

# Volume

Prisms

$$V = B \cdot H$$

Area of the Base Shape

Pyramids

$$V = \frac{1}{3} B \cdot H$$

3D Height  
Always is perpendicular distance to the Base shape

Circle

Cylinder

Cone

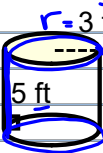
Sphere

Base

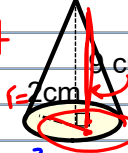
$$V = (\pi r^2) \cdot H$$

$$V = \frac{1}{3} (\pi r^2) \cdot H$$

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



area of circle  $\cdot H$   
 $V = \pi (3)^2 \cdot 5$   
 $V = 141.37 \text{ ft}^3$



area of circle  $\cdot H$   
 $V = \frac{1}{3} (\pi \cdot 2^2) \cdot 9$   
 $V = 37.70 \text{ cm}^3$



$$V = \frac{4}{3} \pi (17)^3$$

$V = 20579 \text{ m}^3$

Height between 2 bases

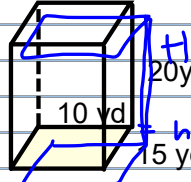
Rectangle

Rectangular

Rectangular

Base

Prism



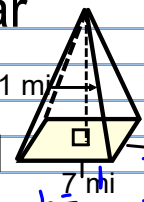
$$V = (b \cdot h) \cdot H$$

$b = l$   $h = w$   
area of rectangle  $\cdot H$

$$V = (15 \cdot 10) \cdot 20$$

$$V = 3000 \text{ yd}^3$$

Pyramid



$$V = \frac{1}{3} (b \cdot h) \cdot H$$

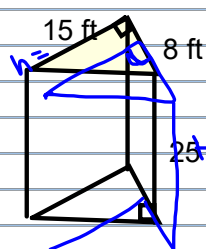
Area of Rectangle  $\cdot H$

$$V = \frac{1}{3} (7 \cdot 7) \cdot 11$$

$$V = 179.67 \text{ mi}^3$$

Triangle

Triangular



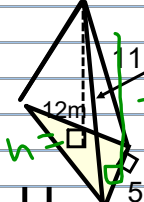
$$V = (\frac{1}{2} b \cdot h) \cdot H$$

triangle Area  $\cdot H$

$$V = (\frac{1}{2} \cdot 15 \cdot 8) \cdot 23$$

$$V = 1500 \text{ ft}^3$$

Triangular



Pyramid

$$V = \frac{1}{3} (\frac{1}{2} b \cdot h) \cdot H$$

area of triangle  $\cdot H$

$$V = \frac{1}{3} (\frac{1}{2} \cdot 5 \cdot 12) \cdot 11$$

$$V = 110 \text{ m}^3$$

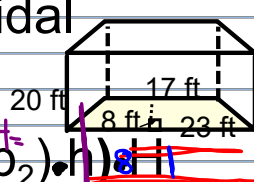
Trapezoid

Trapezoidal

Trapezoidal

Base

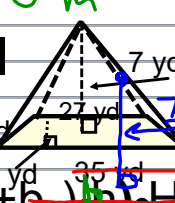
Prism



$$V = (\frac{1}{2} (b_1 + b_2) \cdot h) \cdot H$$

$$V = (\frac{1}{2} \cdot (23 + 17) \cdot 8) \cdot 20$$

Pyramid



$$V = \frac{1}{3} (\frac{1}{2} (b_1 + b_2) \cdot h) \cdot H$$

$$V = \frac{1}{3} (\frac{1}{2} (35 + 27) \cdot 6) \cdot 35$$

# Volume of Slanted 3D Figures

Prisms

$$V = B \cdot H$$

Base shape Area

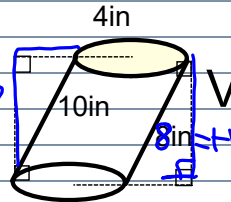
Perpendicular 3D Height

Pyramids

$$V = \frac{1}{3} B \cdot H$$

**Circle Cylinder**

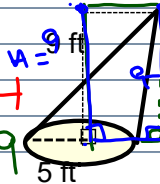
Base  $V = (\pi r^2) \cdot H$   
*area of circle  $\cdot H$*   
 $V = (\pi (4)^2) \cdot 8$



$$V = 402.12 \text{ in}^3$$

**Cone**

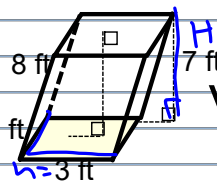
Base  $V = \frac{1}{3} (\pi r^2) \cdot H$   
*area of circle  $\cdot H$*   
 $V = \frac{1}{3} (\pi (5)^2) \cdot 9$



$$V = 235.62 \text{ ft}^3$$

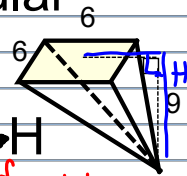
**Rectangle Rectangular**

Base Prism  $V = (b \cdot h) \cdot H$   
*area of rectangle  $\cdot H$*   
 $V = (2 \cdot 3) \cdot 7$   
 $V = 42 \text{ ft}^3$



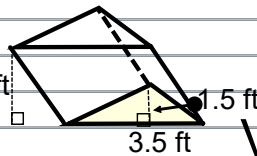
**Rectangular**

Pyramid  $V = \frac{1}{3} (b \cdot h) \cdot H$   
*Area of Rectangle  $\cdot H$*   
 $V = \frac{1}{3} (6 \cdot 6) \cdot 9$   
 $V = 108 \text{ units}^3$



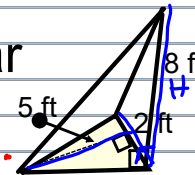
**Triangle Triangular**

Base Prism  $V = (\frac{1}{2} b \cdot h) \cdot H$   
*area of triangle  $\cdot H$*   
 $V = (\frac{1}{2} \cdot 3.5 \cdot 1.5) \cdot 4$   
 $V = 10.5 \text{ ft}^3$



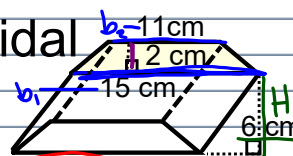
**Triangular**

Pyramid  $V = \frac{1}{3} (\frac{1}{2} b \cdot h) \cdot H$   
*area of triangle  $\cdot H$*   
 $V = \frac{1}{3} (\frac{1}{2} \cdot 2 \cdot 5) \cdot 8$   
 $V = 13.33 \text{ ft}^3$



**Trapezoid Trapezoidal**

Base Prism  $V = (\frac{1}{2} (b_1 + b_2) \cdot h) \cdot H$   
*Area of Trapezoid  $\cdot H$*   
 $V = (\frac{1}{2} (11 + 15) \cdot 2) \cdot 6$   
 $V = 156 \text{ cm}^3$



**Trapezoidal**

Pyramid  $V = \frac{1}{3} (\frac{1}{2} (b_1 + b_2) \cdot h) \cdot H$   
*Area of Trapezoid  $\cdot H$*   
 $V = \frac{1}{3} (\frac{1}{2} (12 + 5) \cdot 3) \cdot 7$   
 $V = 59.5 \text{ units}^3$

