

Name:

4.5 Classwork: Volume of cylinders, cones, pyramids, spheres

1. Find the volume of a rectangular prism with length 2 cm, width 5 cm, and height 3 cm.

2. Find the volume of a pyramid ($V = \frac{1}{3}Bh$) having a height of 11.3 inches and with a square base having side lengths of 7 inches. Express your result to the *nearest cubic inch*.

3. Find the volume of a sphere with a radius of 30 inches, to the *nearest whole cubic inch*.
(The formula for the volume of a *sphere* is $V = \frac{4}{3}\pi r^3$)

4. A waffle cone has a radius of 2 inches and height of 4 inches.
 - (a) Write down the general formula for the volume of a cone.

 - (b) Find the volume of the waffle cone.

5. A given sphere has a radius of 6 inches.
 - (a) Write down the general formula for the volume of a sphere, using r to represent the radius.

 - (b) Find the volume of the sphere, to the *nearest whole cubic inch*.

6. A triangle has an area of 68 square centimeters. Its height is 16 centimeters. Find the length of its base.

7. A pyramid with a square base has a volume of 576 cubic inches. Its height is the same as the lengths of the sides of the base. Find the area of its base.

Given the volume formula $V = \frac{1}{3}(s^2)h$ for a pyramid with a square base ($B = s^2$).

- (a) Write down the variable representing the height
- (b) Write down the variable representing the length of the base's side
- (c) Write an equation relating the two variables in (a) and (b)
- (d) Substitute and solve

$$V = \frac{1}{3}(s^2)h$$

8. The volume of a sphere is $(121\frac{1}{2})\pi$. Find its radius.

9. The perimeter of a square is 10 inches. Find its area.

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10. A sphere has a radius of 5 centimeters. CCSSM.8.G.C.9

(a) Write down the general formula for the volume of a sphere.

(b) Find the volume of the sphere, rounded to the nearest cubic centimeter.

11. A cylinder is 12.3 cm tall and has a volume of 966 cubic cm. Find the area of the base of the cylinder. Express your result to the *nearest hundredth of a square centimeter*.

Model the situation with an equation.

Do NOT solve!

12. A large concrete post in the shape of a cylinder has a volume of 250 cubic feet. Its height is 12 feet. Find the radius of the base of the post.

13. A spherical cork fishing net float has a volume of 4000 cubic centimeters. Find its radius.

14. The volume of a cone having a **diameter** of 10 inches is 200 cubic inches. Find the cone's height.

15. A sphere has a radius of 9 centimeters. CCSSM.8.G.C.9

(a) Write down the general formula for the volume of a sphere.

- (b) Find the volume of the sphere, rounded to the nearest cubic centimeter.
16. A cylinder is 12.3 cm tall and has a volume of 966 cubic cm. Find the area of the base of the cylinder. Express your result to the *nearest hundredth of a square centimeter*.