

Volumes of Cylinders, Cones, Pyramids and Spheres

Grade 10 – Geometry math · Test · Standards: G-GMD.A.1, G-GMD.A.3

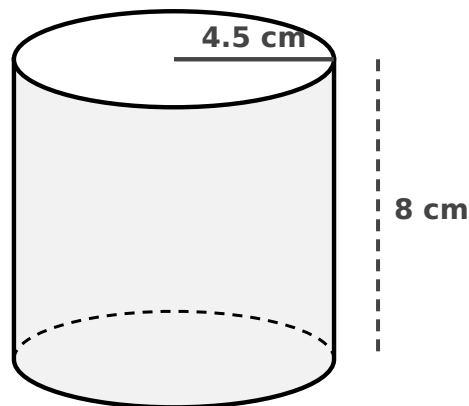
Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points and is designed for 45 minutes. A calculator is allowed. Show the formula you use, keep π exact until the final rounding, and attach cubic units.

Standards: G-GMD.A.1, G-GMD.A.3 · **Level:** Grade 10 Geometry

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

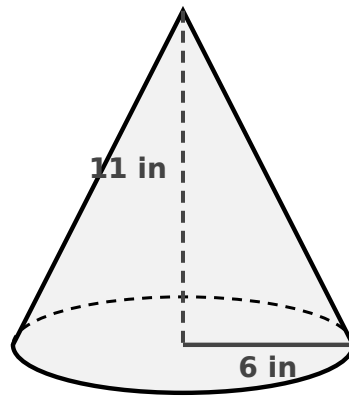
Question 1 Cylinder Volume (2 points)



Not drawn to scale.

Find the volume to the nearest tenth.

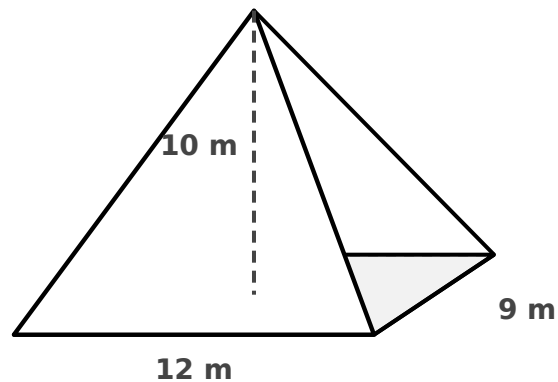
Question 2 Cone Volume (2 points)



Not drawn to scale.

A funnel has the shape of this cone. Calculate how much it holds, rounded to tenths.

Question 3 Pyramid Volume (3 points)



Not drawn to scale.

Find the volume of the pyramid.

Question 4 Sphere Volume (2 points)

A spherical weather balloon has radius 1.8 meters. Find the volume of air it holds to the nearest tenth.

Question 5 Cavalieri Explanation (2 points)

Two prisms each have a base area of 40 square inches and a height of 9 inches. One is a right prism and the other is slanted. Explain why their volumes are equal and find the volume.

Question 6 Capsule Volume (3 points)

A medicine capsule is a cylinder of radius 3 millimeters and length 10 millimeters with a hemisphere attached to each end. Find its volume exactly and to the nearest tenth.

Question 7 Radius from Volume (3 points)

A cone has volume 75π cubic centimeters and height 9 centimeters. Find its radius.

Question 8 Area of a Circle (3 points)

A circle of radius 6 centimeters is cut into thin wedges and rearranged into an approximate parallelogram. Give its base and height and the area they produce. Explain how this argument leads to the formula πr^2 .