

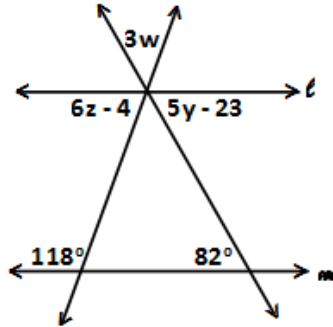
Question #1

Mav Invitational 2014

Geometry Team Round

Use the given figure, where line l is parallel to line m , to find the measures of each variable.

Compute: $\frac{W+Y}{Z}$



Question #2

Mav Invitational 2014

Geometry Team Round

Triangle MNP has coordinates $M(-4, 6)$, $N(10, -2)$ and $P(-16, 10)$. If point A is the midpoint of segment MN and point B is the midpoint of segment NP, find half the distance from point A to point B.

Question #3

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Use the given information about each right triangle to find the requested measures.

A= Find the length of the long leg in a 30-60-90 triangle that has a short leg of $4\sqrt{3}$

B= Find the length of the hypotenuse of a 30-60-90 triangle that has a long leg of $6\sqrt{3}$

C= Find the area of a right triangle that has a hypotenuse of 15 and leg of 12

D= Find the length of the hypotenuse of a right triangle that has legs of 12 and 5.

Compute: $AB - CD$

Question #4**Mav Invitational 2014****Geometry Team Round**

Use the given information about each regular polygon to find the requested angle measures.

A= The measure of an interior angle in a regular Octagon

B= The sum of the measures of the interior angles in a regular Decagon

C= The measure of an exterior angle in a regular Dodecagon.

Compute: $A + B + C$

Question #5**Mav Invitational 2014****Geometry Team Round**

A= The perimeter of a square with side $8\sqrt{3}$

B= The area of an equilateral triangle with side of 10

C= The area of a regular hexagon with a side of 12

Compute: $A + B + C$

Question #6**Mav Invitational 2014****Geometry Team Round**

A triangle has side lengths of 7, 12 and some unknown integer.

A= The maximum possible length of the unknown side

B= The minimum possible length of the unknown side

C= The number of possible integral lengths for the unknown side

Compute: $3A - 2B + C$

Question #7**Mav Invitational 2014****Geometry Team Round**

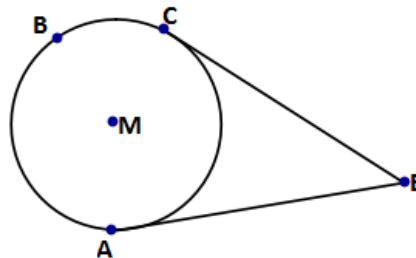
In the figure shown, points A, B, and C lie on circle M. The measure of $\angle CEA$ is $2x$, the measure of $\angle BCA$ is x and the measure of $\angle BAC$ is $2x$.

A= The measure of Arc BC

B= The measure of Arc AB

C= The measure of $\angle ABC$

Compute: $\frac{5A - 2B + 3C}{5}$



Question #8**Mav Invitational 2014****Geometry Team Round**

Determine which statements describe Quadrilateral JKLM whose coordinates are $J(-4, 7)$, $K(4, 5)$, $L(6, -3)$ and $M(-2, -1)$. For each true statement, assign the point value in parenthesis. Find the sum of the true statements.

- (2) Is a parallelogram
- (13) Is a square
- (9) Is a rectangle
- (20) Is a trapezoid
- (17) Is a rhombus
- (32) Is an isosceles trapezoid

Question #9**Mav Invitational 2014****Geometry Team Round**

Use the given point P with coordinate $(-2, 3)$ to perform each transformation

Let (A,B) represent the coordinate after translating point P vertically 6 units and horizontally -4 units

Let (C,D) represent the coordinate after rotating point P 90° counter-clockwise

Let (E,F) represent the coordinate after dilating point P by a scale factor of 2

Let (G,H) represent the coordinate after reflecting point P across the line $y = x$

Compute: $(A+C+E+G) - (B+D+F+H)$

Question #10**Mav Invitational 2014****Geometry Team Round**

Circle O is inscribed in Square ABCD which has a side length of 4. The points of tangency (E,F,G,H) are shown in the diagram.

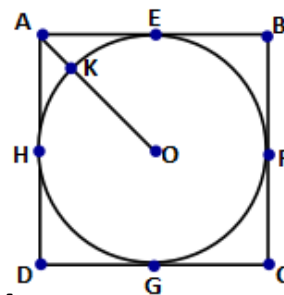
A= Length of segment AO

B= Area of EFGH

C= Length of segment AK

D= Area of Triangle AKH

Compute: $A + B + C + D$

**Question #11****Mav Invitational 2014****Geometry Team Round**

Use the given information to find the requested measures.

A= θ ; where θ is the acute angle opposite the leg of length 3 in a right triangle with legs of 3 and 4.

B= the area of an isosceles trapezoid with parallel bases of lengths 10 and 20, respectively, and congruent sides of length 13

C= the area of a regular hexagon with a side length 10

Compute: $AC + B\sqrt{3}$

Question #12**Mav Invitational 2014****Geometry Team Round**

Given two concentric circles, one with a radius of 4 and the other with a radius of 6

A= Area inside the larger circle, but outside the smaller circle

B= Probability of a dart landing inside the larger circle, but outside the smaller circle

C= Area of an equilateral triangle inscribed in the larger circle

D= Area of an equilateral triangle inscribed in the smaller circle

Compute: $A + B\sqrt{C * D}$

Question #13**Mav Invitational 2014****Geometry Team Round**

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Question #14**Mav Invitational 2014****Geometry Team Round**

Angles 1 and 2 are complementary and Angles 2 and 3 are supplementary. The measure of $\angle 1$ is $4x + 3y$, the measure of $\angle 2$ is $8x + 11y$, and the measure of $\angle 3$ is $7x - 16y$.

A= The measure of angle 1

B= The measure of angle 2

C= The measure of angle 3

Compute: $3A + 4B - C$

Question #15 Mav Invitational 2014 Geometry Team

A trapezoid on a coordinate plane has the following vertices: $(-1, 2)$, $(2, 6)$, $(2, -12)$, and $(-1, -8)$.

Find the perimeter of the trapezoid.