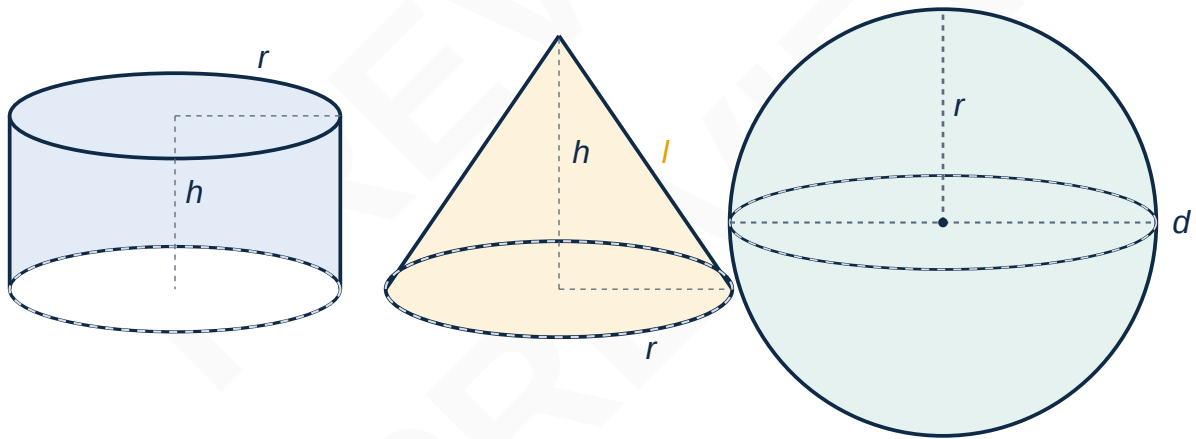


Volume of Cylinders, Cones & Spheres

Complete Unit — Notes, Drills, Applications & Assessments (Grade 8)



UM Printables

Premium Math Resource | TpT | CCSS 8.G.C.9

PREVIEW EDITION - 6 of 35 pages

Table of Contents - Full Unit Scope

CCSS 8.G.C.9

This preview shows 6 of the 35 pages in the complete unit. Below is the full table of contents so you can see exactly what you get with the full version. Pages marked with a **[LOCKED]** icon are excluded from this preview.

	Teacher Notes & Pacing Guide (10-day plan)	2	
	Formula Reference Page	5	[LOCKED]
Topic 1:	Cylinders — Deriving Volume, Missing Dimensions	7	Preview Page 4
Topic 2:	Cones — Relationship to Cylinders, Slant vs. Vertical Height	9	[LOCKED]
Topic 3:	Spheres — Volume and Finding Radius	11	[LOCKED]
	Volume Computation Drill (35 Problems) + Answer Key	13	Preview Page 5
Topic 4:	Mixed Solids & Composite Figures	15	[LOCKED]
Topic 5:	Real-World Applications & Unit Conversions	17	[LOCKED]
	Finding Missing Dimensions (20 Problems) + Answer Key	19	[LOCKED]
	Composite Figures Activity (15 Problems) + Answer Key	20	[LOCKED]
	Real-World Applications (20 Problems) + Answer Key	22	[LOCKED]
	Cumulative Unit Review + Answer Key	25	[LOCKED]
	Unit Quiz + Answer Key	26	[LOCKED]
	Comprehensive Unit Test + Worked Solutions	28	[LOCKED]
	Glossary of Key Terms	33	[LOCKED]

WHAT YOU GET IN THE FULL VERSION

35 pages of premium instructional content - **90+ practice problems** - **2 full assessments** (Quiz + Unit Test) - **Worked solutions for every problem** - **Teacher pacing guide** for an 8–10 day unit - **Glossary** of key terms.

Formula Reference Page - Sample

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The full version includes this complete formula reference page plus a 'Key Relationships & Conversions' table covering cone-cylinder ratios, hemisphere formulas, slant vs. vertical height, and unit conversions. Below is a sample of the three core formulas.

Volume of a Cylinder

$$V = \pi r^2 h$$

Where: V = Volume, $\pi \approx 3.14$, r = radius of circular base, h = vertical height.

Volume of a Cone

$$V = \frac{1}{3} \pi r^2 h$$

Where: V = Volume, $\pi \approx 3.14$, r = radius of circular base, h = **vertical** height (NOT slant height).

Volume of a Sphere

$$V = \frac{4}{3} \pi r^3$$

Where: V = Volume, $\pi \approx 3.14$, r = radius of the sphere. If given diameter (d), remember $r = d \div 2$.

Key Relationships & Conversions

[The full version includes a 5-row reference table: Cone & Cylinder ratio, Hemisphere & Sphere, Slant vs. Vertical Height, Capsule Formula, and Unit Conversions ($m^3 \rightarrow L$, $cm^3 \rightarrow mL$, $ft^3 \rightarrow gal$) - See Full Version]

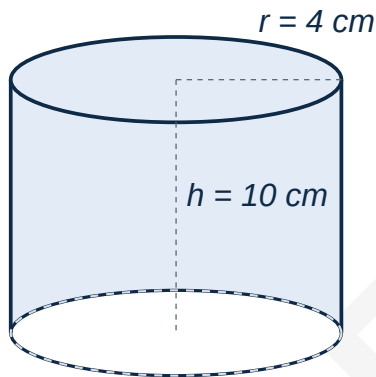
Topic 1: Volume of Cylinders - Sample

CCSS 8.G.C.9

Deriving $V = \pi r^2 h$ from Stacking

A cylinder is a solid with two parallel, congruent circular bases. We can think of a cylinder as a stack of infinitely many thin circular disks—like a roll of coins. The volume of one disk is the area of its circular base, $A = \pi r^2$. By Cavalieri's Principle, stacking these cross-sections to a height of h gives total volume = base area $\times$ height.

Base Area (B)	$\times$	Stacked Height	=	Volume (V)
$B = \pi r^2$		h	=	$V = \pi r^2 h$



Worked Example: Finding the Volume

Example 1.1: Finding the volume of a cylinder

Given: radius (r) = 4 cm, height (h) = 10 cm

Formula: $V = \pi r^2 h$

Substitute: $V = \pi(4)^2(10)$

Arithmetic: $V = \pi(16)(10)$

[Step hidden — See Full Version]

'Try It!' Problem - Sample

The full version includes three 'Try It!' practice problems with worked-out answers. Below is one sample problem—the answer is locked in this preview.

1. Find the volume of a cylinder with $r = 5 \text{ m}$, $h = 8 \text{ m}$. (Exact & Approx)

[Answer hidden - The full version includes 3 Try-It problems with complete worked solutions]

Volume Computation Drill - Sample (6 of 35)

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The full version includes a **35-problem computation drill** covering cylinders, cones, and spheres with a complete answer key in exact form. Below are the first 6 problems as a sample—answers are locked in this preview.

1. Cylinder: $r = 5$, $h = 10$ 4. Cylinder: $d = 10$, $h = 12$ 2. Cylinder: $r = 3$, $h = 14$ 5. Cylinder: $r = 7$, $h = 2$ 3. Cylinder: $d = 8$, $h = 6$ 6. Cylinder: $r = 1$, $h = 9$

+ 29 more problems in the full version

Problems 7-35 cover cylinders, cones, and spheres with a complete answer key in exact form (π notation).

Answer Key - Sample

[Answer key for all 35 problems is included in the full version, in exact form (e.g., 250π , 96π , $4/3 \pi$) with decimal approximations.]

FULL DRILL COVERAGE

Problems 1–12: Cylinders (mixed radius/diameter)

Problems 13–24: Cones (mixed radius/diameter)

Problems 25–35: Spheres (mixed radius/diameter)

Each problem type includes both 'r given' and 'd given' variants to build fluency with the $r = d \div 2$ conversion.

GET THE FULL UNIT

35 Pages - 90+ Problems - 2 Assessments - Worked Solutions

35	90+	5	2
PAGES	PROBLEMS	TOPICS	ASSESSMENTS

WHAT'S INCLUDED IN THE FULL VERSION

- ✓ Teacher Notes & 10-Day Pacing Guide
- ✓ Formula Reference Page (with key relationships & unit conversions)
- ✓ Topic 1: Cylinders - Derivation, worked examples, Try-It problems
- ✓ Topic 2: Cones - Cone-cylinder ratio, slant vs. vertical height
- ✓ Topic 3: Spheres - Archimedes derivation, finding radius from volume
- ✓ Topic 4: Composite Solids - Decomposition, add/subtract volumes
- ✓ Topic 5: Real-World Applications - Tank capacity, capsules, unit conversions
- ✓ 35-Problem Computation Drill + Complete Answer Key
- ✓ 20 Missing Dimensions Problems + Answer Key
- ✓ 15 Composite Figures Problems + Answer Key
- ✓ 20 Real-World Application Problems + Answer Key
- ✓ Cumulative Unit Review + Answer Key
- ✓ Unit Quiz (5 questions) + Answer Key
- ✓ Comprehensive Unit Test (10 questions) + Worked Solutions
- ✓ Glossary of 14 Key Terms

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