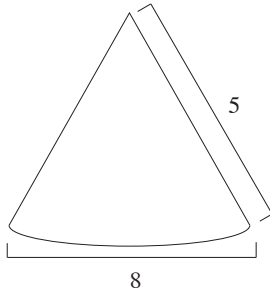


Comprehensive Plane and Solid Geometry Drill

The answers can be found in Part IV.



3. What is the volume of the cone above?

- (A) 50.265
- (B) 83.776
- (C) 150.796
- (D) 201.062
- (E) 251.327

14. A square has vertices $(0, 3)$, $(6, 0)$, $(3, 9)$, and $(9, 6)$. If the coordinates of all points are tripled, then the area of the resulting square is how many times greater than the original?

- (A) 1.732
- (B) 3
- (C) 6
- (D) 9
- (E) 27

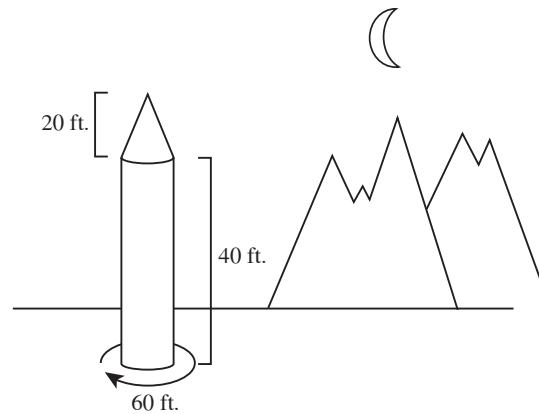
19. An equilateral triangle is located in the coordinate plane with vertices $(3, 3)$, $(3, 9)$ and $(8.169, 6)$. Which of the following could be a fourth point added to the triangle to create a parallelogram?

- I. $(8.196, 12)$
- II. $(8.196, 0)$
- III. $(-2.196, 6)$

- (A) I only
- (B) I and II only
- (C) II only
- (D) II and III only
- (E) I, II, and III

25. A prism has hexagonal bases and 6 rectangular sides. How many edges does this prism have?

- (A) 6
- (B) 12
- (C) 18
- (D) 19
- (E) 24



26. A wizard's tower (shown above) is comprised of a cylinder 40 feet high and 60 feet around topped with a cone of the same circumference that is 20 feet high. If the wizard's tower is to be painted with a paint which covers 100 square feet per gallon, how many gallons of paint will be required to paint the tower?

- (A) 6.649
- (B) 24.000
- (C) 30.649
- (D) 113.097
- (E) 664.884

32. A sphere and a cone have equal volumes. If the radius of the sphere is x , the radius of the cone is y , and the height of the cone is x , then what is the value of x ?

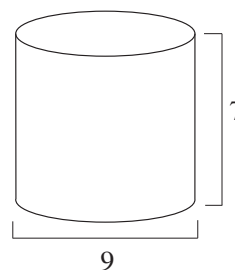
- (A) $\frac{y}{2}$
 (B) $\frac{y^2}{2}$
 (C) y
 (D) $2y$
 (E) \sqrt{y}

38. What is the area of an equilateral triangle located in the coordinate plane with vertices $(a + 3, b)$, $(a - 3, b + 8)$, and (c, d) ?

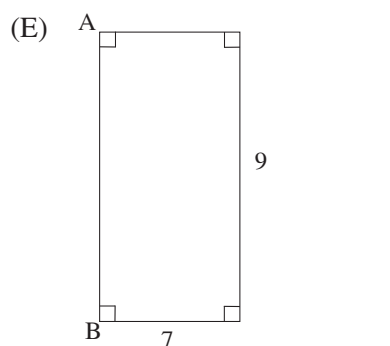
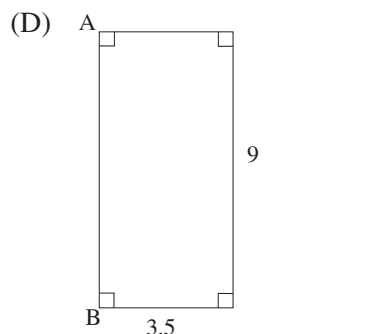
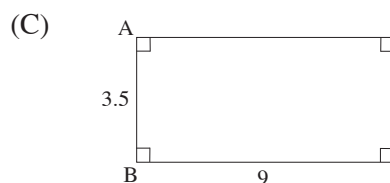
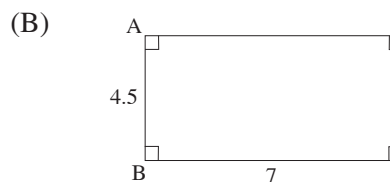
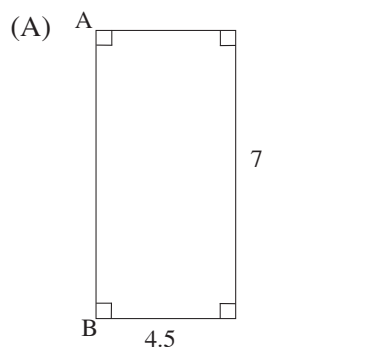
- (A) 10
 (B) $10\sqrt{3}$
 (C) 25
 (D) $25\sqrt{3}$
 (E) $50\sqrt{3}$

41. If a cylinder's diameter is equal to its height and its surface area is equal to its volume, then what is the greatest distance between two points within the cylinder?

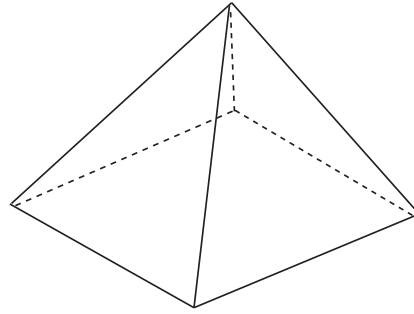
- (A) 3
 (B) $3\sqrt{2}$
 (C) 6
 (D) $6\sqrt{2}$
 (E) It cannot be determined from the information given.



45. Which of the following, when rotated around AB , would create the cylinder shown above?



48. A parallelogram is located in the polar coordinate system with vertices $(0, 0)$, $(2, \frac{\pi}{6})$, $(4, 0)$, and (r, θ) . What is the area of the parallelogram?
- (A) 0.073
 (B) 4
 (C) 4.619
 (D) 5.819
 (E) 6.928



50. The pyramid above has a square base. If each edge of the pyramid is s , then what is the height of the pyramid?
- (A) $\frac{s\sqrt{2}}{2}$
 (B) $s\sqrt{2}$
 (C) s
 (D) $\frac{s^2}{2}$
 (E) $\frac{\sqrt{s}}{2}$