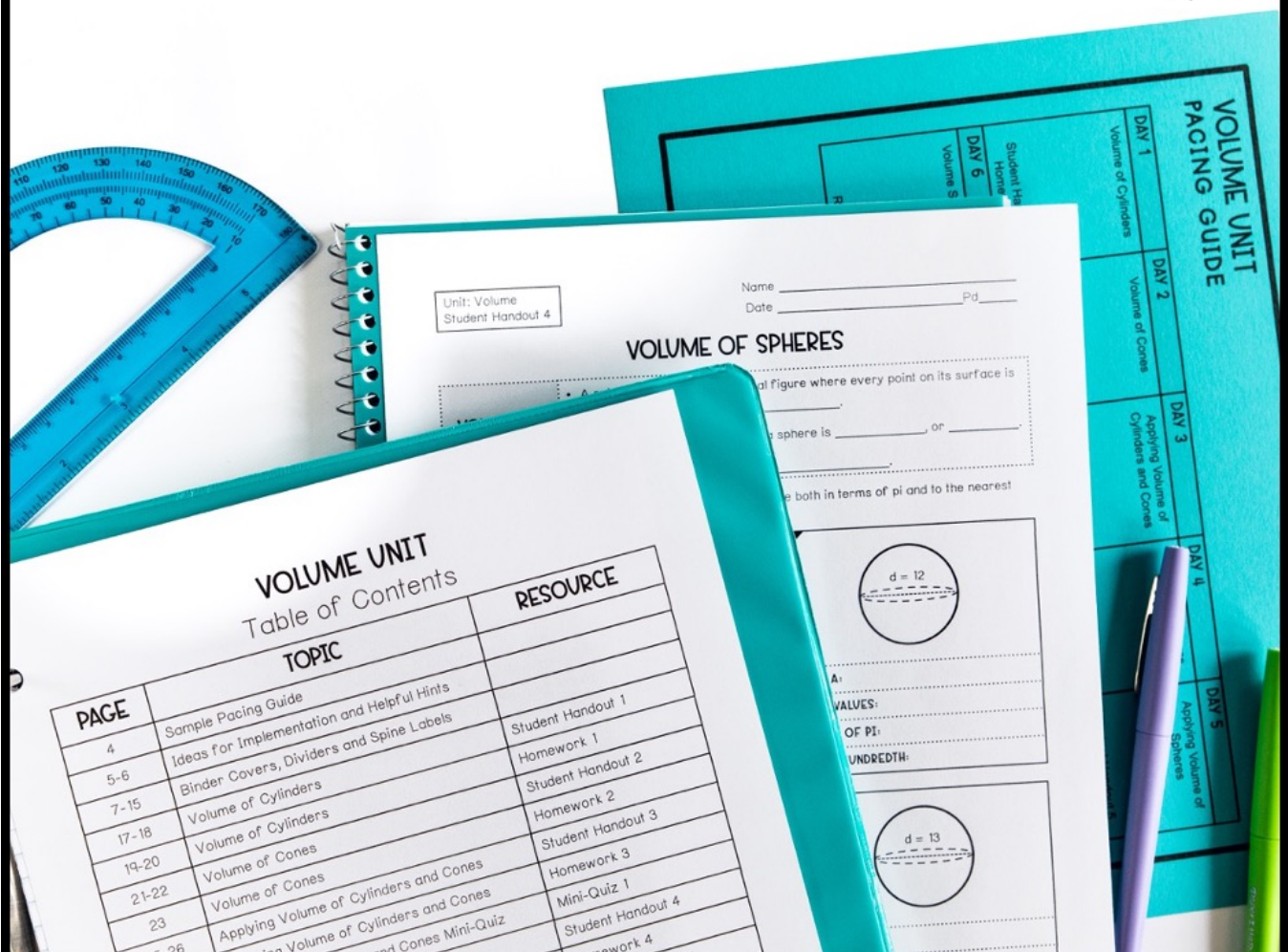


learning focus:

- ✓ use formulas to find the volume of cylinders, cones, and spheres
- ✓ describe the formula for a cylinder in terms of its base area and height
- ✓ use formulas for volume to solve mathematical and real-world problems

VOLUME UNIT 7 DAY TEKS-ALIGNED UNIT



A MANEUVERING THE MIDDLE® RESOURCE

VOLUME



a 7 day TEKS-aligned unit

TEKS: 8.6A, 8.7A

ready-to-go, scaffolded student materials

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VOLUME



a 7 day TEKS-aligned unit

TEKS: 8.6A, 8.7A

student friendly + real-world application

graphic organizers

Unit: Volume
Student Handout 4

Name _____
Date _____ Pd _____

VOLUME OF SPHERES

VOLUME OF SPHERES

- A sphere is a three-dimensional figure where every point on its surface is the same distance from its _____.
- The formula for the volume of a sphere is _____, or _____.
- Half of a sphere is _____.

Use the formula above to find the volume of the sphere below.

1

FORMULA: _____
PLUG IN VALUES: _____
IN TERMS OF PI: _____
NEAREST HUNDREDTH: _____

3

FORMULA: _____
PLUG IN VALUES: _____
IN TERMS OF PI: _____
NEAREST HUNDREDTH: _____

Use the formula for the volume of spheres to help you answer each question below.

5. A hemisphere has a radius of 7 inches. Find the volume of the hemisphere to the nearest tenth.

6. Gabriel and his brothers built a snowman in their backyard. The snowman's head was in the shape of a sphere with a diameter of 16 inches. Find the volume of the snowman's head to the nearest tenth.

7. A sphere has a volume of 288π in³. Find the radius of the sphere.

9. Zola solved a question on her math test below in terms of π . Explain Zola's error.

10. A sphere, cylinder, and cone all have the same radius. The radius is equal to the diameter of the sphere. Let the radius be r .

_____ a. The area of the cylinder's base is _____.

_____ b. I can find the volume of the cylinder as _____.

_____ c. The volume of the sphere is _____.

Summarize today's lesson:

Unit: Volume
Homework 4

Name _____
Date _____ Pd _____

VOLUME OF SPHERES

In 1-4, draw a line connecting each sphere to its volume in terms of π , then to the volume rounded to the nearest tenth. Not all choices will be used.

SPHERE	VOLUME (IN TERMS OF π)	VOLUME (NEAREST TENTH)
1.	457.3π units ³	3,053.6 units ³
2.	121.5π units ³	67 units ³
3.	21.3π units ³	33.5 units ³
4.	10.6π units ³	381.7 units ³
	972π units ³	10,052.2 units ³
	$3,201.3\pi$ units ³	1,436.8 units ³

5. Find the volume of a hemisphere that has a radius of 8 centimeters to the nearest tenth.

6. A magic 8-ball has a diameter of 5 inches. It is filled 85% full with blue water. How much space is occupied by the water? Round to the nearest tenth.

7. A sphere has a volume of 36π in³. Find the radius of the sphere. Use 3.14 for π .

8. A sphere has a volume of $2,304\pi$ mm³. Find the diameter of the sphere.

8


interactive practice

VOLUME



a 7 day TEKS-aligned unit
TEKS: 8.6A, 8.7A

streamline your planning process with unit overviews

VOLUME OVERVIEW

READINESS STANDARDS

8.7A Solve problems involving the volume of cylinders, cones, and spheres.


SUPPORTING STANDARDS

8.6A Describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height.

- ✓ key vocabulary
- ✓ vertical alignment



sample
pacing
calendar

VOLUME UNIT PACING GUIDE

BIG IDEAS

- Formulas can be used to find help us solve both mathem


ESSENTIAL QUESTIO

- What is meant by the volum
- How are the volumes of con
- What are the different variat represent?
- How is finding the volume o similar?

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Volume of Cylinders	Volume of Cones	Applying Volume of Cylinders and Cones	Volume of Spheres	Applying Volume of Spheres
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	DAY 7			
Volume Study Guide	Volume Test			
Review	Test			

teaching
ideas



VOLUME UNIT OVERVIEW

TOPIC	TEACHING TIPS
Volume of Cylinders	<ul style="list-style-type: none">I like to help students visualize the volume formula by showing a stack of coins (or another circular item) to demonstrate that the volume of the stack is equal to the area of one coin multiplied by the height of the stack. A sleeve of circular crackers would also be a great visual.
Volume of Cones	<ul style="list-style-type: none">Take a cylinder and a cone with the same sized base and same height, and have students predict how many of the cones would fit inside the cylinder. Then, demonstrate by filling the cone with rice (or another substance) and pouring it into the cylinder three times.
Volume of Spheres	<ul style="list-style-type: none">Visit http://kera.pbselearningmedia.org and search "Comparing Volumes of Cylinders, Spheres and Cones." This interactive tool will allow students to see the relationship between the volume of a sphere and a cylinder with the same height and radius. (You can also select "Cone" to show the relationship between the volume of a cone and cylinder with the same height and radius).
Using the Formulas	<ul style="list-style-type: none">This unit will involve a lot of formulas, and hopefully showing work! Vary the practice by allowing the students to use dry erase markers every now and then.It can be hard for students to remember that "B" in the formula requires an extra step of calculating the area of the base. I like to tell students that a capital letter in the formula usually means that there will be work involved to find it.

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VOLUME



a 7 day TEKS-aligned unit
TEKS: 8.6A, 8.7A

unit study guide + assessments



quizzes



editable unit test

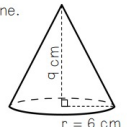
Unit: Volume
Mini-Quiz 1

Name _____
Date _____ Pd _____

VOLUME OF CYLINDERS AND CONES MINI-QUIZ


Solve each of the problems below. Round solutions to the nearest tenth when necessary.

1. Find the volume of the cone.



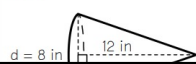
$r = 6 \text{ cm}$

2. Find the volume of the cylinder.



$r =$ _____

3. Find the volume of the cone.



$d = 8 \text{ in}$

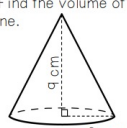
4. A cylinder has a volume of 198 cm^3 , and its base has an area of 22 cm^2 . What is the height of the cylinder?

Unit: Volume
Mini-Quiz 1

VOLUME OF CYLINDERS AND CONES MINI-QUIZ


Solve each of the problems below. Round solutions to the nearest tenth when necessary.

1. Find the volume of the cone.



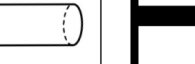
$r = 6 \text{ cm}$

2. Find the volume of the cylinder.



$r =$ _____

3. Find the volume of the cone.



$d = 8 \text{ in}$

4. A cylinder has a volume of 198 cm^3 , and its base has an area of 22 cm^2 . What is the height of the cylinder?

Unit: Volume
Review

Name _____
Date _____ Pd _____

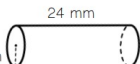
VOLUME STUDY GUIDE

Solve each of the problems below. Be sure to ask questions if you need more help with a topic.

I CAN USE A FORMULA TO FIND THE VOLUME OF CYLINDERS. 8.6A, 8.7A

1. What is the formula used to find the volume of a cylinder? Describe the steps to find the volume of a cylinder in your own words.

2. Find the volume of the cylinder. Leave your answer in terms of π .



$r = 8 \text{ mm}$

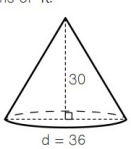
3. Find the volume of the cylinder. Leave your answer in terms of π .

4. Find the volume of the cylinder. Leave your answer in terms of π .

I CAN USE A FORMULA TO FIND THE VOLUME OF CONES. 8.7A

5. Laura is trying to find the volume of a cone. So far, she has found the area of the base of the cone and multiplied it by the height of the cone. Describe what she needs to do to find the volume of the cone.

6. Find the volume of the cone. Leave your answer in terms of π .



$r = 30$

7. Find the volume of the cone. Leave your answer in terms of π .

8. Find the volume of the cone. Leave your answer in terms of π .

EIGHTH GRADE CURRICULUM

VOLUME

UNIT EIGHT: ANSWER KEY

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answer keys
included

