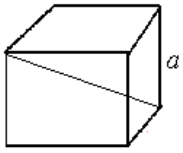
First name: _____ Last name: _____ Student ID: _____

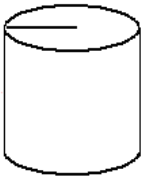
Chapter 7 Measurement Homework

1. The surface of a cube is 54 cm^2, find the volume of the cube.

2. The cubic diagonal is $4\sqrt{3}$, find the volume of the cube.

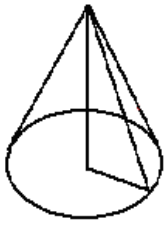


3. The side area of a cylinder is 30 cm^2 with the cylinder height 5 cm, find the volume of the cylinder.



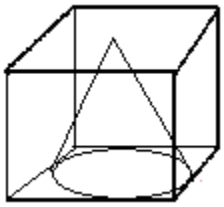
4. If the total length of the edges of a regular triangular prism (equilateral triangular based prism) is 36 and the height is 6, find the surface area.

5. The volume of a cone with height 6 is 18π, find the area of the surface of the cone.

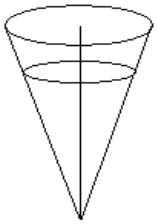


6. A cone has same volume with a cylinder which is 5 cm high. If they have same area of the bases and the cylinder has volume 45π cm^3, find the area of the surface of the cone.

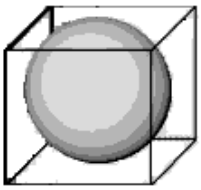
7. A cone is inscribed in a cubic box with edge length of 3, find the area of the surface of the cone.



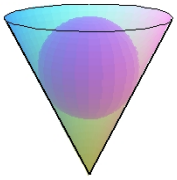
8. A cone container contains some water with depth 2/3 of the height of the cone. Find the percentage of the volume of the water to the cone.



9. If a sphere is inscribed in a cubic box with length 3, find the surface and the volume of the sphere.



10. A sphere is inscribed in a closed cone. This means the sphere touching not only the base of the cone, but also the cone side. If the volume of the sphere is 36π and the height of the cone is 8, find the volume of the cone.



11. Determine the minimum length of wood needed to build a rectangular frame with an area of 70 cm^2.

12. Randy is building a rectangular, fenced dog run beside his barn. He has a budget of $1050 for fencing and it costs him $8.75 per metre for the materials. He plans to use the side of the barn as one side of the fenced area. What are the dimensions of a dog run that maximizes the area Randy can enclose?

13. A perfume manufacturer wants its new perfume package to be a square-based prism with a capacity of 120 ml.

a) What should the *dimensions* of the box be to require the minimum amount of cardboard to construct the box? Round the dimensions to the nearest hundredth of a centimetre. (1 mL = 1 cm^3)

b) Determine the least amount of cardboard required to construct this box? Round the nearest square centimetre.

14. A vineyard is designing a new cylindrical barrel with a lid in which to age wine. They are planning to create a container with a volume of 450 000 cm^3 that is as cost efficient as possible.

a) Determine the dimensions of the barrel that requires the least material. Round the dimensions to the nearest hundredth of a centimetre.

b) If oak costs \$0.005/cm^2, find the cost to make 100 oak barrels.