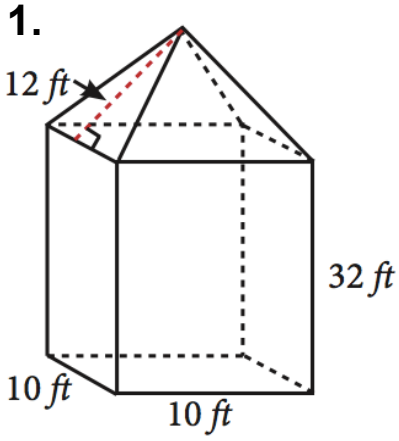
5 SURFACE AREA OF COMPOSITE FIGURES

WHAT YOU'LL LEARN

1) **Identify the different types of figures that make up the solid.**
2) **Identify what parts of each figure are on the surface of the solid.**
3) **Calculate the surface area of composite shapes.**

Find the surface area of the figure below:

1.



Identify the parts of the solid on the surface.

Find the area of the base.

$$A_{Base} = 10(10) = 100$$

Find the lateral area of the prism.

$$LA_{Prism} = P_{base}h$$
$$LA_{Prism} = 4(10)(32) = 1280$$

Find the lateral area of the pyramid.

$$LA_{Pyramid} = \frac{1}{2}P_{base}h$$
$$LA_{Pyramid} = \frac{1}{2}(40)(12) = 240$$

Find the sum of all three parts.

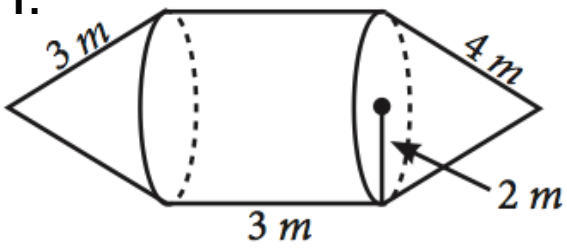
$$S.A. = 1280 + 240 + 100$$

The surface area of the composite solid is 1620 square feet.

PRACTICE TEST:

Find the Surface Area of the following. Write your complete solutions, final answers correct to two decimal places. Use pi in your calculator.

1.



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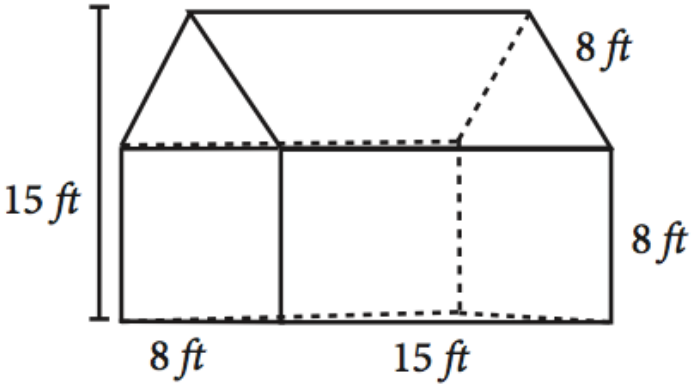

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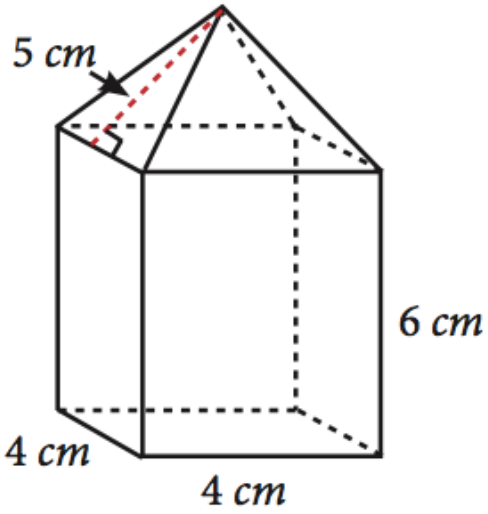

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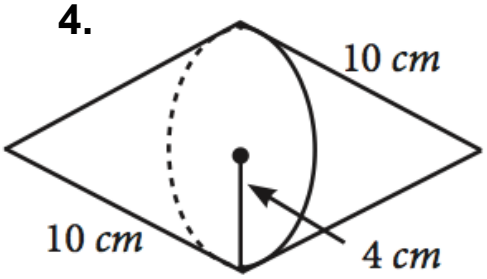

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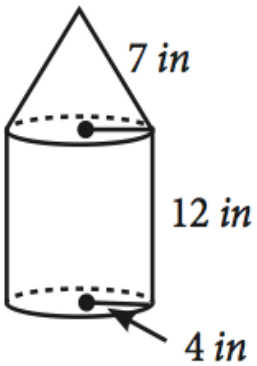
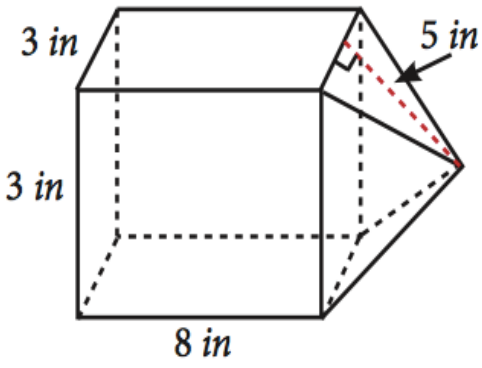


6.



APPLICATIONS:

Solve the following problems completely. Write your final answers correct to two decimal places. Use pi in your calculator.

1) Yanna celebrated her fifth birthday. She ate at her favorite restaurant. She ordered a soda pop. The soda pop came in a cup shaped like a cylinder with a cone top. The cylinder part of the cup was 6 inches tall and the height of the top was 2 inches. The radius of the cup was 2 inches. What was the surface area of the cup?

2) James wants to paint his grain silo. The diameter of the silo is 8 meters. The height of the cylindrical part is 12 meters. The slant height of the cone top is 4.5 meters.

   a. Calculate the surface area of the grain silo.
   b. A five-gallon bucket of paint covers 20 square meters. How many buckets of paint will James need?

3) Shynna designed her perfect wedding cake. She wants to have 3 layers with smooth white frosting on the cake. The first layer will have a 24-inch diameter, the second layer will have an 18-inch diameter and the top layer will have a 10-inch diameter. Each layer will be 6-inches tall. How many square inches of frosting will show on the surface of the cake?

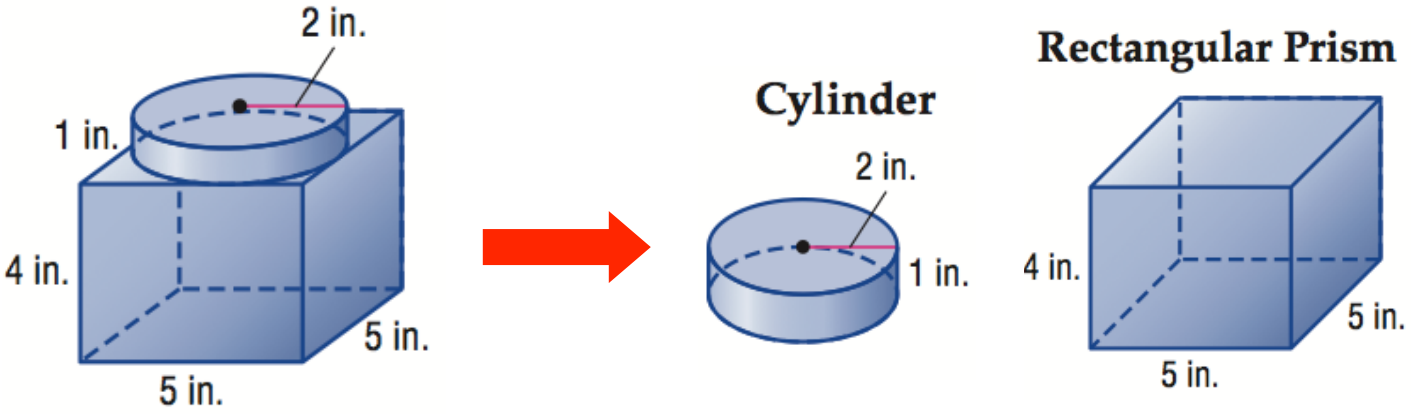
References:
http://www.nos.org/secmathcour/eng/ch-24.pdf
http://www.redmond.k12.or.us/14552011718214563/lib/14552011718214563/Lesson_10.7.pdf
http://www.bigideasmath.com/protected/content/ipe/grade%207/07/g7_07_05.pdf

6 VOLUME OF COMPOSITE FIGURES

WHAT YOU'LL LEARN

1) **Identify the different types of figures that make up the solid.**
2) **Calculate the volume of composite shapes.**

Find the volume of the figure:



Find the volume of the cylinder.

$$V = \pi r^2 h$$
$$V = \pi(2)^2(1)$$
$$V = 4\pi$$

Find the volume of the prism.

$$V = lwh$$
$$V = 5(5)(4)$$
$$V = 100$$

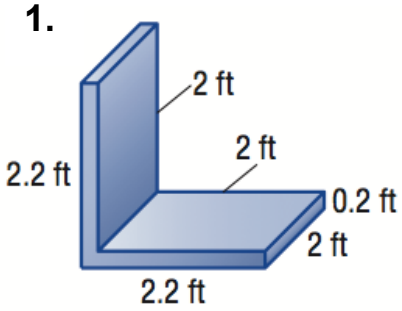
Total Volume = 4π + 100

$$V \approx 112.57 in^3$$

PRACTICE TEST:

Find the Volume of the following. Write your complete solutions, final answers correct to two decimal places. Use pi in your calculator.

1.



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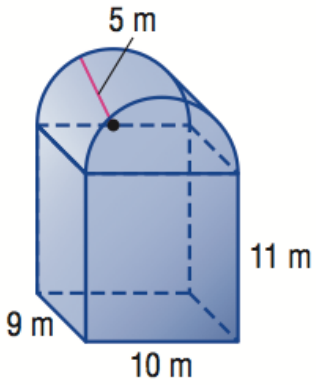

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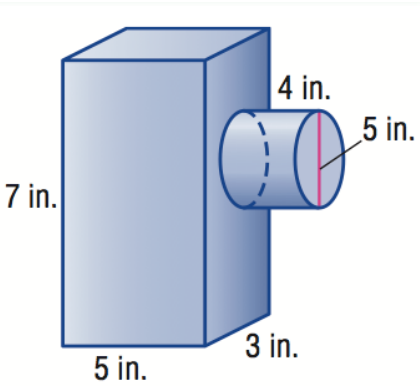

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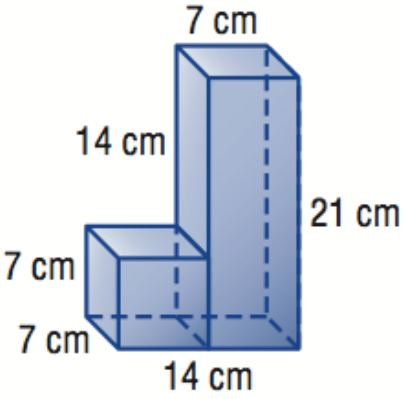

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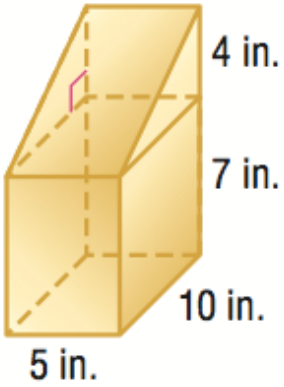

THINKING TIME:

How is finding the volume and surface area of composite figures different from finding the volume and surface area of simple figures?

References:
http://www.nos.org/secmathcour/eng/ch-24.pdf
http://www.redmond.k12.or.us/14552011718214563/lib/14552011718214563/Lesson_10.7.pdf
http://www.bigideasmath.com/protected/content/ipe/grade%207/07/g7_07_05.pdf