Volume of other 3D shapes (cylinders, cones, pyramids, spheres, etc)

Mana Maths

Te reo Māori terms

puoto
cylinder
Open in Te Aka

koeko
cone
Open in Te Aka

rōrahi
volume
Open in Te Aka

ahutoru
solid shape
Open in Te Aka

Volume of other 3D shapes (cylinders, cones, pyramids, spheres, etc) — Foundation

1. A cylinder has radius 3 cm and height 8 cm. Find its volume in terms of π.

2. A cylinder has radius 5 m and height 4 m. Find its volume in terms of π.

3. A cone has radius 6 cm and height 9 cm. Find its volume in terms of π.

4. A cone has radius 4 m and height 12 m. Find its volume in terms of π.

5. A sphere has radius 3 cm. Find its volume in terms of π.

6. A sphere has radius 6 m. Find its volume in terms of π.

7. A square pyramid has base side 10 cm and perpendicular height 9 cm. Find its volume.

8. A square pyramid has base side 12 m and perpendicular height 5 m. Find its volume.

9. A rectangular pyramid has base 8 cm by 5 cm and height 9 cm. Find its volume.

10. A cylinder has volume 81π cm^3 and height 9 cm. Find the radius.

11. A cone has volume 48π cm^3 and height 4 cm. Find the radius.

12. A sphere has volume $500\pi/3$ cm^3. Find the radius.

13. A square pyramid has volume 144 cm^3 and base side 6 cm. Find the height.

14. A cylinder has radius 7 cm. If the height doubles, what happens to the volume?

Volume of other 3D shapes (cylinders, cones, pyramids, spheres, etc) — Proficient

1. A can is a cylinder with radius 4 cm and height 15 cm. Find its volume in terms of π.

2. A traffic cone has radius 10 cm and height 24 cm. Find its volume in terms of π.

3. A ball has radius 7 cm. Find its volume in terms of π.

4. A square pyramid has base side 9 cm and height 14 cm. Find its volume.

5. A rectangular pyramid has base 12 m by 7 m and height 10 m. Find its volume.

6. A cylinder has volume 320π cm^3 and radius 8 cm. Find its height.

7. A cone has volume 75π m^3 and radius 5 m. Find its height.

8. A cylinder and a cone have the same radius 6 cm and the same height 12 cm. Find both volumes and compare them.

9. A sphere has volume $500\pi/3$ cm^3. Find its radius.

10. A square pyramid has volume 392 cm^3 and height 6 cm. Find the side length of the base.

11. A cylindrical tank has radius 2.5 m and height 3 m. Find its volume correct to 1 decimal place.

12. A hemisphere has radius 9 cm. Find its volume in terms of π.

Volume of other 3D shapes (cylinders, cones, pyramids, spheres, etc) — Excellence

1. A cylinder and a sphere both have radius 6 cm. The cylinder has height 8 cm. Which has the greater volume, and by how much? Give your answer in terms of π.

2. A cone and a cylinder have the same radius and the same height. Explain why the cylinder's volume is three times the cone's volume.

3. A square pyramid has base side 12 cm. Its volume is 576 cm^3. Find the perpendicular height.

4. A sphere has the same volume as a cylinder with radius 3 cm and height 16 cm. Form an equation and solve for the sphere's radius exactly.

5. A cone has volume 128π cm^3 and height 24 cm. Find the radius.

6. A cylindrical tank has diameter 10 m and depth 4 m. It is 70% full. How many cubic metres of water are in the tank? Give your answer correct to 1 decimal place.

7. A square pyramid has the same base area and height as a prism. The prism volume is 540 cm^3. Find the pyramid volume and justify your answer.

8. A sphere has radius r. Write an expression for the volume of a hemisphere in terms of r.

9. A cone has radius 9 cm and slant height 15 cm. Find its perpendicular height, then its volume in terms of π.

10. A cylinder has radius 4 cm. Its volume is the same as a cone with radius 8 cm. Find the ratio of the cylinder height to the cone height.

11. A solid metal sphere of radius 6 cm is melted and recast into a cylinder of radius 3 cm. Find the height of the cylinder.

12. A square pyramid has volume 250 cm^3 and height 6 cm. Find the side length of the base correct to 1 decimal place.

13. A toy is made from a hemisphere of radius 4 cm joined to a cone of radius 4 cm and height 9 cm. Find the total volume in terms of π.

14. A sphere has volume 288π cm^3. Form an equation and solve for the radius.

15. A cone and a pyramid both have volume 180 cm^3. The cone has radius 6 cm. The pyramid has square base side 6 cm. Find the height of each solid.

16. A cylinder has radius 5 cm and volume 200π cm^3. If the radius is doubled and the height is halved, what is the new volume?