

TAKS Objective 8
TEK G.8D
Tutorial
(Grade 11)

...find surface area and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations.

The only time you are to use the ruler on the formula chart is when the problem states to do so.

Be sure to use the correct unit of measurement. The problem will tell you whether to use inches or centimeters and how accurate to be.

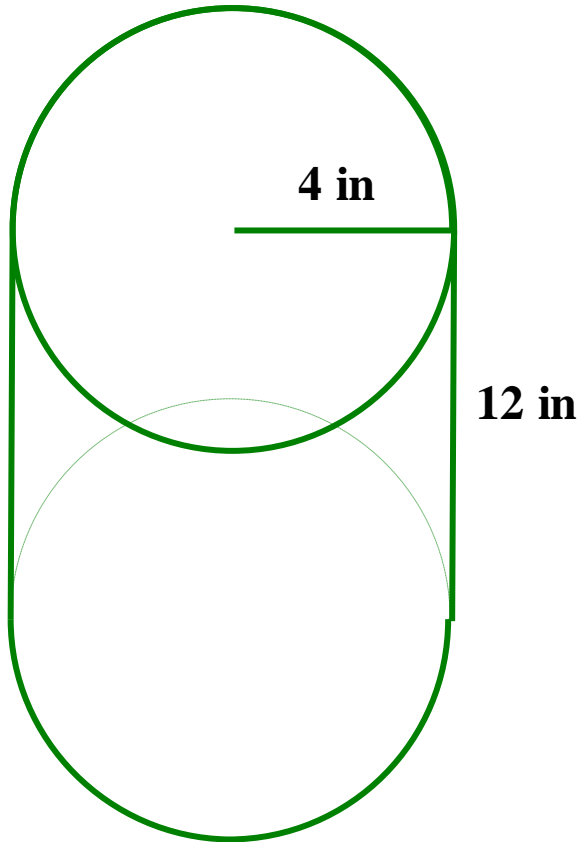
What is the formula for finding the lateral surface area of a cylinder?

$$S = 2\pi rh$$

What is the formula for finding the surface area of a cylinder?

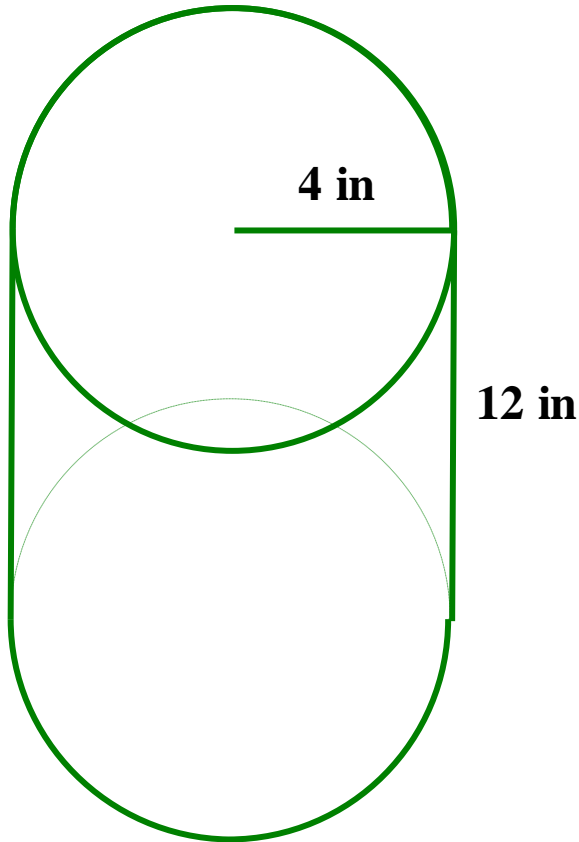
$$S = 2\pi rh + 2\pi r^2$$

Find the lateral surface area.



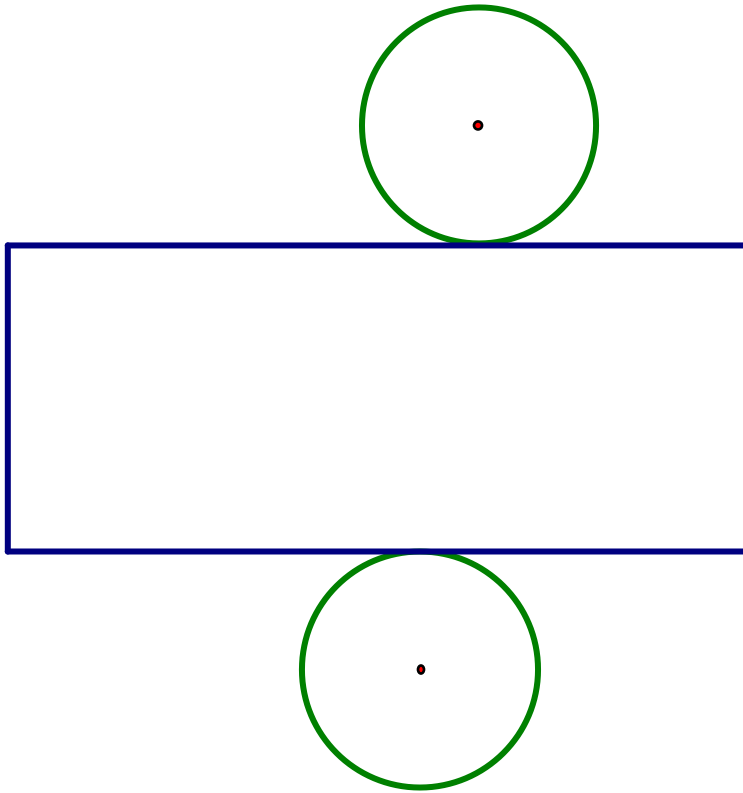
$$\begin{aligned} S &= 2\pi rh \\ &= 2\pi(4)(12) \\ &= 96\pi \text{ in}^2 \end{aligned}$$

Find the surface area.



$$\begin{aligned} S &= 2\pi rh + 2\pi r^2 \\ &= 2\pi(4)(12) + 2\pi(4)^2 \\ &= 96\pi + 32\pi \\ &= 128\pi \text{ in}^2 \end{aligned}$$

Use the ruler to find the surface area.
Measurements are to be to the nearest tenth
of a centimeter.

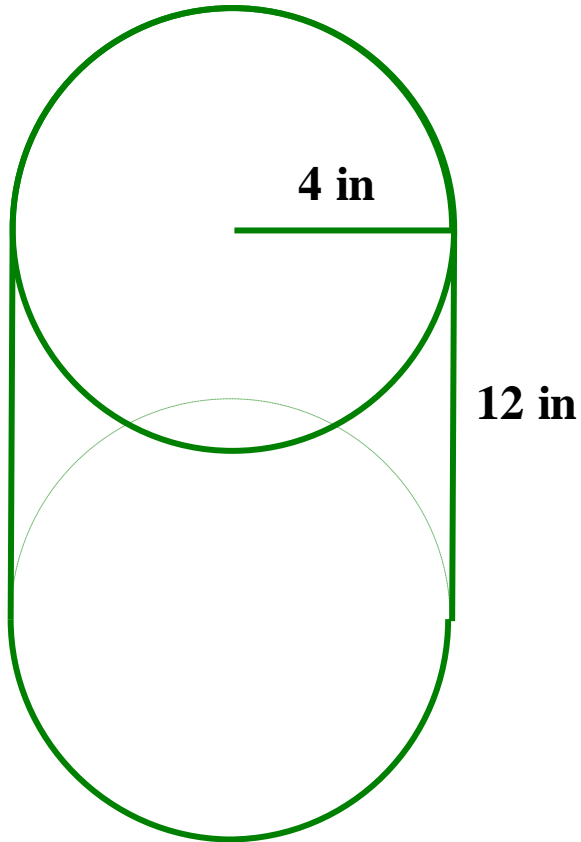


Add the area of the
three parts.

Measure the length
and width of the
rectangle and find
the area.

Measure the radius
and find the area of
the circle.

Find the volume.

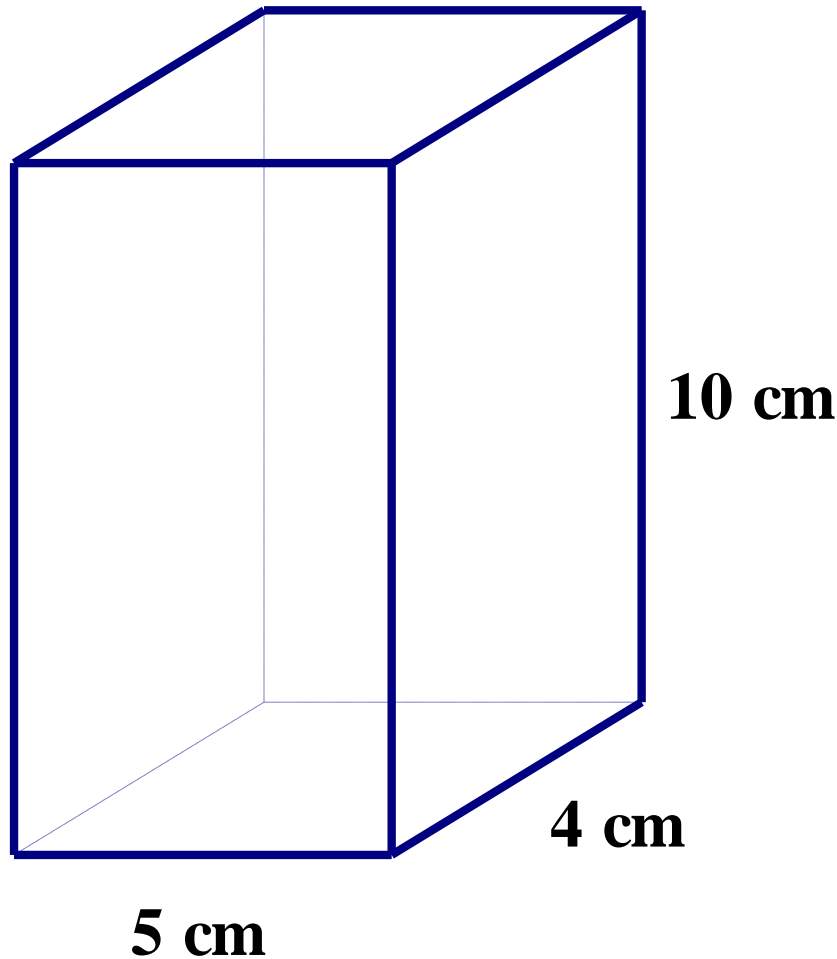


$$V = Bh$$

$$B = \pi r^2 = \pi(4)^2 = 16\pi$$

$$\begin{aligned} V &= 16\pi(12) \\ &= 192\pi \text{ in}^2 \end{aligned}$$

Find the surface area.



Method 1: Find the area of the six sides and add together.

$$5 \times 4 = 20$$

$$5 \times 4 = 20$$

$$4 \times 10 = 40$$

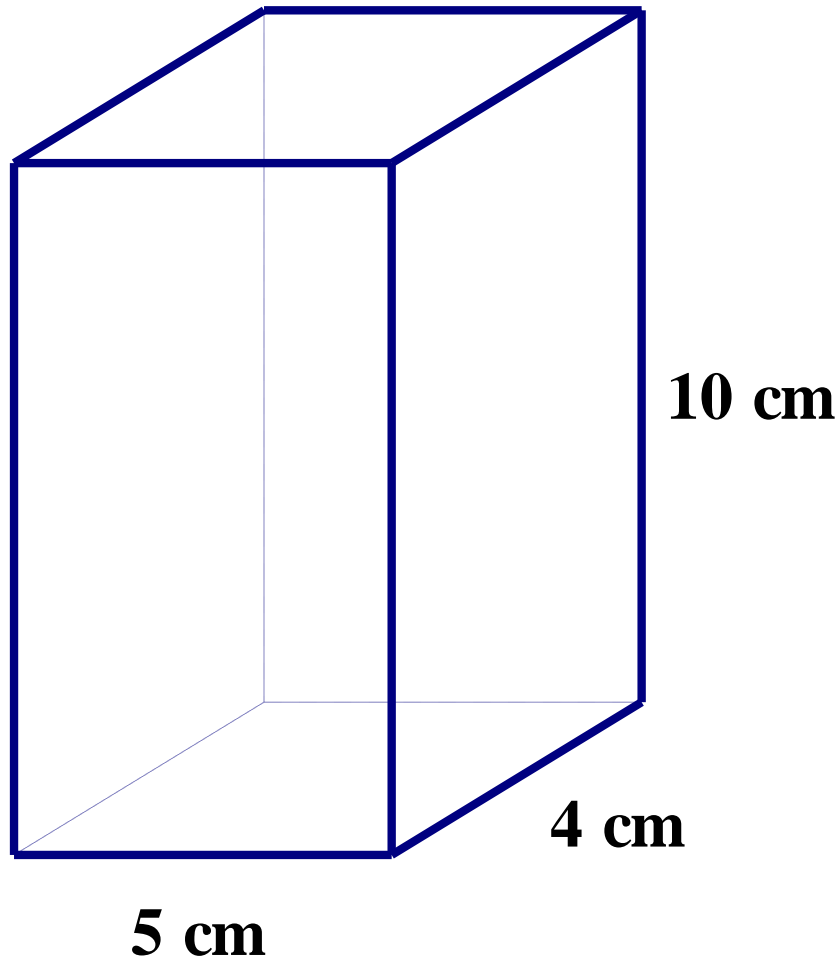
$$4 \times 10 = 40$$

$$5 \times 10 = 50$$

$$5 \times 10 = \underline{50}$$

$$220 \text{ cm}^2$$

Find the surface area.



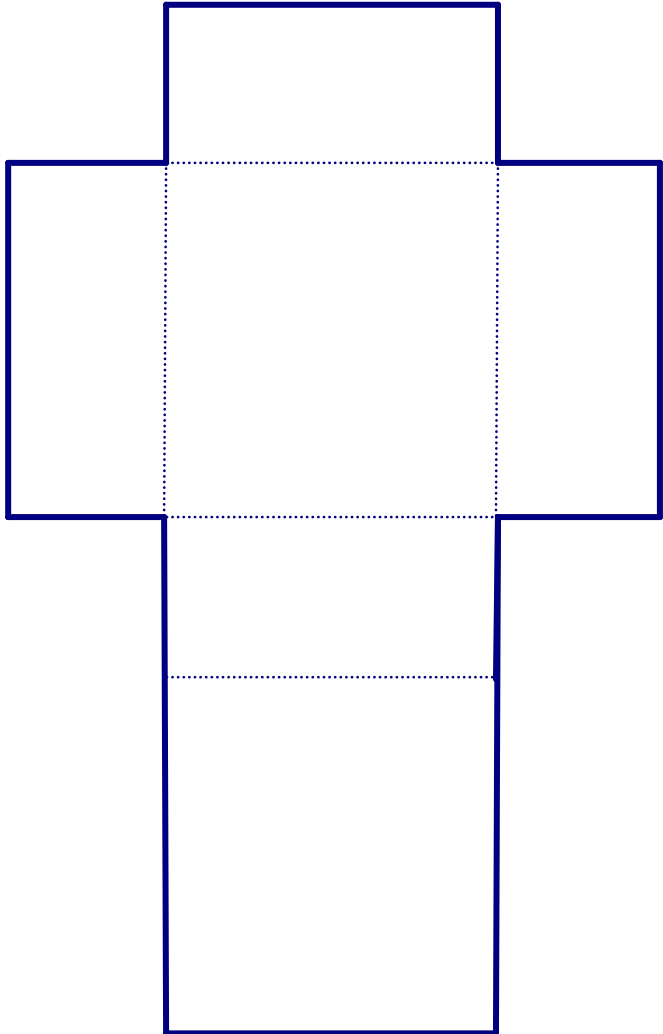
Method 2: Use the formula. $S = Ph + 2B$

$$P = 5 + 4 + 5 + 4 = 18$$

$$B = 5 \times 4 = 20$$

$$\begin{aligned} S &= Ph + 2B \\ &= 18(10) + 2(20) \\ &= 220 \text{ cm}^2 \end{aligned}$$

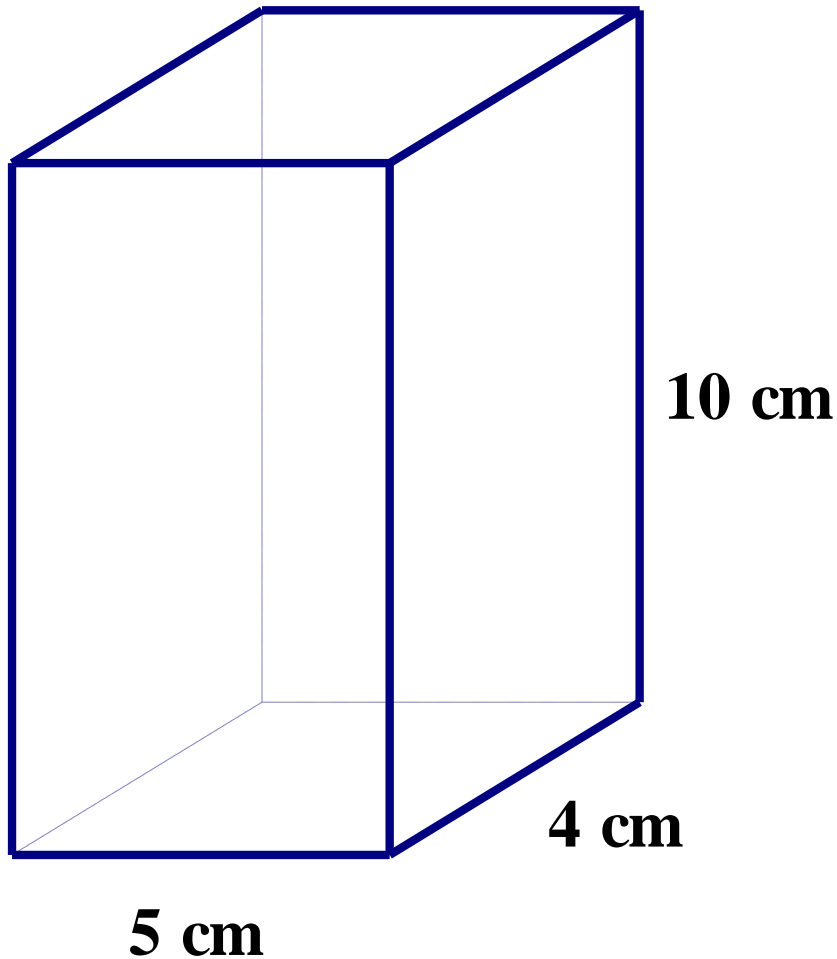
Using the ruler, measure lengths to the nearest $1/8^{\text{th}}$ of an inch and find the surface area.



Measure the length and width of each rectangle and find the area.

Add all the areas together.

Find the volume.

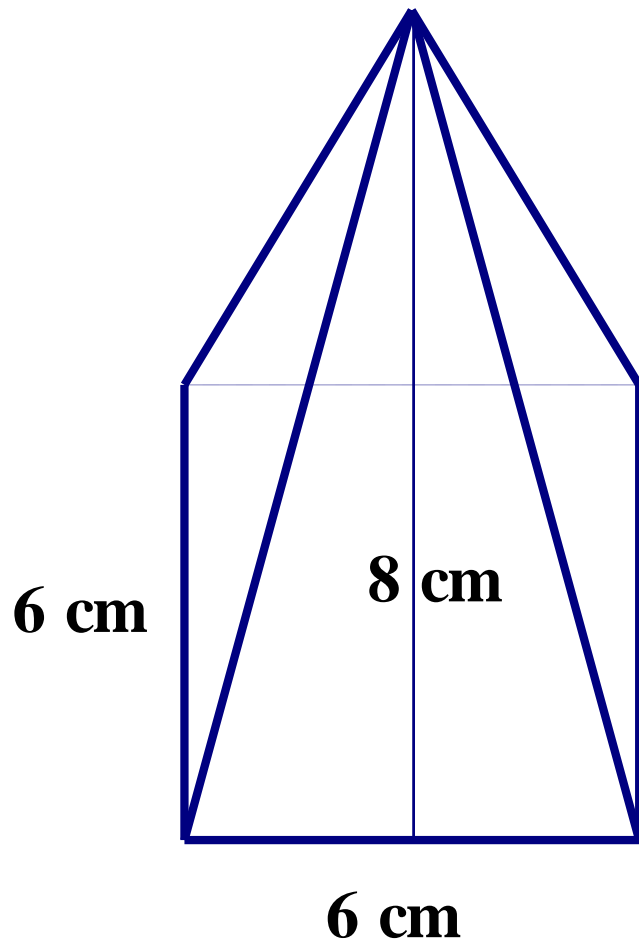


$$V = Bh$$

$$B = 5 \times 4 = 20$$

$$V = 20(10) \\ = 200 \text{ cm}^2$$

Find the lateral surface area.



Method 1: Find the area of the four triangles and add together.

$$\frac{1}{2}(6)(8) = 24$$

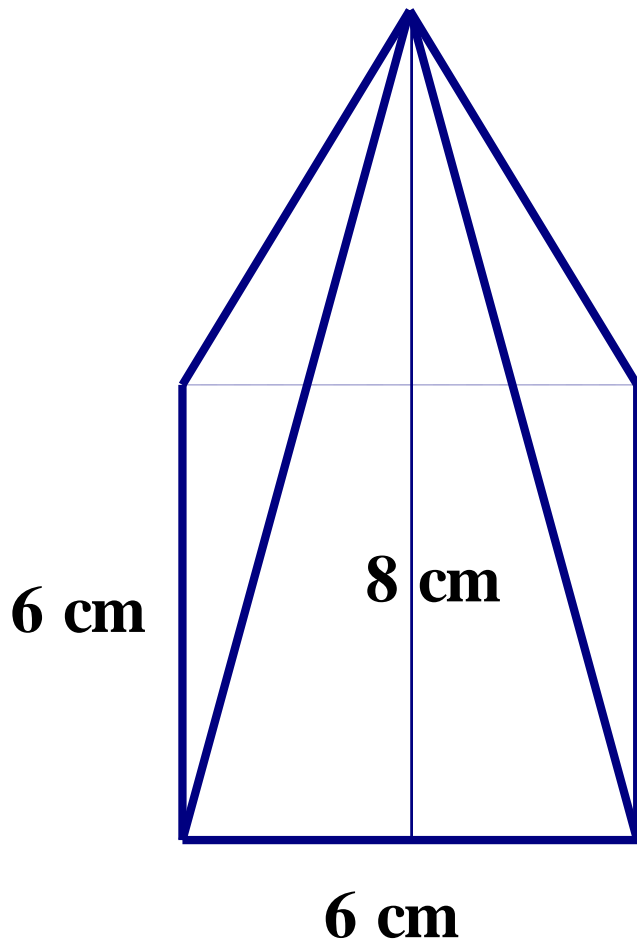
$$\frac{1}{2}(6)(8) = 24$$

$$\frac{1}{2}(6)(8) = 24$$

$$\frac{1}{2}(6)(8) = \underline{24}$$

$$96 \text{ cm}^2$$

Find the
surface area.



Method 1: Find the
area of the five sides
and add together.

$$6 \times 6 = 36$$

$$\frac{1}{2}(6)(8) = 24$$

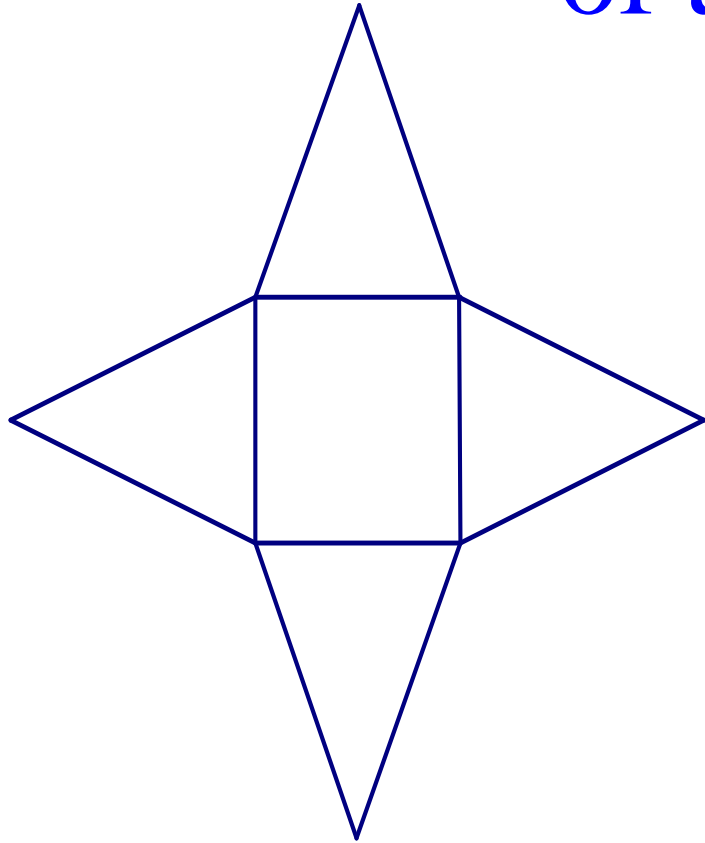
$$\frac{1}{2}(6)(8) = 24$$

$$\frac{1}{2}(6)(8) = 24$$

$$\frac{1}{2}(6)(8) = \underline{24}$$

$$132 \text{ cm}^2$$

Use the ruler to find the surface area.
Measurements are to be to the nearest tenth
of a centimeter.

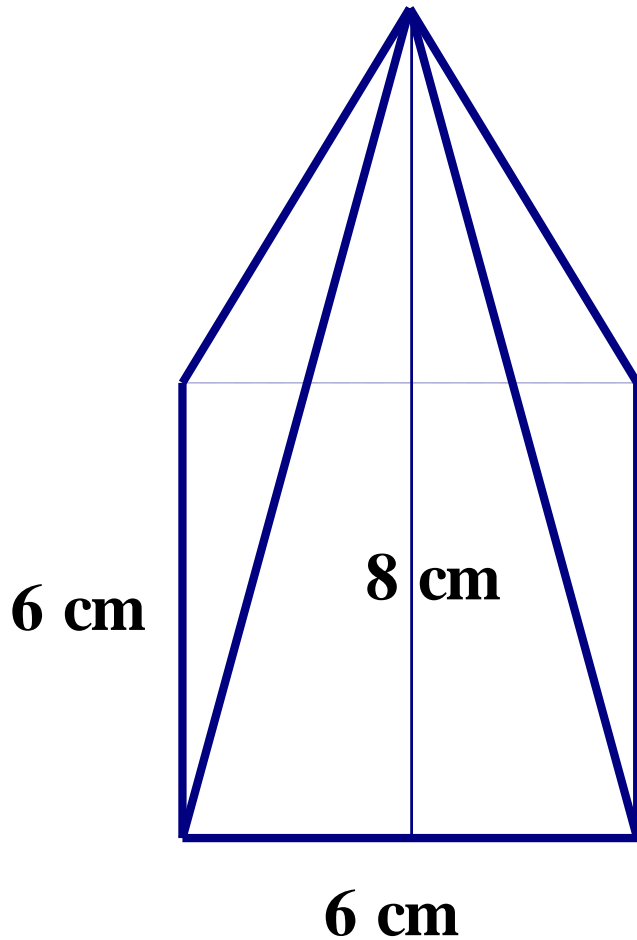


Measure the length
and width of the
rectangle and find
the area.

Measure the base
and height of the
triangle and find the
area.

Add the areas of the
five parts.

Find the
volume.



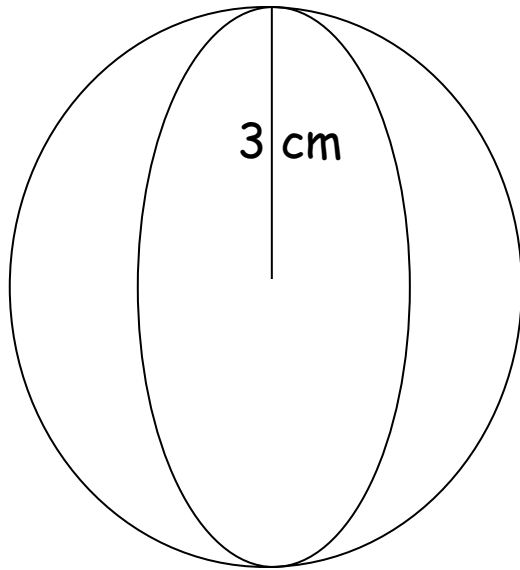
$$V = \frac{1}{3} Bh$$

$$B = 6 \times 6 = 36$$

$$h: \sqrt{8^2 - 3^2} = 7.42$$

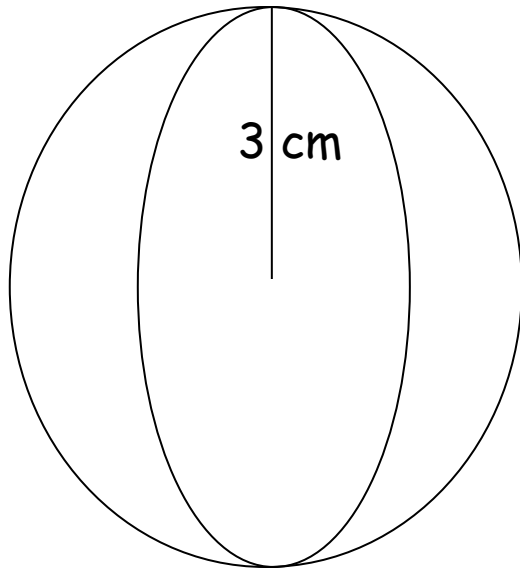
$$V = \frac{1}{3} (36)(7.42) \\ = 89 \text{ cm}^2$$

Find the surface area.



$$\begin{aligned} S &= 4\pi r^2 \\ &= 4\pi(3)^2 \\ &= 36\pi \text{ cm}^2 \end{aligned}$$

Find the volume.



$$\begin{aligned}V &= \frac{4}{3} \pi r^3 \\ &= \frac{4}{3} \pi (3)^3 \\ &= 9\pi \text{ cm}^3\end{aligned}$$

Be familiar with the formulas for finding the surface area and volume of prisms, pyramids, spheres, cones, and cylinders.

When figures include two or more 3-D shapes, find the surface area or volume of each and combine.

Exit Level
Spring 2003

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