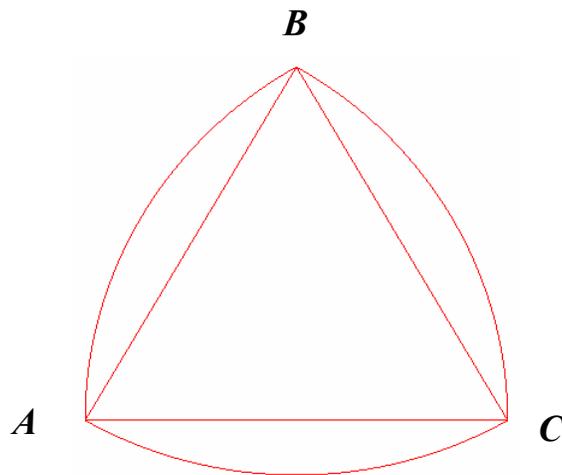


ROUND #1

*Gainesville College
Mathematics Tournament
For Two-Year Colleges
April 2, 2005*

$\triangle ABC$ is equilateral with side length 2. Attach circular arcs \widehat{AB} , \widehat{AC} , and \widehat{BC} with centers at C, B, and A respectively. Find the exact value, or an approximation accurate to 5 decimal places, of the area of the resulting figure.



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ROUND #2

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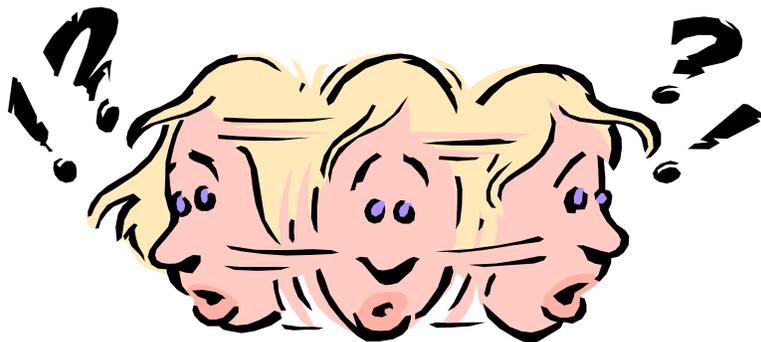
Pump *A* can empty a pool in 5 hours if pump *B* helps out for 3 hours. Likewise, pump *B* can empty the pool in 6 hours if pump *A* helps for 3 hours. How long would it take for both pumps, working together the entire time, to empty the pool?



ROUND #3

*Gainesville College
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For Two-Year Colleges
April 2, 2005*

If $x + y + z = 2$ and $xy + yz + xz = 1$, what is $x^2 + y^2 + z^2$?



ROUND #4

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April 2, 2005*



Find the 2005th digit (after the decimal point) in the decimal representation of $\frac{1}{7}$.

ROUND #5

*Gainesville College
Mathematics Tournament
For Two-Year Colleges
April 2, 2005*

At the start of the day, Michael has between \$140 and \$150 in one-dollar bills and five-dollar bills. At the end of the day, he again has only one-dollar and five-dollar bills, but he has the same number of one-dollar bills as he had five-dollar bills at the beginning of the day, and the same number of five-dollar bills as he had one-dollar bills at the beginning of the day. If he ends the day with exactly $\frac{1}{3}$ less money than he began it with, what was the exact starting amount?

