

Round Solids: Cylinder, Cone, Sphere Volume

Grade 8 math · Test · Standards: 8.G.C.9

Name: _____ Date: _____ Class: _____

This test covers the volume of cylinders, cones, and spheres, including missing dimensions and combined solids. It has 8 questions worth 20 points and should take about 45 minutes. Give units with every answer and use 3.14 only when the question asks for it.

Standards: 8.G.C.9 · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Cylinder volume (2 points)

A cylinder has base radius 7 ft and height 9 ft. Calculate its volume as an exact value with π .

Question 2 Cone volume (2 points)

A cone has base radius 9 m and height 10 m. Calculate its volume as an exact value with π .

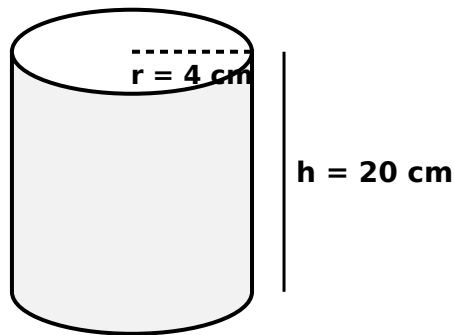
Question 3 Sphere volume (3 points)

A sphere has diameter 15 cm.

- Find its radius. (1 point)
- Calculate its volume as an exact value with π . (1 point)
- Calculate its volume taking π as 3.14. (1 point)

Question 4 Water bottle (3 points)

A cylindrical water bottle is shown.



A cylindrical water bottle.

- a. Calculate its volume as an exact value with π . (1 point)
- b. Calculate its volume taking π as 3.14. (1 point)
- c. Knowing that 1 cm^3 equals 1 mL, how many full 250 mL cups can be filled from a full bottle? (1 point)

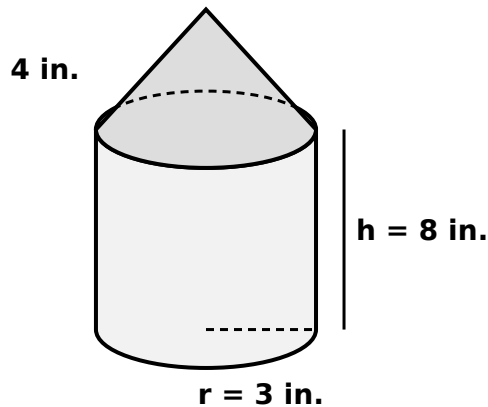
Question 5 Missing height (3 points)

A cone has a volume of $75\pi \text{ in}^3$ and radius 5 in.

- a. Find the height of the cone. (2 points)
- b. A cylinder has the same radius and height. Find its volume. (1 point)

Question 6 Composite solid (3 points)

A solid is a cylinder with a cone on top. The cylinder has radius 3 in. and height 8 in. The cone has the same radius and height 4 in.



A cylinder topped by a cone.

- a. Calculate how much the cylinder holds. (1 point)
- b. Calculate how much the cone holds. (1 point)
- c. Add up the total volume taking π as 3.14. (1 point)

Question 7 Sphere and cylinder (2 points)

A solid ball has radius 6 in. A cylinder has the same radius and height 12 in.

- a. Find the volume of each as an exact value with π . (1 point)
- b. What fraction of the cylinder's volume is the sphere's volume? (1 point)

Question 8 Gravel pile (2 points)

A conical pile of gravel has diameter 10 ft and height 6 ft. Take π to be 3.14 and find its volume.