



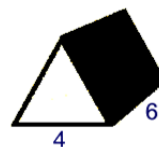
# Geometric Relationships

Name \_\_\_\_\_

1. The radius of a sphere is 5 feet. Find the area of the great circle of this sphere. [1]  $5\pi$  [2]  $25\pi$  [3]  $125\pi$  [4]  $625\pi$

2. A cylinder and a cone each have a radius of 3 in. and a height of 8 in. What is the ratio of the volume of the cone to the volume of the cylinder?  
 [1]  $V_{\text{cone}} : V_{\text{cylinder}} = 1 : 2$  [3]  $V_{\text{cone}} : V_{\text{cylinder}} = 1 : \pi$   
 [2]  $V_{\text{cone}} : V_{\text{cylinder}} = 1 : 3$  [4]  $V_{\text{cone}} : V_{\text{cylinder}} = 1 : 1$

3. Find the volume of a prism whose base is an equilateral triangle with a side of 4 and whose length is 6.  
 [1] 24 [2]  $16\sqrt{3}$  [3]  $24\sqrt{3}$  [4] 48



4. The surface area of a regular square pyramid is  $S = B + \frac{1}{2}ps$  where  $B$  is the area of the base,  $p$  is the perimeter of the base and  $s$  is the slant height. If the base is a square with a side length of 10 and the slant height is 15, find the surface area of the pyramid.  
 [1] 85 [2] 220 [3] 310 [4] 400

5. Which of the following formulas will find the surface area of a cylinder with one open end and one closed end?  
 [1]  $SA = 2\pi rh + 2\pi r^2$  [3]  $SA = 2\pi rh - \pi r^2$   
 [2]  $SA = 2\pi rh + \pi r^2$  [4]  $SA = 2\pi rh$

6. Which platonic solid will be created when the net shown at the right is assembled?  
 [1] tetrahedron [3] octahedron  
 [2] cube [4] dodecahedron



7. Soda is sold in aluminum cans that measure 6 inches in height and 2 inches in diameter. How many cubic inches of soda are contained in a full can? (Round answer to the nearest tenth of a cubic inch.)  
 [1] 12.0 [2] 18.8 [3] 24.0 [4] 75.4

8. Find the volume, to the nearest cubic inch, of a cone whose radius is 12 inches and whose height is 15 inches.  
 [1] 2827 [2] 2262 [3] 565 [4] 188

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. Top soil is sold by the cubic yard. To the *nearest cubic yard*, how much top soil is needed to create a flower bed with soil 4 feet wide by 25 feet long by 6 inches deep? [1] 50 [2] 27 [3] 6 [4] 2

9. \_\_\_\_\_

10. How many sides does a polygon have if the sum of its interior angles is  $720^\circ$ ? [1] 5 [2] 6 [3] 7 [4] 8

10. \_\_\_\_\_

11. Find the number of degrees in each interior angle of a dodecagon? [1]  $135^\circ$  [2]  $144^\circ$  [3]  $150^\circ$  [4] cannot be determined

11. \_\_\_\_\_

12. Find the sum of the exterior angles of a 15 sided polygon. [1] 2340 [2] 360 [3] 156 [4] 24

12. \_\_\_\_\_

13. If two planes are perpendicular to the same line,  
[1] they are perpendicular. [3] they intersect but are not perpendicular.  
[2] they are parallel. [4] none of the above.

13. \_\_\_\_\_

14. What is a polygon called if the sum of its interior angles equals  $1440^\circ$ ? [1] hexagon [2] octagon [3] decagon [4] dodecagon

14. \_\_\_\_\_

15. Each interior angle of a regular polygon measures  $162^\circ$ . How many sides does the polygon have? [1] 20 [2] 18 [3] 16 [4] cannot be determined

15. \_\_\_\_\_

16. When assembled, the net shown at the right will create a:  
[1] cube. [2] cylinder. [3] cone. [4] prism.



16. \_\_\_\_\_

17. Find the volume of a hemisphere whose radius is 10 feet. Round answer to the *nearest cubic foot*. [1] 419 [2] 1047 [3] 2094 [4] 4189

17. \_\_\_\_\_

18. How many sides in a cube? [1] 4 [2] 6 [3] 9 [4] 12

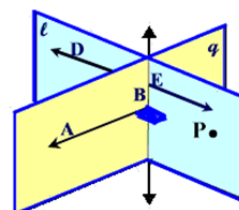
18. \_\_\_\_\_

19. Find the measure of each exterior angle of a regular hexagon. [1]  $90^\circ$  [2]  $72^\circ$  [3]  $60^\circ$  [4]  $45^\circ$

19. \_\_\_\_\_

20. Regarding the diagram shown, which of the following statements is TRUE?

- [1] Planes  $l$  and  $q$  are parallel planes.
- [2] Planes  $l$  and  $q$  intersect in line  $\overline{DE}$ .
- [3] Point  $P$  is in plane  $l$ .
- [4] None of the statements are true.



20. \_\_\_\_\_