MU ALPHA THETA, MAINE '95
OMEGA BOWL - ALPHA DIVISION
ROUND I - 12 minutes

NAME:_____

STUDENT #:_____

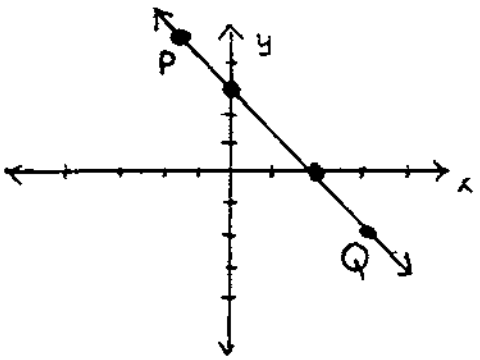
ANSWERS: 1. (2-pts.)_____

2. (3-pts.)_____

3. (5-pts.)_____

4. (8-pts.)_____

1. (2-pts.) Find the slope of line PQ.



2. (3-pts.) Aunt Emma picked 12.5 pounds of crabmeat. After packing this crabmeat into 7 ounce packages, how much crabmeat was left over if each package contained exactly 7 ounces?

3. (5-pts.) Two centimeters from the outer end of the radius of circle O, the radius bisects a twenty centimeter chord. What is the centimeter length of the radius of this circle?

4. (8-pts.) Solve the following system of equations for x and y. Write your answer in ordered pair form.
$\frac{3}{x}+\frac{2}{y}=-4$ and $\frac{-4}{x}-\frac{3}{y}=7$

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ROUND II - 12 minutes

NAME:_____

STUDENT #:_____

ANSWERS: 1. (2-pts.)_____

2. (3-pts.)_____

3. (5-pts.)_____

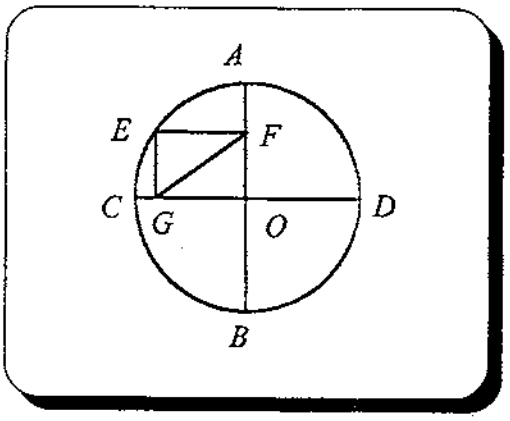
4. (8-pts.)_____

1. (2-pts.) Solve for x: $\left|\frac{3x}{4}-8\right|=-12$

2. (3-pts.) Evaluate: State the exact numerical value for
$\sin^2 10^\circ+\sin^2 20^\circ+\sin^2 30^\circ+\ldots+\sin^2 90^\circ$

3. (5-pts.) A boat has a speed of 15 mph in still water. In a stream that has a current of 5 mph, it travels a certain distance down stream and returns. Find the ratio of the average speed for the round trip to the speed in still water.

4. (8-pts.) $AB \perp CD$ at O, the center of the circle.
$EF \perp AB, EG \perp CD. EG = 6, area\ \Delta GEF = 30$ sq. units.
Find the circumference of circle O.



MU ALPHA THETA, MAINE '95
OMEGA BOWL - ALPHA DIVISION
ROUND III - 12 minutes

NAME:_____

STUDENT #:_____

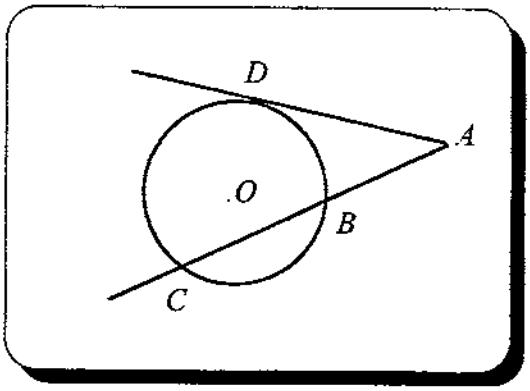
ANSWERS: 1. (2-pts.)_____

2. (3-pts.)_____

3. (5-pts.)_____

4. (8-pts.)_____

1. (2-pts.) Find AB if AD is tangent to Circle O at D, AC intersects Circle O at B and C, BC = 63, and AD = 30



2. (3-pts.) If a fox and a half can eat a dozen and a half eggs in one day, how many **hours** will it take 6 foxes to eat a dozen eggs?

3. (5-pts.) If $[3(37+q)]^2 = 13,6k9$, find the sum of k + q.

4. (8-pts.) Uncle Wilbur was exhausted after helping Aunt Sally fill the pint containers of tomato juice. Aunt Sal recommended that Uncle Wilbur go lay in the hammock for a spell. He noticed that the temperature was 25 degrees Celsius. After three hours, Uncle Wilbur was amzed to see that the temperature had risen 10 degrees Celsius. He quickly brought this to the attention of Aunt Sal. She said, I don't take much stokc in 'those' Celsuis degrees, how many degrees in Fahrenheit had the temperature risen? What was Uncle Wilbur's response, in degrees Fahrenheit?

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ROUND IV - 12 minutes

NAME:_____

STUDENT #:_____

ANSWERS: 1. (2-pts.)_____

2. (3-pts.)_____

3. (5-pts.)_____

4. (8-pts.)_____

1. (2-pts.) Expand and Simplify: $(1+i)^4$ where $i = \sqrt{-1}$

2. (3-pts.) A family room has a floor in rectangular shape with dimensions five meters by six meters. A vinyl floor tile is a square with sides of twenty-five centimeters. If one tile costs sixty-seven cents, what will it cost, in dollars.

3. (5-pts.) Find the value of x - y - z if

$$\begin{bmatrix} 3 & 5 & -6 \\ 4 & -2 & 3 \\ 2 & -7 & 5 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 19 \\ 5 \\ 9 \end{bmatrix}$$

4. (8-pts.) Solve for x: $\sqrt{2x} + 1 + \sqrt{3x-8} = 1$

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ROUND V - 12 minutes

NAME:_____

STUDENT #:_____

ANSWERS: 1. (2-pts.)_____

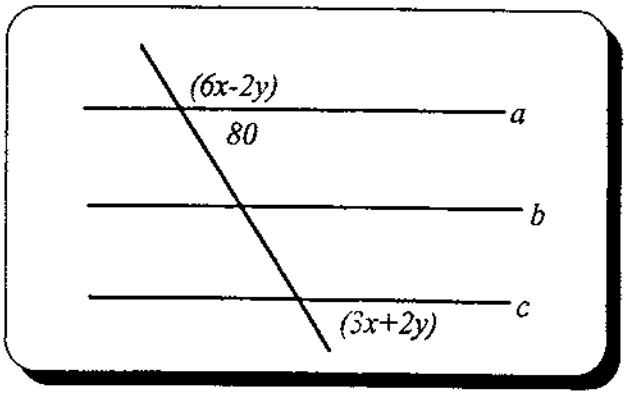
2. (3-pts.)_____

3. (5-pts.)_____

4. (8-pts.)_____

1. (2-pts.) Suppose that a photo was reduced $66\frac{2}{3}\%$, and the result was reduced again by the same percentage. To get back to the original size, it must be enlarged by what percent?

2. (3-pts.) If a || b || c, then find the value of x and y. All angles are measured in degrees.



3. (5-pts.) If $y = \frac{10^n}{n!}$ where n is a positive value, then find all positive values of n so that y will have a maximum value.

4. (8-pts.) What is the largest negative integral value of k for which the vertex of the graph of $y = 3x^2 + kx + 1$ will below the x-axis?