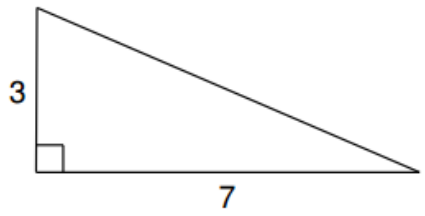
Name _____ Period _____

Unit 8 Study Guide

Pythagorean Theorem

Find the missing side lengths of the triangles given below. Round each answer to the nearest tenth. SHOW ALL OF YOUR WORK!

1.



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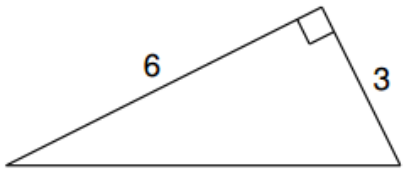

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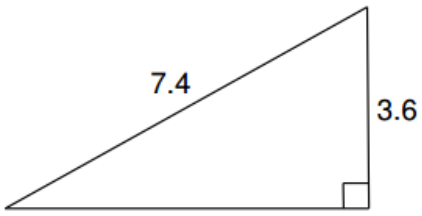

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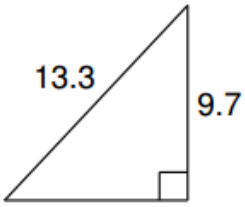


5. a = 10, b = 24

6. a = 9, c = 13

7. b = 18, c = 30

8. a = 5, b = 12

In order for three side lengths to create a right triangle, the square of the two smaller sides must equal the square of the larger side.

Example: A triangle with side lengths of 6 cm, 8 cm, and 10 cm will create a right triangle because:

$$6^2 + 8^2 = 10^2$$
$$36 + 64 = 100$$

However, a triangle with side lengths of 5 cm, 6 cm, and 12 cm will NOT create a right triangle because:

$$5^2 + 6^2 = 12^2$$
$$25 + 36 \neq 144$$

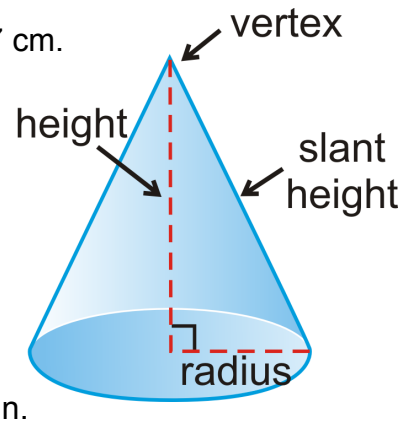
Do the following side lengths form a right triangle? Prove your answer using the Pythagorean theorem.

9. a = 6 cm, b = 8 cm, c = 9 cm

10. a = 5 cm, b = 12 cm, c = 13 cm

We also use the Pythagorean theorem with the slant height of a cone. The height and radius are the legs of the triangle, and the slant height is the hypotenuse.

11. Find the slant height of a cone with a radius of 6 cm and a height of 17 cm.

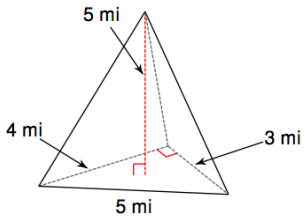


12. Find the height of a cone with a radius of 5 in and a slant height of 30 in.

Surface Area and Volume of Rectangular and Triangular Pyramids

Find the surface area for each pyramid below. Round to the nearest tenth.

13.



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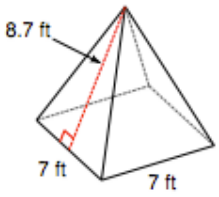

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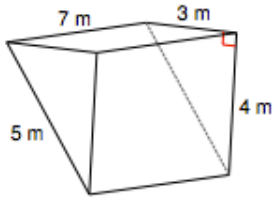
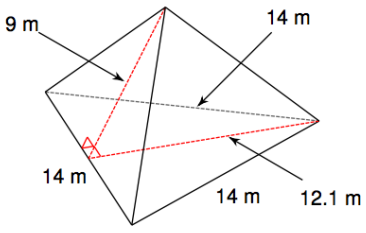


Find the volume for each pyramid below. Round to the nearest tenth.

16.



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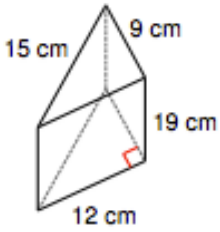

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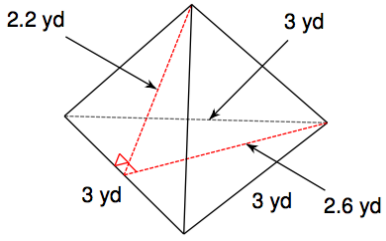
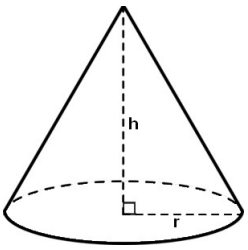


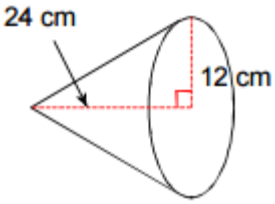
Volume of Cones

Find the volume for each cone below. Leave your answer in terms of π.



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

19.



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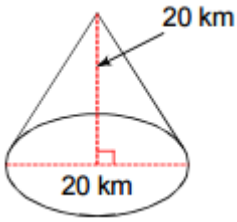

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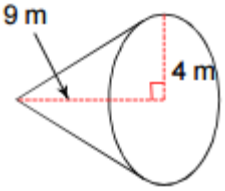

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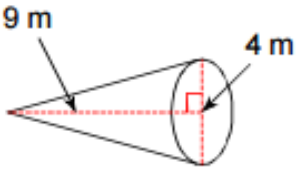
Find the volume for each cone below. Use 3.14 for π and round your answer to the nearest tenth.

22.



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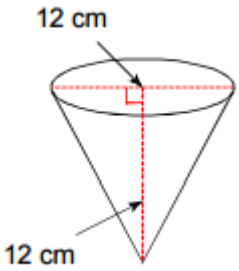

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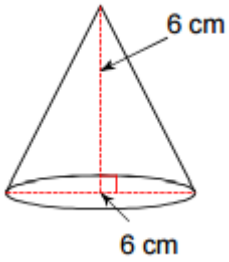

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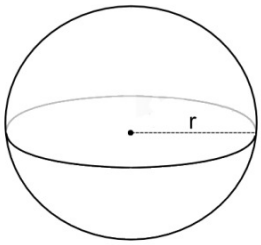
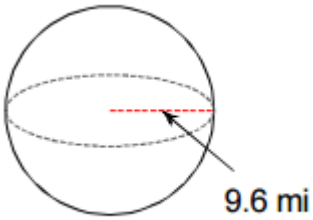
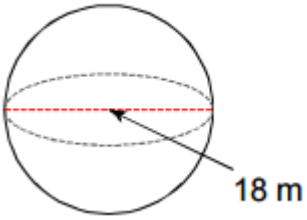
Volume of Spheres

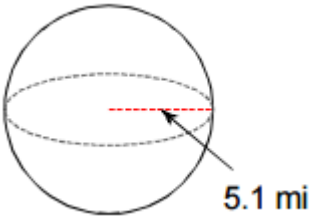
Find the volume for each sphere below. Leave your answer in terms of π.



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

25. 

26. 

27. 

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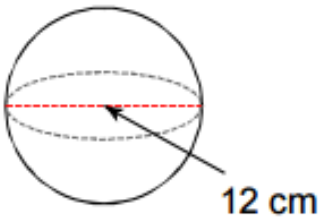
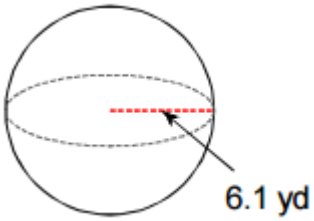
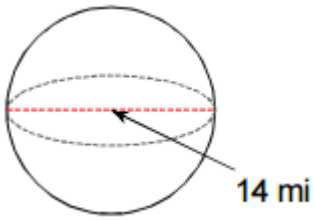
Find the volume for each sphere below. Use 3.14 for π and round your answer to the nearest tenth.

28. 

29. 

30. 

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