Name:_____ Date:_____ Period:_____

Chapter 9: 3-D Figures
Topic 4: Lateral Area

Lateral Area: For prisms, pyramids, cylinders, and cones, lateral area is the area of a figure not including the bases.

Lateral Area Formulas:

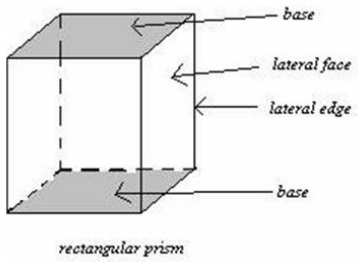
ANY PRISM: $LA = (base\ perimeter)h$

Rectangular Right Pyramid: $LA = \frac{1}{2}(base\ perimeter)\ell$ *(where ℓ is the slant height)*

Right Circular Cylinder: $LA = \pi dh$

Right Circular Cone: $LA = \pi r\ell$ *(where ℓ is the slant height)*

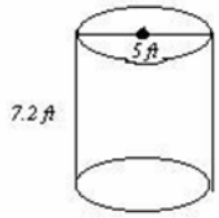
Diagram:



rectangular prism

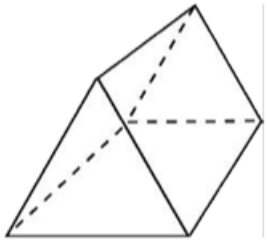
Examples:

1. Find the lateral area of the cylinder below in terms of π.

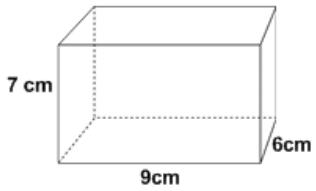


2. Given a right circular cone with a diameter of 10 meters and a slant height of 6 meters, find the lateral area to the nearest hundredth.

3. A triangular prism has a base with sides measuring 11 cm, 14 cm, and 17 cm. The triangular prism also has a height of 25 cm. Find the lateral area.

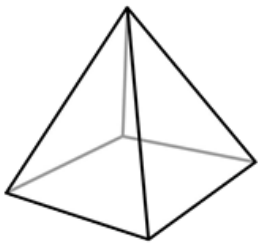


4. Find the lateral area of the following rectangular prism.



5. A cone has a diameter of 50 feet and a height of 24 feet. Find the lateral area in terms of π.

6. A pyramid has a lateral area of 925,344 inches^2. The base of the pyramid is a square, with sides measuring 756 inches. Find the length of the slant height.



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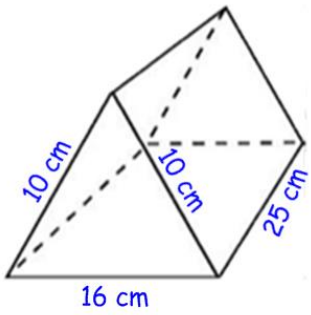
Lateral Area Homework

Directions: *Answer the following questions completely. Make sure to show all work, including formulas.*

1) A right circular cylinder has an altitude (height) of 11 feet and a radius of 5 feet. What is the lateral area, in square feet, of the cylinder, to the nearest tenth

2) A right circular cone has a base with a radius of 15 cm, a vertical height of 20 cm, and a slant height of 25 cm. Find, in terms of' π, the number of square centimeters in the lateral area of the cone.

3) Find the lateral area of the following triangular prism.



4) Multiple Choice:

Compare the quantity in Column A with the quantity in Column B.

Column A	Column B
the lateral area of a cylinder with $r = 6$ and $h = 4$	the lateral area of a cylinder with $r = 4$ and $h = 9$

[A] The quantity in Column A is greater.

[B] The quantity in Column B is greater.

[C] The two quantities are equal.

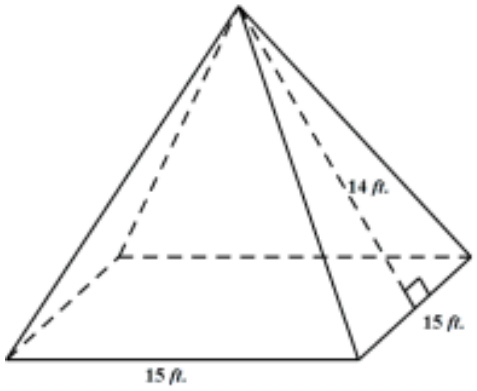
[D] The relationship cannot be determined on the basis of the information supplied.

5) In a right equilateral triangular prism, the length of the sides of the base is 20 cm and the height is 25 cm. Find the lateral area of this prism.

6) The lateral area of a right circular cone is equal to 120π cm^2. If the base of the cone has a diameter of 24 cm, what is the length of the slant height, in centimeters?

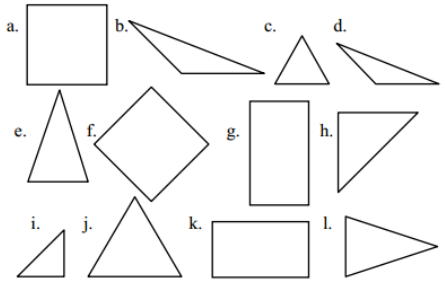
1) 2.5
2) 5
3) 10
4) 15.7

7) A square perimeter has a base length of 15 feet and a slant height of 14 feet. What is the lateral area of the square pyramid?



Review Section:

8) Which of the following statements is false according to the images below?



(1) g and k are similar
(2) c and j are similar
(3) a and f are similar
(4) b and d are congruent

9) What is $r_{x-axis^\circ} \circ T_{(-2,3)}$ on the point B(-2,8)?

10) Identify the following transformations as: Reflection, Translation, or Dilation.

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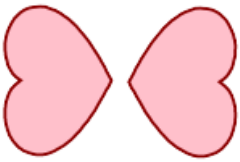

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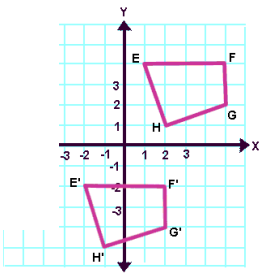

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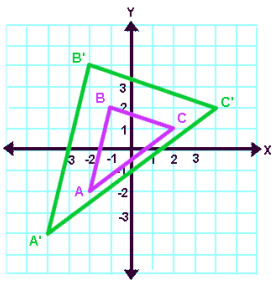

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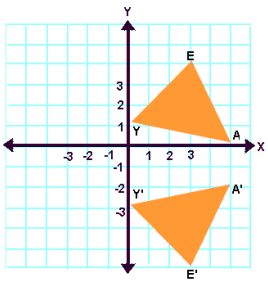

11) Given: ΔABC, $\overline{BD}$ bisects $\angle ABC$, $\overline{BD} \perp \overline{AC}$
Prove: $\overline{AB} \cong \overline{CB}$