



Jakarta
International
School
7th Grade

Practice Test - Green
Area and Volume

Name:

Date:

Score:

38

Clearly show required work. Check Carefully! (2 points per answer)

1. A Sandbox for Geoffrey

Mr. and Mrs. Hesslink want to build a sandbox for their son *Geoffrey*. They bought 5 wooden boards to create the sandbox frame. They chose wood because they didn't know exactly what size they'd make the sandbox, so they want to be able to cut the pieces after they figure out the best size. Each board is 8 feet long. Plastic must also be purchased for the bottom of the sandbox. However, they are not sure how much to buy. First they must determine the size the sandbox is going to be.

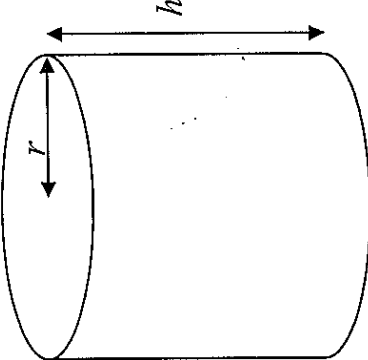
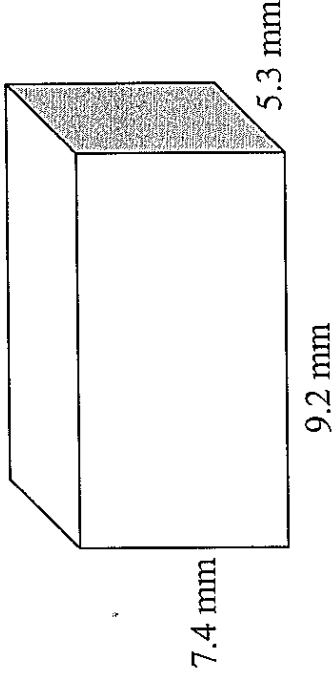
A. What are all of the possible rectangular sandboxes that they could make using all of the wood they purchased? Only consider whole number possibilities.

B. Which one do you think they should build? Why?

C. How much plastic do the Hesslinks need to buy to cover the bottom of the sand box?

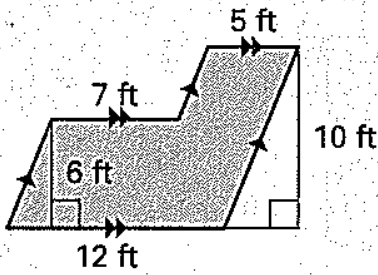
2. If each side of a perfect cube is stretched to be 2 units longer, by how many cubic units will the volume of the cube increase?

3. Calculate the volume and surface area of the following 3D shapes. Make sure you include a formula and ALL working steps.

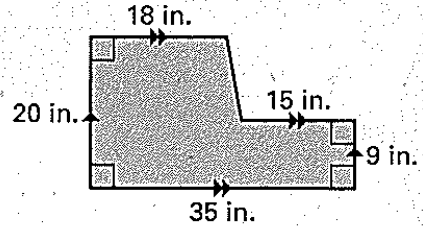
<p>a. The following cylinder has a radius of 8cm and a height of 20 cm.</p> 		<p>Surface Area (show formula used)</p>	<p>Volume (show formula used)</p>
<p>b. The shaded portion is the base.</p> 		<p>Surface Area (show formula used)</p>	<p>Volume (show formula used)</p>

4. Find the area of each figure below

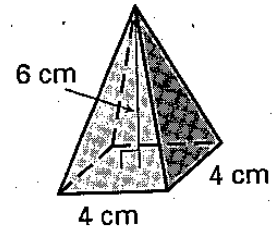
A.



B.



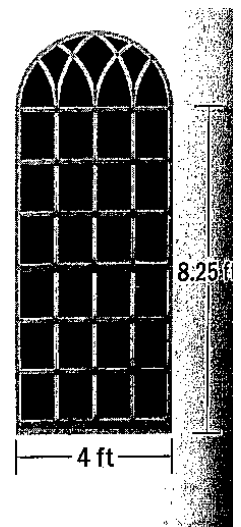
5. Find the volume of the square based pyramid pictured here.



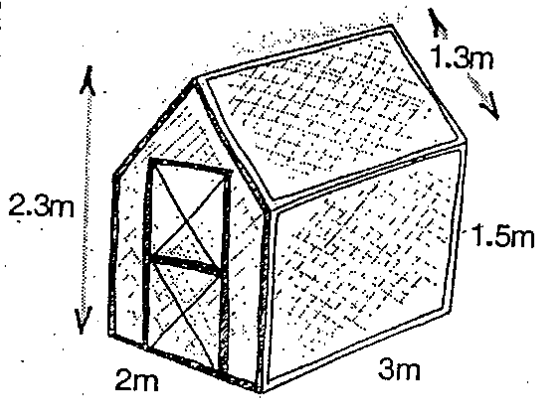
6. A goat is tethered to a stake in the ground with a 5 meter long rope. The goat can graze to the full length of the rope a full 360° around the stake. How much area does the goat have in which to graze?

7. A bedroom is 18 ft long, 14 ft wide and 8 ft high.
- a. Find the cost of painting the four walls with two coats of paint costing \$9.50 per gallon. Each gallon covers 256 ft^2 with a single coat.
- b. Find the cost of carpeting the floor with carpet costing $\$5/\text{ft}^2$.
- c. Find the cost of covering the ceiling with acoustic tile costing $\$7.50/\text{ft}^2$.

8. **Norman Windows** - A Norman window from Congress Hall in Philadelphia consists of a rectangle and a half circle, as shown. Find the area of the window to the nearest square foot.



9. Glenn is making an aviary (a big bird cage). The dimensions of the aviary are shown in this diagram. The total height is 2.3 m. Calculate the cost of covering the wooden frame with wire netting at \$3.95 per square meter.



10. Find the *circumference* of the circle and the *area* of the shaded region below. (4 points)

