



Jakarta International
School
7th Grade

Practice Test - Blue
Area & Volume

Name: _____

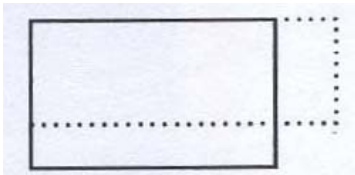
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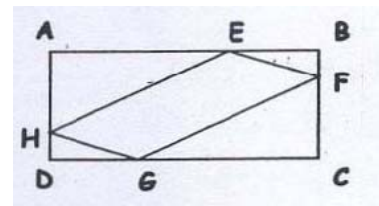
36

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

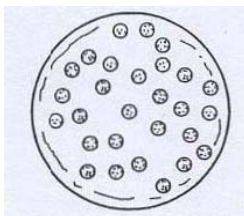
1. The length of a rectangle is increased by 25%. To keep the area of the rectangle the same, by what percent must the width be decreased?



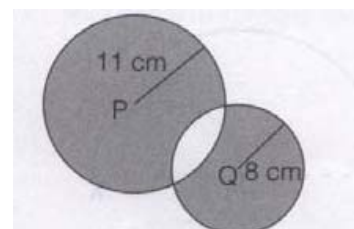
2. ABCD is a rectangle, AB = 6, BC = 4, EFGH is a parallelogram, AE/BE = 2/1, and BF/FC = 1/3. What is the ratio of the area of parallelogram EFGH to the area of rectangle ABCD? Express your answer as a common fraction.



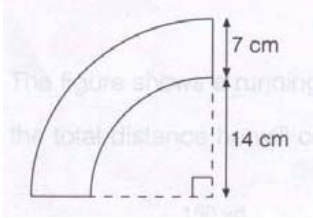
3. Twenty-eight circular pepperoni slices 1" in diameter, are placed on a circular pizza. The slices neither overlap nor hang off the edge. The diameter of the pizza is 14". How many square inches of pizza are not covered by pepperoni slices? Express your answer in terms of π .



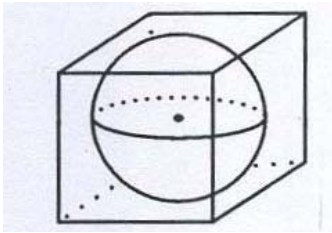
4. In the figure shown, the area where the two circles intersect is 76.5 cm^2 . Find the area of the shaded parts. (Take $\pi = 3.14$)



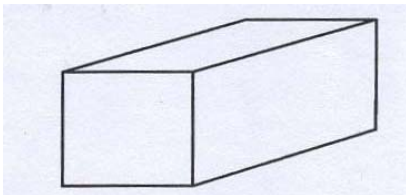
5. In the figure shown, find the perimeter (take $\pi = \frac{22}{7}$)



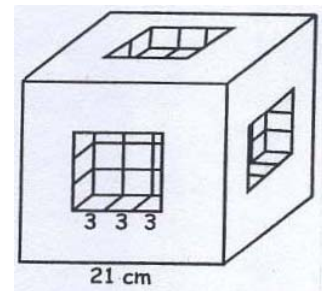
6. Which has a greater impact on the volume of a cone, tripling the height or doubling the radius? Explain your answer in detail.
7. The length, width and height of a rectangular box are each decreased by 50%. By what percent, to the nearest tenth, is the volume of the box decreased?
8. The length of the diameter of this spherical ball is equal to the height of the box in which it is placed. The box is a cube and has an edge length of 30 cm. How many cubic centimeters of the box are not occupied by the solid sphere? Express your answer in terms of π .



9. In cubic inches, what is the volume of a right rectangular solid with face areas of 33, 55 and 60 square inches?



10. A solid cube measures 21 cm on an edge. 9 cubes of edge length 3 cm are removed from the center of each face of the original cube. What is the number of square centimeters in the surface area of the new object?

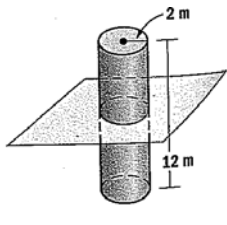


11. Two pyramids have congruent bases. The slant height of the first pyramid is one third of the slant height of the second pyramid. Is the surface area of the first pyramid one third of the surface area of the second pyramid? Explain your reasoning.

12. When a plane intersects a solid, the intersection of the plane and the solid forms a *cross section*.

a. A plane intersects a cylinder parallel to the bases of the cylinder, as shown. What shape does the cross section have? To the nearest square meter, what is the area of the cross section?

b. Another plane intersects the cylinder perpendicular to the bases and passes through the centers of the bases. What shape does the cross section have? What is the area of the cross section?



13. An oil company makes closed cylindrical tanks for storing petrol underground. Each tank has a radius of 2.4 meters and a depth of 3 meters. Before being installed underground, a tank is coated with a special sealant to prevent corrosion. This sealant cost \$8.50 per m^2 to apply. The sealing is applied to the top, the bottom and the sides. Calculate the cost of coating one of these tanks on the inside and the outside.

14. Billy's family goat liked to jump their fence and eat grass in their neighbor's yard. Billy's dad told the kids that he would have a contest to see which child could solve this problem efficiently. He asked his children to find the best possible place to tie the goat so that it would eat the most grass in their square yard. He reminded the kids that the total length of their fence was 600 feet. He gave the children some rope and a stake to which to tie the goat. Please help Billy win the contest by answering and explaining the following questions:

A. Where should the stake be placed so that the goat will eat the most grass?

B. How long should the rope be, and how much space will the goat have to eat the grass?

C. How much grass will have to be mowed?

D. If the lawn mower cuts 15,000 square inches in one and a half minutes, about how many hours are needed to cut the remainder of the grass?