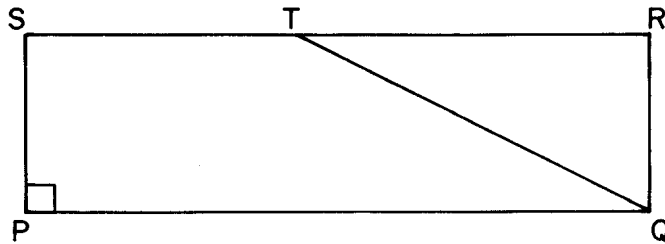


1. Which figure has the largest area?

- (1) a square whose side measures 6
- (2) a circle whose diameter measures 6
- (3) a triangle whose base and height each measure 6
- (4) an equilateral triangle whose side measures 6

2. The perimeter of a square is $4a$. What is the area of the square?

3. In the accompanying diagram, $PQRS$ is a rectangle. The measure of \overline{RQ} is represented by x , and the ratio of RQ to RT is 1:2. The length of \overline{ST} exceeds the length of \overline{RQ} by 4.



If the area of rectangle $PQRS$ is 39, what is the value of x ?

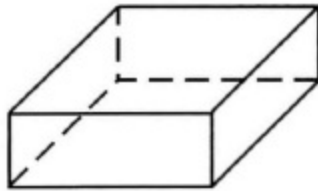
4. If the length of a rectangle is $5\sqrt{2}$ and the width is $2\sqrt{3}$, what is the area of the rectangle?

5. If a parallelogram has a base of $6x$ and a height of $2x$, what is the area of the parallelogram in terms of x ?

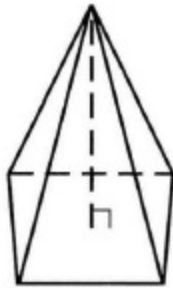
6. The endpoints of one side of a regular pentagon are $(-1, 4)$ and $(2, 3)$. What is the perimeter of the pentagon?
7. If each side of a rectangle is doubled, the area of the rectangle will
8. If the length of a rectangle is doubled and its width is multiplied by 4, the area of the rectangle is multiplied by
9. The surface area of a sphere is 2304π square inches. The length of a radius of the sphere, in inches, is
10. A designer needs to create perfectly circular necklaces. The necklaces each need to have a radius of 10 cm. What is the largest number of necklaces that can be made from 1000 cm of wire?
11. A right circular cylinder has a volume of 1,000 cubic inches and a height of 8 inches. What is the radius of the cylinder to the *nearest tenth of an inch*?
12. A box in the shape of a cube has a volume of 64 cubic inches. What is the length of a side of the box?

13. Which figure can have the same cross section as a sphere?

(1)



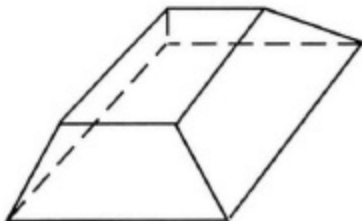
(2)



(3)



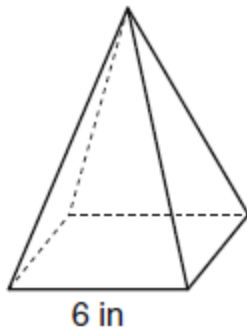
(4)



14. The density of the American white oak tree is 752 kilograms per cubic meter. If the trunk of an American white oak tree has a circumference of 4.5 meters and the height of the trunk is 8 meters, what is the approximate number of kilograms of the trunk?

15. A right circular cone has a diameter of $10\sqrt{2}$ and a height of 12. What is the volume of the cone in terms of π ?

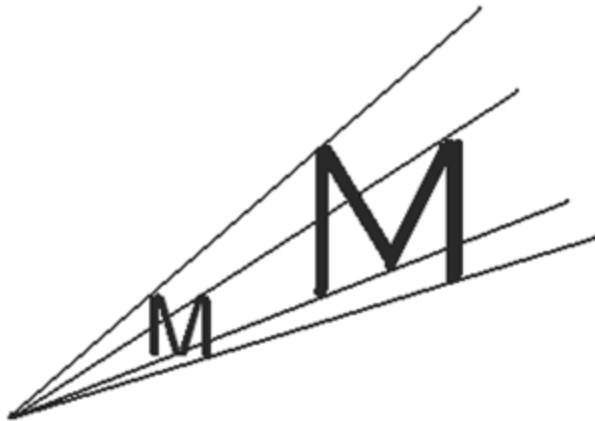
16. As shown in the diagram below, a regular pyramid has a square base whose side measures 6 inches.



If the altitude of the pyramid measures 12 inches, its volume, in cubic inches, is

17. If an equilateral triangle is continuously rotated around one of its medians, which 3-dimensional object is generated?
- (1) cone (2) pyramid (3) prism (4) sphere
18. A side of a cube measures 4 centimeters and a side of a smaller cube measures 2 centimeters. The volume of the larger cube is how many times the volume of the smaller cube?

19. A triangle is dilated by a scale factor of 3 with the center of dilation at the origin. Which statement is true?
- (1) The area of the image is nine times the area of the original triangle.
 - (2) The perimeter of the image is nine times the perimeter of the original triangle.
 - (3) The slope of any side of the image is three times the slope of the corresponding side of the original triangle.
 - (4) The measure of each angle in the image is three times the measure of the corresponding angle of the original triangle.
20. Which transformation for letter M is shown in the accompanying diagram?



21. In a rectangle, the length is twice the width, and the perimeter is 48. Find the area of the rectangle.
22. The measure of the length of a rectangle is three times the measure of the width, and the perimeter is 32. Find the area of the rectangle.

23. Find the area of a right triangle whose legs measure 5 and 12.
24. Two prisms with equal altitudes have equal volumes. The base of one prism is a square with a side length of 5 inches. The base of the second prism is a rectangle with a side length of 10 inches. Determine and state, in inches, the measure of the width of the rectangle.

