

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 1

A cube has sides of length 2. Find:

- A) the area of one face
- B) the surface area of the cube
- C) the volume of the cube

What is $A+B+C$?

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 2

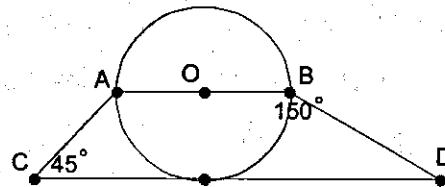
A house is shaped like a triangle with sides that are all longer than 15 ft and with angles 45° , 60° , and 75° . Find the exact total area that a dog on a 15 ft leash can roam outside of the house if the leash is tied to:

- A) the 45° vertex
- B) the 60° vertex
- C) the 75° vertex

What is $A+B+C$?

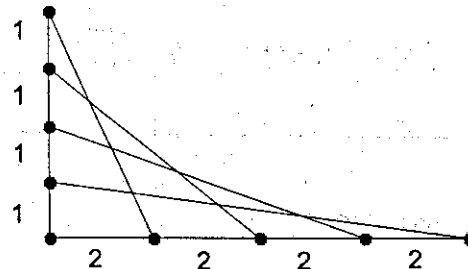
2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 3

In this diagram, the circle with center O has a diameter of 12. The measure of $\angle C$ is 45° and the measure of $\angle ABD$ is 150° . If CD is tangent to the circle, and $AB \parallel CD$, what is the exact length of segment CD ?



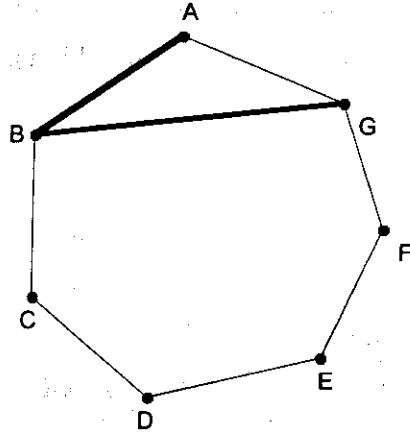
2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 4

Channing was bored in class, so she drew this line design. What is the sum of the lengths of all the segments (including the horizontal and vertical ones) in the line design, to the nearest tenth?



2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 5

Heptagon ABCDEFG is a regular heptagon with side length 1. To the nearest degree, what is the measure of angle ABG as shown in the diagram?



2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 6

Mr. Macfarlane lives far away from the school where he teaches. He leaves for school at 5:20 AM and arrives at 6:45 AM. During his car ride,

- A) How many degrees has the hour hand rotated?
- B) How many degrees has the minute hand rotated?
- C) How many degrees has the second hand rotated? (Assume that both his departure and arrival are exactly on the minute.)

What is $A + B + C$?

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 7

A triangle has side lengths 8 and 11. What is the sum of all the integer lengths for the third side that would make the triangle obtuse?

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 8

Brianna meant to drive down Straight Road, which goes due east. Instead she got lost and turned onto Angular Road 45° to the north, following it for 10 minutes. She then realized her mistake, turned due south, and drove directly back to Straight Road. If she was driving at 60 mph the entire time, how long in miles was her detour? Round your answer to the nearest hundredth.

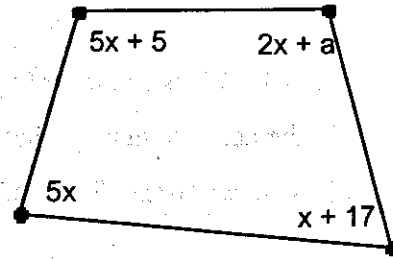
2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 13

A triangle has side lengths 20, 21, and 29. What is the area of the triangle?

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 9

In this quadrilateral, all the angle measures are integers and a is an integer between -5 and 5 . Find the value of:

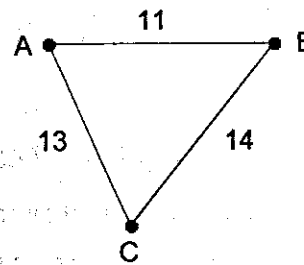
- A) a
- B) x
- C) the measure of the largest angle



What is $A + B + C$?

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM
QUESTION 10

Nolan is playing musical chairs. There are three chairs left (A, B, and C) in this arrangement. If Nolan is equally likely to be at any point along this triangle when the music stops, what is the probability that he is closest to chair A?



2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM
QUESTION 11

A right triangle with side lengths 3, 4, and 5 is rotated around one of its legs to form a cone.

A = the volume of the cone if the triangle is rotated around the leg of length 3

B = the volume of the cone if the triangle is rotated around the leg of length 4

What is $A - B$? Give an exact answer.

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 12

In a trapezoid, the smaller base is 8 units long, the larger base is 4 units longer than the height, and the area is 80 square units. What is the height of the trapezoid?

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 14

Dr. Evil and Mini-Me have bodies that are exactly similar to each other. Dr. Evil is 6 feet tall and Mini-Me is 3 feet tall. If Dr. Evil weighs 189 pounds more than Mini-Me does, how many pounds does Mini-Me weigh? Assume that weight is directly proportional to the volume of one's body.

2004 PALM HARBOR INVITATIONAL GEOMETRY TEAM QUESTION 15

The slope of a tangent line to any circle at point of tangency (x, y) is given by $-\frac{x}{y}$. On the circle

with equation $x^2 + y^2 = 36$, what is the exact y -value where the tangent line at point $(3\sqrt{2}, 3\sqrt{2})$ intersects the y -axis?