GEOMETRY

Exam 12

Based on Chapter 12 (pages 790 - 865) in your textbook.

Student's Name _____ **Student Number** _____

Street _____ **City** _____ **State** _____ **Zip Code** _____

BE SURE YOU FULLY UNDERSTAND ALL CHECKPOINT PROBLEMS FROM THIS CHAPTER **BEFORE** YOU COMPLETE THIS EXAM. **SHOW** AS MUCH **WORK** AS POSSIBLE.

1. Complete the table below for the five regular polyhedra. Use Euler's Theorem to show a check of your values.

Platonic Solid	Faces	Vertices	Edges	F + V = E + 2 ?
Tetrahedron	4			
Cube	6			
Octahedron	8	6	12	8 + 6 = 12 + 2 ✓
Dodecahedron	12		30	
Icosahedron	20	12		

2. Find the number of faces, vertices, and edges of a right pentagonal prism.

   faces _____

   vertices _____

   edges _____

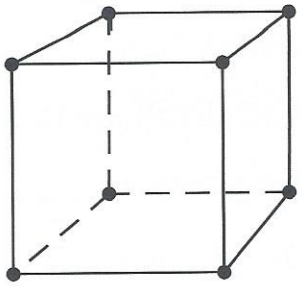
3. Find the number of faces, vertices, and edges of a regular hexagonal pyramid.

   faces _____

   vertices _____

   edges _____

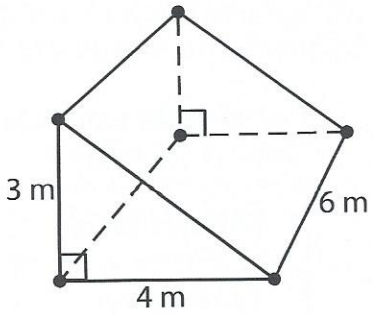
4. Circle the shape it is NOT possible for a cross section of a cube to take.



equilateral triangle *rectangle* *square*

octagon *rhombus* *isosceles triangle*

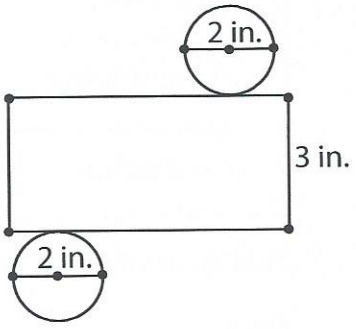
5. Find the lateral area and volume of the right triangular prism.
Hint: The base is a 3-4-5 right triangle.



Lateral Area = _____

Volume = _____

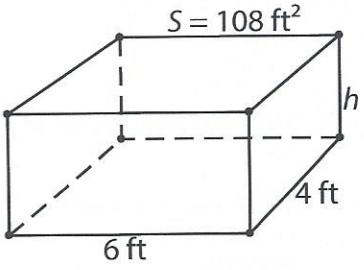
6. Find the surface area and volume of the solid formed by the net.



Surface Area = _____

Volume = _____

7. Find the height of the right rectangular prism.



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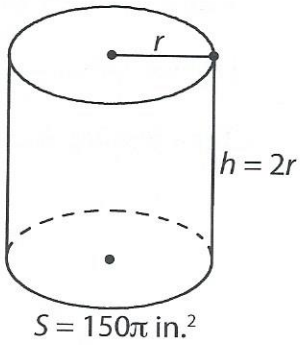
8. Find the radius of the right cylinder shown, in which the height of the cylinder is equal to its diameter.



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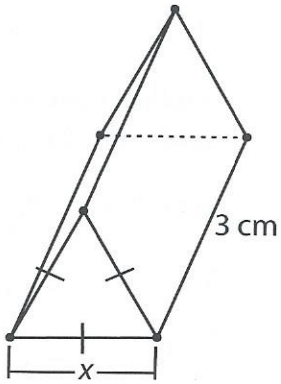
9. The lateral area of the right regular triangular prism is 18 cm². Find the total surface area. Give your answer in decimal form rounded to 2 decimal places.
Hint: The base is an equilateral triangle.



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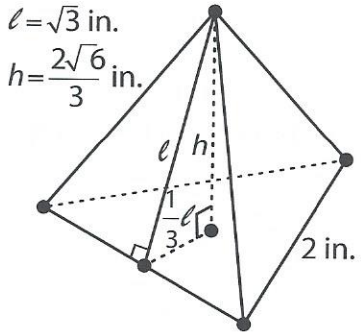
10. Find the surface area and volume of a tetrahedron with 2 in. edges.
Hint: All four faces are equilateral triangles.



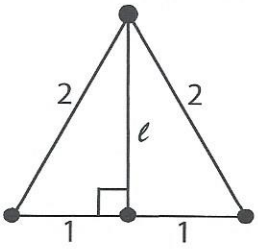
11. The shown net forms a regular square pyramid with all lateral and base edges the same length. Find the following:

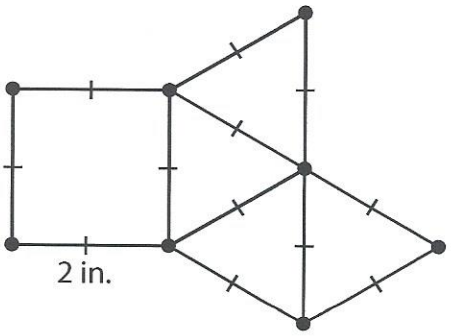
Slant height ℓ = _____ Base Perimeter P = _____

Base Area B = _____

Lateral Area L = _____

Surface Area S = _____





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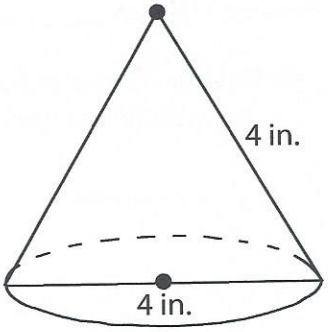
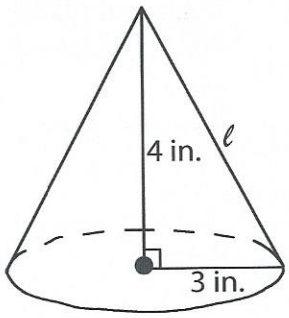
12. Find the lateral area and the total surface area of a right cone with a diameter and slant height of 4 inches.



Lateral Area = _____

Total Surface Area = _____

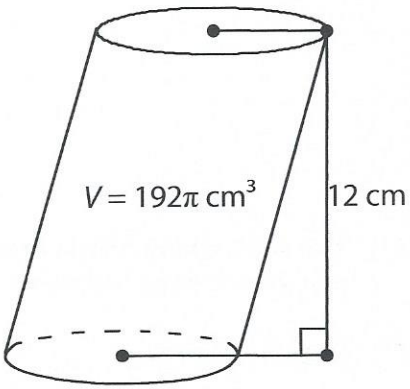
13. Find the total surface area and the volume of a right cone with a radius of 3 inches and a height of 4 inches.



Total Surface Area = _____

Volume = _____

14. Find the radius of the oblique cylinder.



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15. Find the volume of an oblique square prism with all edges measuring 5 cm and a height of 4 cm.

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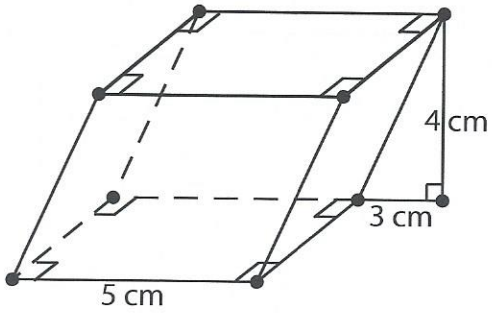
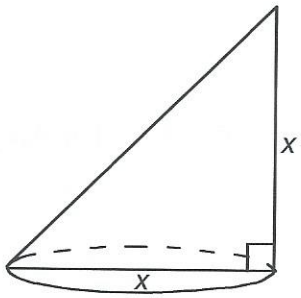


16. The volume of an oblique cone with equal diameter and height is 18π cm^3. Find the height and radius (to the nearest cm).

height = _____

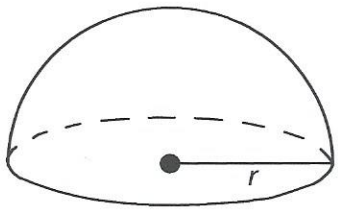
radius = _____



17. If a regulation NBA basketball has a circumference of 29.5 inches, then find the following:

diameter = _____ radius = _____ Surface Area = _____ Volume = _____

18. A hemispherical dome holds a volume of 486π ft^3.
Find the surface area (omit the area of the circle).
Hint: Volume of a hemisphere $= \frac{1}{2} \cdot$ *volume of a sphere.*
Find r, then $\frac{1}{2} \cdot$ *surface area of a sphere.*



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19. Find the volume using the shaded base.

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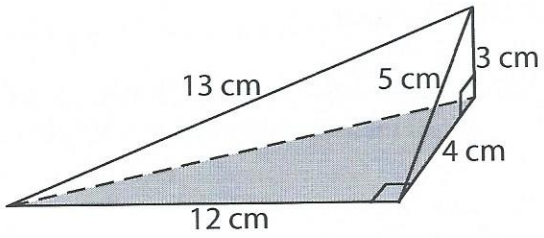


T *F* The same volume can be found using the 3-4-5 triangle as the base and a 12 cm height.

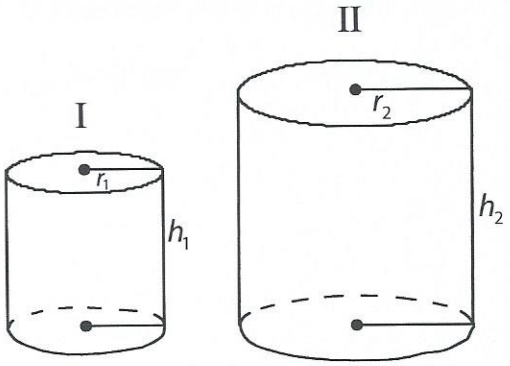
T *F* The height of the pyramid using the 5-12-13 base is 2.4 cm.

20. The surface areas of two similar cylinders are 8π in.^{2} and 18π in.^{2}. Find the following ratios:

$$\frac{\text{Area I}}{\text{Area II}} = \frac{a^2}{b^2} =$$

$$\frac{r_1}{r_2} = \frac{h_1}{h_2} = \frac{a}{b} =$$

$$\frac{\text{Volume I}}{\text{Volume II}} = \frac{a^3}{b^3} =$$



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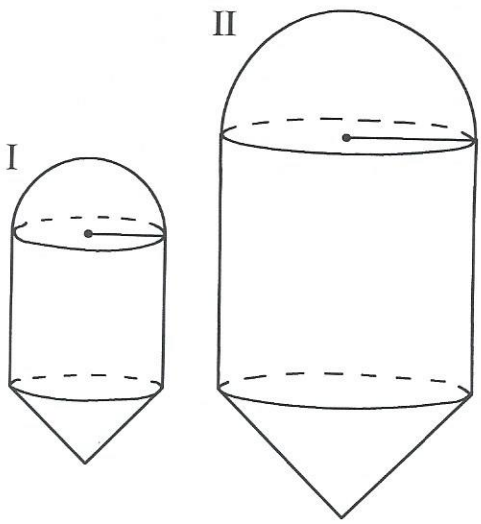
21. (A) Two similar solids have a scale factor of 3 : 5. If the height of solid I is 3 cm, find the height of solid II.



(B) If the surface area of I is 54π cm^2, find the surface area of II.

(C) If the volume of II is 250π cm^3, find the volume of I.

22. If the ratio of the volumes of two similar solids is 8 : 125, then what is the ratio of their surface areas?

FILL IN YOUR NAME AND THE OTHER REQUIRED INFORMATION ON EACH PAGE OF THE EXAM AND MAIL THE EXAM TO AMERICAN SCHOOL.