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Date \_\_\_\_\_  
Geometry

## Hollow Volume

1. A hollow cylinder has a height of 10 inches, an outer diameter of 5 inches, and a thickness of 1 inch. Find the volume to the hollow cylinder to the nearest cubic inch.

$V = \pi r^2 h$   
 $V = \pi (2.5)^2 (10)$   
 $V = 196.3$

$V = \pi r^2 h$   
 $V = \pi (1.5)^2 (10)$   
 $V = 70.6$

$196.3$   
 $- 70.6$   
 $\hline 126 \text{ in}^3$

2. A hollow rectangular prism has a length of 12 cm, a width of 4 cm, and a height of 16 cm. Find the volume of the hollow rectangular prism to the nearest cubic centimeter.

$V = lwh$   
 $V = 16(12)(4)$   
 $V = 768$

$V = lwh$   
 $V = 16(11)(3)$   
 $V = 528$

$768$   
 $- 528$   
 $\hline 240 \text{ cm}^3$

3. A hollow sphere has an outer diameter of 10 feet, and a thickness of 1.5 feet. Find the volume of the hollow sphere to the nearest tenth of a cubic foot.

$V = \frac{4}{3} \pi r^3$   
 $V = \frac{4}{3} \pi (5)^3$   
 $V = 523$

$V = \frac{4}{3} \pi (3.5)^3$   
 $V = 179$

$523$   
 $- 179$   
 $\hline 344.0 \text{ ft}^3$

4. A hollow rectangular prism has a length of 8 meters, a width of 6 meters, and a height of 4 meters. Find the volume of the hollow rectangular prism to the nearest cubic meter.

$V = lwh$   
 $V = 8(6)(4)$   
 $V = 192$

$V = lwh$   
 $V = 6(4)(4)$   
 $V = 96$

$192$   
 $- 96$   
 $\hline 96 \text{ m}^3$

5. A box tube is to be constructed out of 1 cm thick metal that has a width of 10 cm, a height of 6 cm, and a depth of 15 cm. Which of the following represents the volume of the metal used?

(1) 420 cm<sup>3</sup>

(2) 540 cm<sup>3</sup>

$V = lwh$

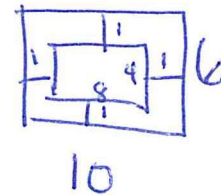
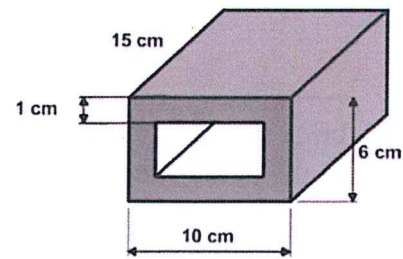
(3) 640 cm<sup>3</sup>

(4) 760 cm<sup>3</sup>

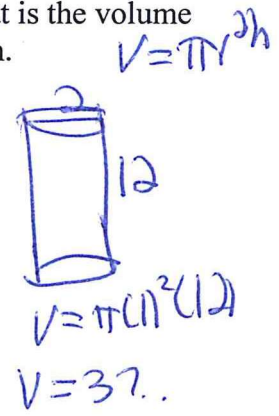
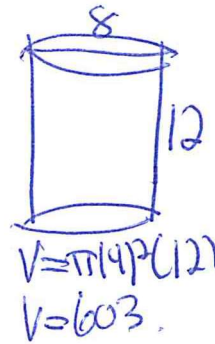
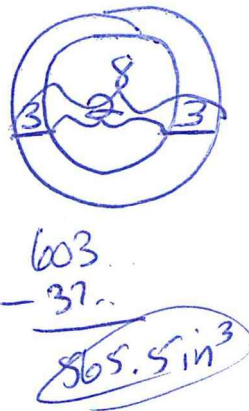
$V = 10(6)(15)$   
 $V = 900$

$V = 8(4)(15)$   
 $V = 480$

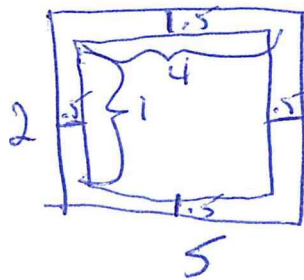
$900 - 480 = 420 \text{ cm}^3$



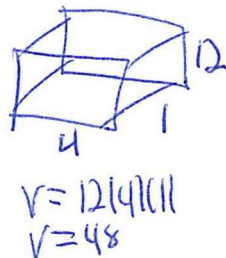
6. The paper towel roll shown below has a diameter of 8 inches and the paper has a thickness of 3 inches. If the height of the paper towel roll is 12 inches, what is the volume of the paper towels? Round your answer to the nearest tenth of a cubic inch.



7. A hollow metal pipe is in the shape of a rectangular prism that has a height of 12 cm. The length is 5 cm and the width is 2 cm. If the thickness is 0.5 cm all the way around, what is the volume of the metal?



$V = lwh$



$120 - 48 = 72 \text{ cm}^3$