

# GEOMETRY

Name \_\_\_\_\_ Date \_\_\_\_\_

## WARM UP #1

### Lesson 2: Proving the Pythagorean Theorem

Skill: Prove the Pythagorean Theorem

- |                                                                                                      |                                                                                                    |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1) Do the given side lengths belong to a right triangle? Provide proof for your answer.<br>5, 12, 13 | 2) Do the given side lengths belong to a right triangle? Provide proof for your answer.<br>3, 5, 6 |
| 3) Do the given side lengths belong to a right triangle? Provide proof for your answer.<br>8, 20, 22 | 4) Do the given side lengths belong to a right triangle? Provide proof for your answer.            |

## 8<sup>TH</sup> GRADE MATH CURRICULUM - UNIT 7

# GEOMETRY

### Vocabulary

- Pythagorean Theorem
- Right triangle
- Cone
- Converse of the Pythagorean Theorem
- Cylinder
- Hypotenuse
- Legs of a triangle

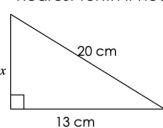
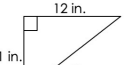
- Find the missing angles in triangles.
- Find the missing angles in quadrilaterals.
- Explain a proof of the Pythagorean Theorem.
- Apply the Pythagorean theorem to find missing side lengths.

Name \_\_\_\_\_ Date \_\_\_\_\_

## EXIT TICKET #1

### Lesson 3: Applying the Pythagorean Theorem

Skill: Apply the Pythagorean Theorem

- |                                                                                                                                                                 |                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 1) Find the missing side length. Round to the nearest tenth if necessary.<br> | 2) Find the missing side length. Round to the nearest tenth if necessary. |
| 3) Find the missing side length. Round to the nearest tenth if necessary.<br> | 4) Find the missing side length. Round to the nearest tenth if necessary. |



## Unit 7 GEOMETRY ASSESSMENT

### Geometry Unit Exam

Round your answers to the nearest hundredth, when applicable.

[lindsayperro@gmail.com](mailto:lindsayperro@gmail.com) [Switch account](#)

\* Required

Email \*

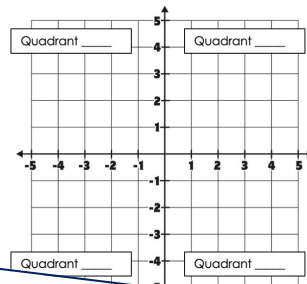
Name \_\_\_\_\_ Date \_\_\_\_\_

NOTES

## THE DISTANCE FORMULA

### Coordinate Plane Review

- Identify the following parts of the coordinate plane:
  - y-axis (highlight blue)
  - x-axis (highlight pink)
  - Origin (highlight yellow)
  - Label all four quadrants.
- Plot the following points on the coordinate plane.



Name \_\_\_\_\_ Date \_\_\_\_\_

## VOLUME APPLICATIONS

Directions: Read each problem carefully and solve. Round your answer to the nearest hundredth if necessary.

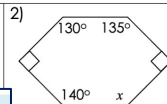
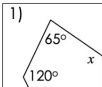
- 1) A new oil funnel is being developed. It needs to be able to hold 113 inches<sup>3</sup> of oil. It will have a radius of 3 inches. About how tall will the funnel have to be? Round to the nearest tenth.
- 2) Kyle is putting air in a new basketball, and he doesn't want to overfill it. If the ball has a 12-inch diameter, how much air can the ball hold? Round to the nearest tenth.

Name \_\_\_\_\_ Date \_\_\_\_\_

## QUIZ

## MISSING ANGLES AND THE PYTHAGOREAN THEOREM

For #1 – 6: Find the missing angle or side length. Figures are not drawn to scale.



Name \_\_\_\_\_ Date \_\_\_\_\_

## ASSESSMENT

## GEOMETRY

Read each problem carefully and solve. Round your answer to the nearest hundredth if necessary.

- 2) Find the missing side length.



length.

- 4) Find the missing side length.

unit  
7

# GEOMETRY

## Vocabulary

- |                                                                                                                                                                                 |                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Cone</li> <li>• Converse of the Pythagorean Theorem</li> <li>• Cylinder</li> <li>• Hypotenuse</li> <li>• Legs of a triangle</li> </ul> | <ul style="list-style-type: none"> <li>• Pythagorean Theorem</li> <li>• Right triangle</li> <li>• Sphere</li> <li>• Square Root</li> <li>• Volume</li> </ul> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Objectives

- Find the missing angles in triangles.
- Find the missing angles in quadrilaterals.
- Explain a proof of the Pythagorean Theorem and its converse.
- Apply the Pythagorean theorem to find missing side lengths in right triangles.
- Know the Pythagorean Theorem and when to apply it.
- Use the Pythagorean Theorem to find the distance between two points on a coordinate plane.
- Calculate the volume of rounded objects using given formulas.
- Know the formulas for finding the volume of cylinders, spheres and cones.
- Identify missing dimensions when given the volume of a rounded object.
- Know the formulas for finding the volume of cylinders, spheres and cones.
- Calculate the volume of rounded objects using given formulas.
- Identify missing dimensions when given the volume of a rounded object.
- Know the formulas for finding the volume of cylinders, spheres and cones.

## Standards

### CCSS

- 8.G.5
- 8.G.7
- 8.G.8
- 8.G.9

### TEKS

- 7.11(C)
- 8.7(A)
- 8.7(C)
- 8.8(D)
- G.8(13)

# GEOMETRY

| Lesson                                                 | Resources                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit Prep<br>pages (6 – 12)                            | <ul style="list-style-type: none"> <li>• Vocabulary Page</li> <li>• Warm Up Page</li> <li>• Unit Pre-Assessment</li> </ul>                                                                                                                                                                                                                                               |
| 1) Missing Angles in Polygons<br>pages (13 – 19)       | <ul style="list-style-type: none"> <li>• 1 Warm-Up</li> <li>• Missing Angles in Polygons Notes (2 pages)</li> <li>• Missing Angles in Quadrilaterals Practice Worksheet (2 pages)</li> <li>• 1 Exit Ticket</li> </ul>                                                                                                                                                    |
| 2) Proving the Pythagorean Theorem<br>pages (20 – 25)  | <ul style="list-style-type: none"> <li>• One Warm-Up</li> <li>• Proving the Pythagorean Theorem Notes</li> <li>• Proving the Pythagorean Theorem Converse Guided Practice &amp; Independent Practice</li> <li>• Proving the Pythagorean Theorem Practice Worksheet</li> <li>• One Exit Ticket</li> </ul>                                                                 |
| 3) Applying the Pythagorean Theorem<br>pages (26 – 34) | <ul style="list-style-type: none"> <li>• Three Warm-Ups</li> <li>• Apply the Pythagorean Theorem Notes (2 pages)</li> <li>• Apply the Pythagorean Theorem Practice Worksheets (2 worksheets)</li> <li>• Apply the Pythagorean Theorem in 2-D and 3-D Worksheet</li> <li>• Apply the Pythagorean Theorem Word Problems Worksheet</li> <li>• Three Exit Tickets</li> </ul> |
| 4) The Distance Formula<br>pages (35 – 47)             | <ul style="list-style-type: none"> <li>• Three Warm-Ups</li> <li>• Finding the Distance Formula Between Two Points Notes</li> <li>• Pythagorean Theorem Fold and Flip Notes</li> <li>• Distance Between Two Points Worksheets (2 worksheets)</li> <li>• Missing Angles and The Pythagorean Theorem Quiz</li> <li>• Three Exit Tickets</li> </ul>                         |

# GEOMETRY

| Lesson                                                       | Resources                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5) Volume of Cylinders, Cones and Spheres<br>pages (48 – 65) | <ul style="list-style-type: none"> <li>• Three Warm-Ups</li> <li>• Volume Notes</li> <li>• Volume Fold &amp; Flip Notes</li> <li>• Volume of Cylinders Notes</li> <li>• Cylinders Practice Worksheet (2 pages)</li> <li>• Volume of Cones Notes</li> <li>• Cones Practice Worksheet (2 pages)</li> <li>• Volume of Spheres Notes</li> <li>• Spheres Practice Worksheet (2 pages)</li> <li>• Three Exit Tickets</li> </ul> |
| 6) Finding Missing Dimensions {Volume}<br>pages (66 – 71)    | <ul style="list-style-type: none"> <li>• One Warm Up</li> <li>• Missing Dimensions Notes (2 pages)</li> <li>• Missing Dimensions Worksheet</li> <li>• One Exit Ticket</li> </ul>                                                                                                                                                                                                                                          |
| 7) Volume Applications<br>pages (72 – 78)                    | <ul style="list-style-type: none"> <li>• Two Warm-Ups</li> <li>• Volume in the Real-World Notes</li> <li>• Volume in the Real-World Practice Worksheet</li> <li>• Volume Quiz</li> <li>• Two Exit Tickets</li> </ul>                                                                                                                                                                                                      |
| End of Unit<br>pages (79 – 84)                               | <ul style="list-style-type: none"> <li>• Review Sheet</li> <li>• Unit Post-Assessment</li> </ul>                                                                                                                                                                                                                                                                                                                          |



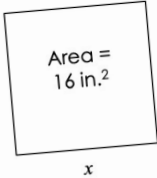
# WARM UPS AND EXIT TICKETS

## Lesson 1: Missing Angles in Triangles

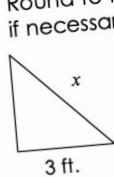
Skill: Missing Dimensions in Similar Figures

1) The two figures are similar. Find the missing dimension. Round to the nearest tenth if necessary.

Area =  $16 \text{ in.}^2$



2) The two figures are similar. Find the missing dimension. Round to the nearest tenth if necessary.



## Lesson 3: Applying the Pythagorean Theorem

Skill: Prove the Pythagorean Theorem

Measures of three sides of a triangle are 30 centimeters, 40 centimeters, and 50 centimeters. Determine if the triangle is a right triangle. Show all steps and your work.

## Lesson 2: Proving the Pythagorean Theorem

Skill: Prove the Pythagorean Theorem

1) Do the given side lengths belong to a right triangle? Provide proof for your answer.  
8, 12, 5

2) Do the given side lengths belong to a right triangle? Provide proof for your answer.  
9, 15, 12

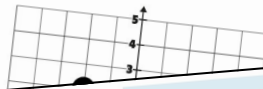
3) Do the given side lengths belong to a right triangle? Provide proof for your answer.

4) Do the given side lengths belong to a right triangle? Provide proof for your answer.  
10, 11, 13

## Lesson 4: The Distance Formula

Skill: The Distance Formula

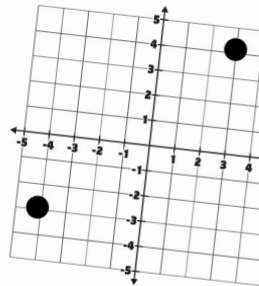
1) Find the distance between the points.



2) Find the distance between the points.



3) Find the distance between the points.



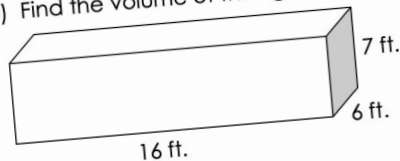
## Lesson 5: Volume of Cylinders, Cones & Spheres

Skill: Volume of Rectangular Prisms

1) How much water can a rectangular fish tank hold if it is 12 inches long, 8 inches tall and 6 inches wide?

2) How much confetti can Sara put in a cube shaped box that has 5.5-inch sides?

3) Find the volume of the figure.



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## Lesson 5: Volume of Cylinders

Skill: Volume of Cylinders

1) Find the volume.

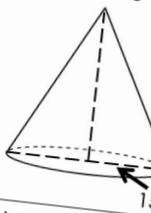


## Lesson 6: Missing Dimensions {Volume}

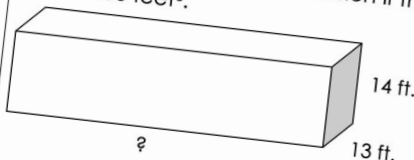
Skill: Missing Dimensions {Volume}

1) Estimate the height of a cylinder with a 7-inch radius and a volume of  $1,539 \text{ in.}^3$ .

2) Estimate the height of the cone if the volume is  $1,178 \text{ cm}^3$ .



3) Estimate the missing dimension if the volume is  $5,460 \text{ feet}^3$ .



4) Estimate the radius of a sphere with a volume of  $905 \text{ cm}^3$ .

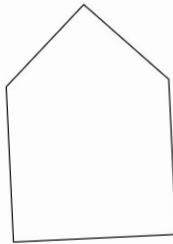
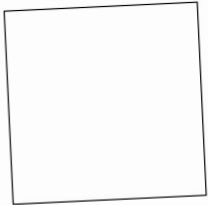
# NOTES

## NOTES

### MISSING ANGLES IN

#### Interior Angle Exploration:

What is the smallest number of triangles each shape can be broken into?



\_\_\_\_\_ triangles

\_\_\_\_\_ triangles

- Multiply the number of triangles in each shape by 180°. Repeat for other shapes.

Name \_\_\_\_\_

Date \_\_\_\_\_

## NOTE

### APPLY THE PYTHAGOREAN THEOREM

#### Finding the Hypotenuse

$$a^2 + b^2 = c^2$$

or

$$\sqrt{a^2 + b^2}$$

#### Finding a Leg

$$c^2 - a^2 = b^2$$

$$c^2 - b^2 = a^2$$

or

$$\sqrt{\text{hypotenuse}^2 - \text{leg}^2}$$

#### Guided Practice:

1. Given a right triangle with legs of 3 inches and 4 inches, what is the measurement of side  $c$ , the hypotenuse?

## NOTES

2. Given a right triangle with a hypotenuse of 5 inches and side  $b = 8$  inches, what is the measurement of side  $c$ , the other leg?

3. You are missing a short side or the long side, but you know the hypotenuse. How do you find the missing side?

\_\_\_\_\_ side is missing.

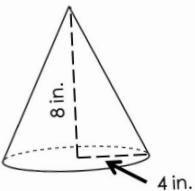
4. Use the Pythagorean Theorem to solve the problem. Write the information into the formula.

### VOLUME OF CONES

#### Notes:

To find the volume of a cone you only need the dimensions of the base and the height, or you need the radius of the base and the height.

#### Example:



**Step 1:** Find the area of the base. The base is a circle. To find the area of the base, use the formula  $A = \pi r^2$ .

Name \_\_\_\_\_

Date \_\_\_\_\_

## NOTE

### THE DISTANCE FORMULA

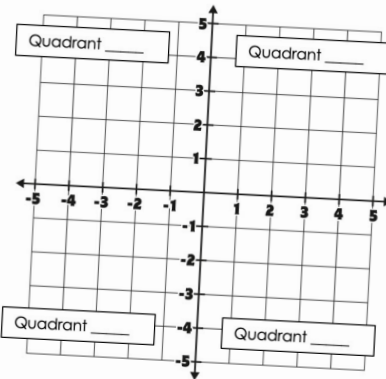
#### Coordinate Plane Review

- Identify the following parts of the coordinate plane:

- y-axis (highlight blue)

- x-axis (highlight pink)

- Origin



## NOTES

1. Identify the parts of the coordinate plane.

2. Plot the points.

3. Draw a line segment connecting the two points. Draw the line segment between the two points.

4. Use the Pythagorean Theorem to approximate the distance between the two points.

$(x_2, y_2)$

### VOLUME APPLICATIONS

Will I really use volume in the real world?

- Yes! Whenever you pack a bag, load the trunk of a car, fill up a fish tank, put air in a balloon, etc., you must consider volume.

Provide examples of where you will see each of the given shapes in the real world.

| Rectangular Prism | Cylinder        | Cone            |
|-------------------|-----------------|-----------------|
| Volume Formula:   | Volume Formula: | Volume Formula: |

**Volume Review:** Find the volume of each shape.

2)

3)

## The Pythagorean Theorem

PROVE IT

APPLY IT

THE COORDINATE PLANE

# PRACTICE WORKSHEETS

## PROVE THE PYTHAGOREAN THEOREM

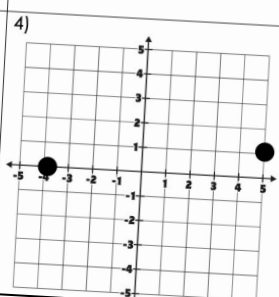
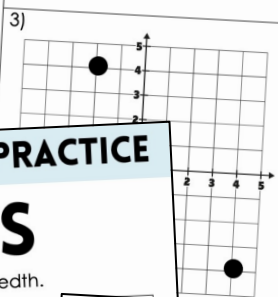
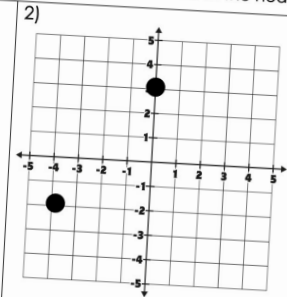
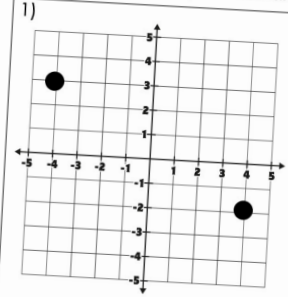
**GUIDED PRACTICE:** The measures of three sides of a triangle are 5 inches, 12 inches and 13 inches. Is the triangle a right triangle?

| Statements                                    | Proof / Work      |
|-----------------------------------------------|-------------------|
| 1. Pythagorean Theorem                        | $a^2 + b^2 = c^2$ |
| 2. Substitute $a = 5$ , $b = 12$ , $c = 13$ . |                   |
| 3. Evaluate.                                  |                   |
| 4. Simplify.                                  |                   |
| 5. Check.                                     |                   |

Is the triangle a right triangle? \_\_\_\_\_

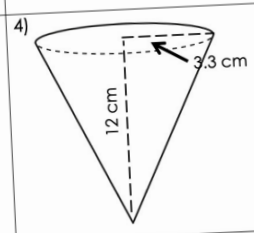
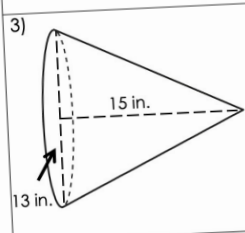
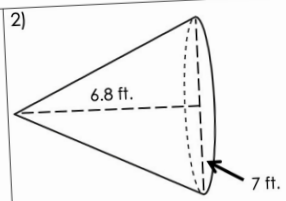
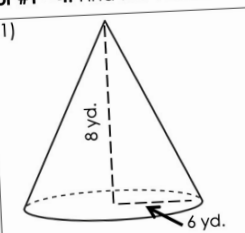
## THE DISTANCE FORMULA

**Directions:** Solve each problem using the distance formula. Round your answer to the nearest hundredth.



## VOLUME OF CONES

**For #1 - 4:** Find the volume of each cone. Use 3.14 for  $\pi$ . Round to the nearest hundredth.



**For #5 - 7:** Solve each word problem. Show your work.

5) An ice cream cone wrapper is 6 inches tall and has a diameter of 4 inches. If it is rolled into a cone, what is the volume of the cone?

## VOLUME APPLICATIONS

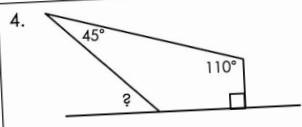
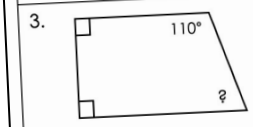
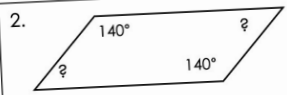
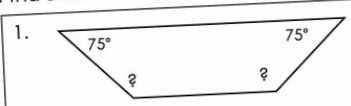
**Directions:** Read each problem carefully and solve. Round your answer to the nearest hundredth if necessary.

1) A new oil funnel is being developed. It needs to be able to hold 113 inches<sup>3</sup> of oil. It will have a radius of 3 inches. About how tall will the funnel have to be? Round to the nearest tenth.

2) Kyle is putting air in a new basketball, and it doesn't want to overfill it. If the ball has a diameter of 9 inches, how much air can the ball hold? Round to the nearest tenth.

## MISSING ANGLES IN POLYGONS

Find each missing angle. Show your work and round to the nearest tenth if necessary.



3) A cylindrical vase. She wants to know how much water it can hold. If the vase is 14 inches tall and has a diameter of 4 inches, how much water can the vase hold?

4) Jason has a rectangular fish tank. The tank is 14 inches wide, 20 inches tall and 24 inches long. He fills up the tank 75% of the way. How much water does Jason have in the tank?

5) A snow cone company has new cones. The cones are 9 inches tall and have a 3-inch diameter. What is the volume of each cone?

6) A snow cone company has new cones. The cones are 9 inches tall and have a 3-inch diameter. What is the volume of each cone?

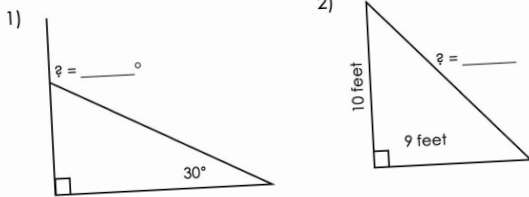
# ASSESSMENTS - PRINT AND DIGITAL

Name \_\_\_\_\_ Date \_\_\_\_\_

## PRE-ASSESSMENT

# GEOMETRY

For # 1 - 6: Find the missing angle measurement, side length or dimension.



- 3)   $x = \text{ }$
- 4) What is the height of a \_\_\_\_\_
- 5) What is the measurement of \_\_\_\_\_
- 6) \_\_\_\_\_

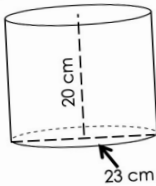
Name \_\_\_\_\_ Date \_\_\_\_\_

## QUIZ

# VOLUME

Directions: Read each problem carefully and solve. Round your answer to the nearest \_\_\_\_\_

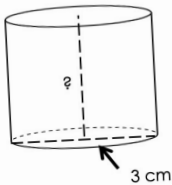
- 1) Find the volume of the cylinder.



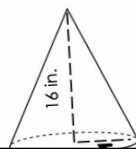
- 2) Find the volume of the \_\_\_\_\_

# GEOMETRY

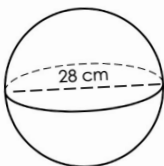
- 14) Estimate the height of the cylinder if the volume is  $339 \text{ cm}^3$ .



- 15) Estimate the radius of the cone if the volume is  $603 \text{ inches}^3$ .



- 16) Find the volume of the given shape.



- 17) Find the diameter \_\_\_\_\_

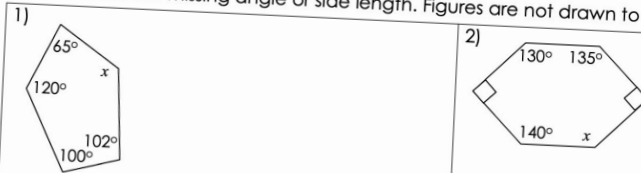
- 18) Find the volume of a cone with a 1.25-inch diameter and height of 3.5 inches.

- 19) Find the \_\_\_\_\_

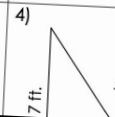
Name \_\_\_\_\_ Date \_\_\_\_\_

## QUIZ

For # 1 - 6: Find the missing angle or side length. Figures are not drawn to scale.



## QUIZ



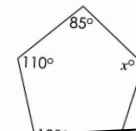
Name \_\_\_\_\_ Date \_\_\_\_\_

## ASSESSMENT

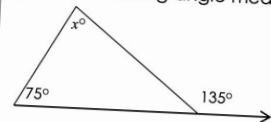
# GEOMETRY

Directions: Read each problem carefully and solve. Round your answer to the nearest hundredth if necessary.

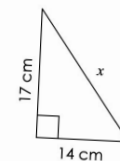
- 1) Find the missing angle measurement.



- 2) Find the missing angle measurement.



- 4) Find the missing side length.



## ASSESSMENT



## Unit 7 GEOMETRY ASSESSMENT

### Geometry Unit Exam

Round your answers to the nearest hundredth, when applicable.

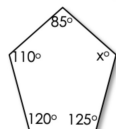
[lindsayperro@gmail.com](mailto:lindsayperro@gmail.com) [Switch account](#)

\* Required

Email \*

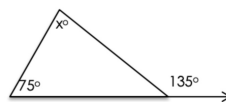
Your email \_\_\_\_\_

- 1) Find the missing angle measure. \*



Your answer \_\_\_\_\_

- 2) Find the missing angle measure. \*



## UNIT 7 QUIZ VOLUME

### Volume

Round to the nearest hundredth.

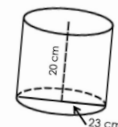
[lindsayperro@gmail.com](mailto:lindsayperro@gmail.com) [Switch account](#)

\* Required

Email \*

Your email \_\_\_\_\_

- 1) Find the volume of the given shape: \*



Your answer \_\_\_\_\_

- 2) Find the volume of the given shape: \*

