

**SOML MEET 2**  
**EVENT II**  
**GEOMETRY**

**NAME:** \_\_\_\_\_  
**TEAM:** \_\_\_\_\_  
**SCHOOL:** \_\_\_\_\_

1. [2 Points] A student is trying to determine his hat size. He measures around his head and gets 22 inches. Hat sizes are given in terms of the diameter of the head. Assuming a circular cross-section for one's head, what would be the hat size to the nearest half unit?

ANS:

2. [3 Points] A plumbing supply company has rectangular boxes that are 60 inches long, 28 inches wide and 16 inches high. What is the longest rod, cut to a whole number of inches, that can be packed into a box? Assume the diameter of the rod is of negligible thickness.

ANS:

3. [5 Points] Tennis balls are packed three to a can, snugly. Assuming the can is a cylinder, express the volume of the can in terms of the radius of a ball,  $r$ . Be exact.

ANS:

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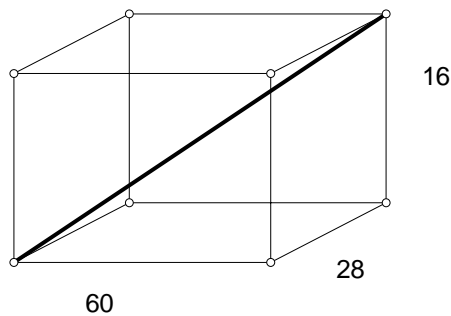
1. [2 Points] A student is trying to determine his hat size. He measures around his head and gets 22 inches. Hat sizes are given in terms of the diameter of the head. Assuming a circular cross-section for one's head, what would be the hat size to the nearest half unit?

**Solution:**  $22 \div \pi = 7.0028\dots$  which is 7 to the nearest half unit.

ANS: 7

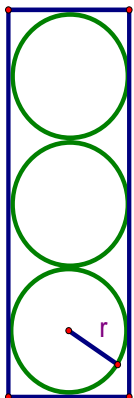
2. [3 Points] A plumbing supply company has rectangular boxes that are 60 inches long, 28 inches wide and 16 inches high. What is the longest rod, cut to a whole number of inches, that can be packed into a box? Assume the diameter of the rod is of negligible thickness.

**Solution:**  $\sqrt{\sqrt{60^2 + 28^2}^2 + 16^2} = 68$  inches



ANS: 68 inches

3. [5 Points] Tennis balls are packed three to a can, snugly. Assuming the can is a cylinder, express the volume of the can in terms of the radius of a ball,  $r$ . Be exact.



**Solution:**

Height =  $6r$ ; cross-sectional area =  $\pi r^2$

Volume = their product =  $6\pi r^3$

ANS:  $6\pi r^3$