

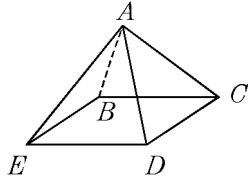
Grade 7 Hon Prep Work  
8.3 Vol. of Prisms & Cylinders

Name \_\_\_\_\_

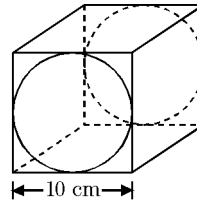
Date \_\_\_\_\_

1. The total surface area of a cube is  $150\text{ cm}^2$ . What is the volume in cubic centimeters of the cube?
2. The sum of the measures of the edges of a cube is 48 cm. What is the volume of the cube in cubic centimeters?
3. What is the volume, in cubic centimeters, of a pyramid with a square base whose edge measures 6 cm and whose height is 8 cm?
4. What is the volume, in cubic centimeters, of a circular cone whose base has a radius of 5 cm and whose height is 12 cm? Let  $\pi = 3.14$ .
5. What is the volume, in cubic centimeters, of a circular cone whose base has a circumference of 25.12 cm and whose height is 15 cm? Let  $\pi = 3.14$ .
6. If the radius of a cylinder is doubled and its altitude is cut in half, what is the ratio of the volume of the original cylinder to the volume of the altered cylinder? Express your answer in the form  $a:b$ .
7. A swimming pool's surface forms a rectangle measures 25 m long by 15 m wide. The pool is 2 m deep at the shallow end and the depth increases at a constant rate to 4 m deep at the other end. How many liters of water will the pool hold?
8. The sum of the lengths of all the edges of a cube is 120 inches. Find the number of cubic inches in the volume of the cube.

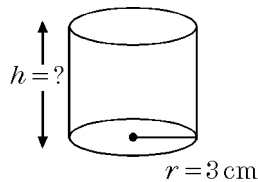
9. Given right square pyramid  $ABCDE$ , with square base  $BCDE$ . Perimeter of square  $BCDE$  is  $32\sqrt{2}$ . If  $AB = AC = AD = AE = 10$ , find the number of cubic units in the volume of the pyramid.



10. What is the remaining volume in cubic centimeters if a cylinder with a radius of 5 cm is removed from a cube whose sides measure 10 cm? Express your answer in terms of  $\pi$ .



11. The volume of the cylinder shown is  $45\pi$  cubic centimeters. What is the height in centimeters of the cylinder?

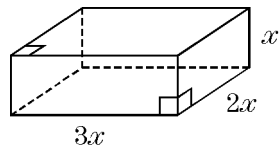


12. If you double the radius of a cylinder while you halve the height, by what number is the volume multiplied?

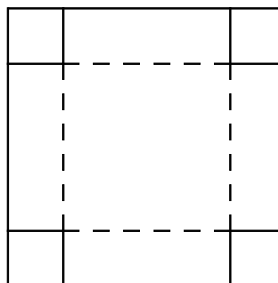
13. The dimensions of a rectangle are in the ratio  $3 : 4$ , and its perimeter is 28. The rectangle is rolled up to form a right circular cylinder with the longer side of the rectangle forming the circumference of the base of the cylinder and the shorter side forming the altitude. What is the volume in cubic units of the cylinder? Express the answer in terms of  $\pi$ .

14. The side, front, and bottom faces of a rectangular solid have areas of 32, 24, and 48 square units respectively. What is the number of cubic units in the volume of the solid?

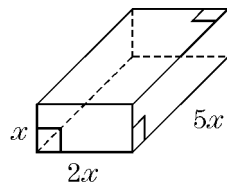
15. What is the value of  $x$  if the volume of the box shown is 48 cubic centimeters?



16. A 10-inch by 10-inch piece of cardboard has a 2-inch by 2-inch square cut out of each corner. The sides are then folded up to form a box. What is the volume, in cubic inches, of the box?

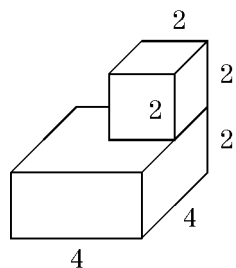


17. What is the largest integer  $x$  such that the volume of the box shown is at most 1992 cubic units?



18. If a  $25\text{ cm} \times 12\text{ cm} \times 7\text{ cm}$  full box of paper towels contains 175 individual towels, what is the volume of each towel in cubic centimeters?

19. Find the number of cubic units in the union of the two right prisms shown.



20. The length of a side of a cube is 8 units. Express, as a common fraction, the ratio of the number of square units in the surface area of the cube to the number of cubic units in its volume.

**Answer List**

- |                                    |   |                           |
|------------------------------------|---|---------------------------|
| 1. 125 (cm <sup>3</sup> )          | 2. 64 (cm <sup>3</sup> )                | 3. 96 (cm <sup>3</sup> )  |
| 4. 314 (cm <sup>3</sup> )          | 5. 251.2 (cm <sup>3</sup> )             | 6. 1 : 2                  |
| 7. 1,125,000 (L)                   | 8. 1000 (in <sup>3</sup> )              | 9. 256 (cubic units)      |
| 10. 1000 – 250π (cm <sup>3</sup> ) | 11. 5 (cm)                              | 12. 2                     |
| 13. $\frac{96}{\pi}$ (cubic units) | 14. 192 (units <sup>2</sup> )           | 15. 2 (cm)                |
| 16. 72 (in <sup>3</sup> )          | 17. 5                                   | 18. 12 (cm <sup>3</sup> ) |
| 19. 40 (units <sup>3</sup> )       | 20. $\frac{3}{4}$ (units <sup>2</sup> ) |                           |

**Catalog List**

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|---------------|---------------|---------------|
| 1. MCC CC 2   | 2. MCC CC 9   | 3. MCC CC 11  |
| 4. MCC CC 13  | 5. MCC CC 16  | 6. MCC CC 17  |
| 7. MCC CC 23  | 8. MCC CC 26  | 9. MCC CC 28  |
| 10. MCC CC 6  | 11. MCC CC 43 | 12. MCC CC 44 |
| 13. MCC CC 37 | 14. MCC CC 36 | 15. MCC CC 50 |
| 16. MCC CC 46 | 17. MCC CC 47 | 18. MCC CC 57 |
| 19. MCC CC 63 | 20. MCC CC 51 |               |