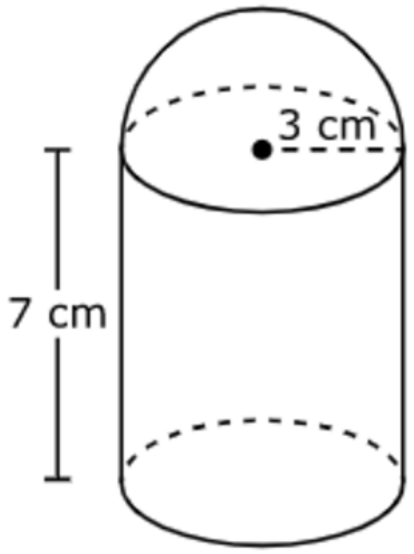
Table of Alignments and Objectives

Information Needed	Project Information
Standards Being Used (including state, if relevant)	8.7(A) solve problems involving the volume of cylinders, cones, and spheres
	8.6(A) describe the volume formula V = Bh of a cylinder in terms of its base area and its height
Specific Standard Previously Aligned in Summative Assessment	8.7(A) solve problems involving the volume of cylinders, cones, and spheres
Grade Level	8th Grade
Subject or Discipline	Math
Summative Assessment Objective (revised if requested)	Calculate the volume of water that can be harvested based on a chosen catchment area and surface material.
Formative Assessment For Learning Objective	The learner will calculate volume of a cylinder using the Volume formula based on given dimensions on an Exit Ticket.
Formative Assessment As Learning Objective	The learner will assess their confidence in performing various skills through the Exit Ticket associated with the Learning Objective.

What's the volume of a container in the shape of a cylinder with a lid in the shape of a hemisphere?



STAAR GRADE 8 MATHEMATICS REFERENCE MATERIALS

STAAR State of Texas Assessments of Academic Readiness

LINEAR EQUATIONS

Slope-intercept form	$y = mx + b$
Direct variation	$y = kx$
Slope of a line	$m = \frac{y_2 - y_1}{x_2 - x_1}$

CIRCUMFERENCE

Circle	$C = 2\pi r$	or	$C = \pi d$

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$

SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

VOLUME

Prism or cylinder	$V = Bh$
Pyramid or cone	$V = \frac{1}{3}Bh$
Sphere	$V = \frac{4}{3}\pi r^3$

ADDITIONAL INFORMATION

Pythagorean theorem	$a^2 + b^2 = c^2$
Simple interest	$I = Prt$
Compound interest	$A = P(1 + r)^t$

Assessment for Learning - Rubric

Your Score	Understanding Concepts	Calculation Accuracy	Problem-Solving Strategy
4	The student can calculate the volume of the cylinder and also the hemisphere. The student understands that the question requires the calculation of a composite volume.	The student performs calculations accurately and efficiently, consistently checking and verifying their work with attention to detail.	The student effectively selects and applies the relevant formulas.
3	The student can calculate the volume of the cylinder or the hemisphere but lacks understanding of composite volume.	The student performs calculations accurately with minimal errors and checks their work to ensure correctness.	The student understands how to substitute values into the volume formula but has difficulty calculating the volume of a sphere.
2	The student shows partial understanding of the concepts. They may confuse the components or make errors in identifying them.	The student makes some errors but attempts to correct them. They may not consistently check their work.	The student attempts to use strategies but may choose inappropriate ones or apply them incorrectly. They show some effort in tackling complex problems.
1	The student shows little to no understanding of the relationship between radius, height, and volume. They struggle to identify the correct components.	The student frequently makes errors in their calculations, leading to incorrect answers.	The student struggles to choose an appropriate strategy for solving the problems. They may not attempt to solve more complex problems.

Assessment as Learning Checklist

On a scale from 1 - 10, rate the following:

- 1: I have no confidence in my ability to perform this skill.
- 2: I have some confidence, but I often struggle with this skill.
- 3: I feel confident in my ability to perform this skill most of the time.
- 4: I am very confident in my ability to perform this skill and can help others.

Skill	Rating	Comments
1. Identify the different parts of a cylinder		
2. Identify the different parts of a hemisphere		
2. Select the correct formula or formulas for the given shape.		
3. Calculate the volume with the given information.		
4. Verify that the calculated volume is correct		

Reflection

This approach is entirely different from my previous methods of assessing students. The formative assessments I have conducted may not have been accurate, as I primarily focused on identifying misconceptions during their calculations. Introducing a rubric that outlines a defined set of skills for students to demonstrate, along with a self-assessment checklist, has elevated my assessment practices significantly. I now recognize that summative assessments are not the sole type we should rely on; formative assessments promote greater student ownership and provide a clearer understanding of their learning gaps. Although this shift was challenging, I believe that with practice, it will become easier.