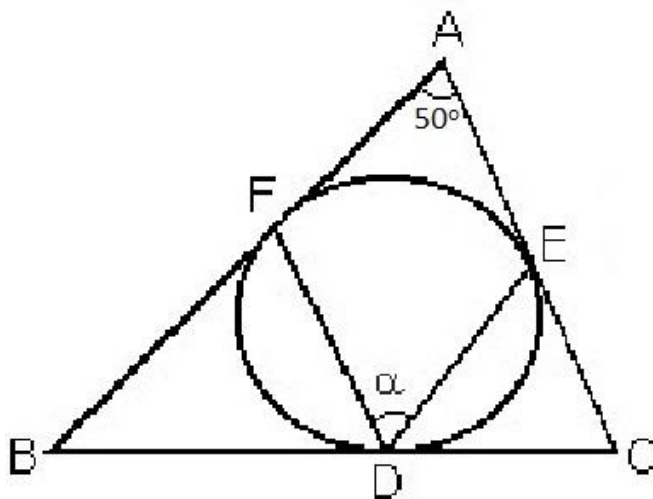
ROUND #4

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

In the figure below, ABC is a triangle with a circle inscribed and $\angle BAC = 50^\circ$.

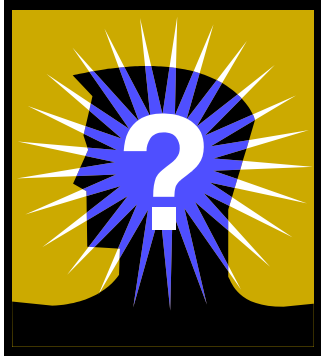
\overline{AB} is tangent to the circle at point F , \overline{AC} is tangent to the circle at point E , and

\overline{BC} is tangent to the circle at point D . What is the angle α ?



ROUND #5

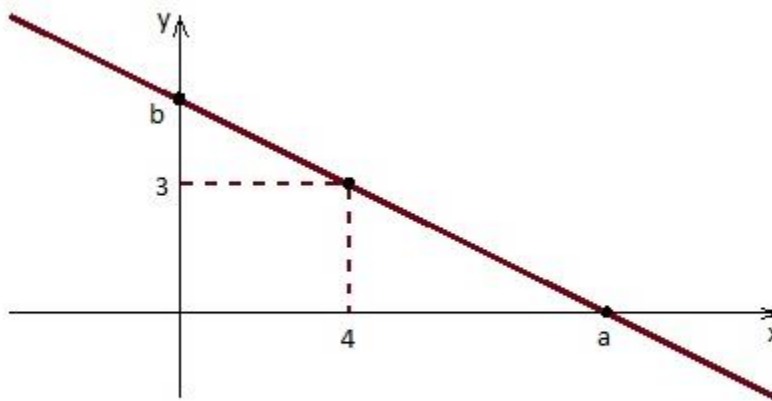
*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*



Find the acute angle Φ formed by the two lines
 $y - 3x = 0$ and $2x - 3y = 1$. Give your answer to
the nearest whole *degree*.

ROUND #6

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*



Find $(a-4)(b-3)$.

ROUND #7

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

In a triangle PQR , $\angle R = \frac{\pi}{2}$. If $\tan\left(\frac{P}{2}\right)$ and $\tan\left(\frac{Q}{2}\right)$ are the roots of the equation

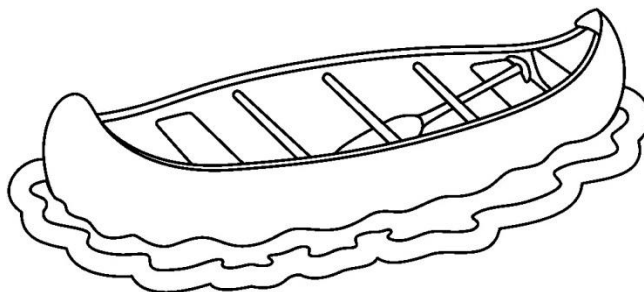
$ax^2 + bx + c = 0$, $a \neq 0$, then find a relation between a , b , and c .



ROUND #8

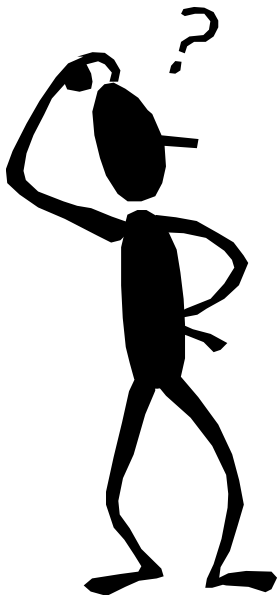
*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

Jane is in a canoe and is paddling upstream. After traveling 1 mile from her starting point, a log in the stream passes by her. She continues upstream for an additional hour and turns around. She arrives at her starting point at the same time as the log. How fast is the stream?



ROUND #9

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*



$$\text{Simplify } A = \frac{\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \cdots + \frac{1}{99} + \frac{1}{100}}{\frac{1}{99} + \frac{2}{98} + \cdots + \frac{99}{1}}.$$

ROUND #10

*University of North Georgia
Sophomore Level Mathematics Tournament
April 11, 2015*

$ABCDE$ is a five distinct-digit even number that is less than 25,000. Given that none of the digits are 3 or 6, and that four times $ABCDE$ is $EDCBA$, another even number, find $ABCDE$.

