



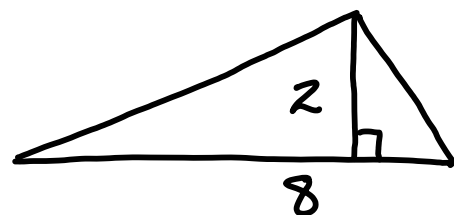
Area of Basic Figures

Examples

Triangle - $A = \frac{1}{2}bh$

$b = 8$ $h = 2$ $A = \frac{1}{2}(8)(2)$

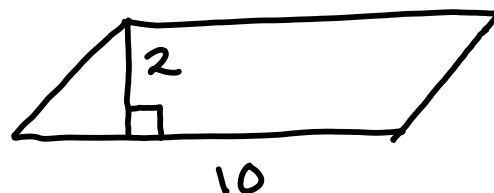
$A = 8$ units squared



Parallelogram - $A = bh$

$b = 10$ $h = 2$ $A = (10)(2)$

$A = 20$ units squared



Trapezoid - $A = \frac{1}{2}h(b_1 + b_2)$

$h = 3$

$b_1 = 5$

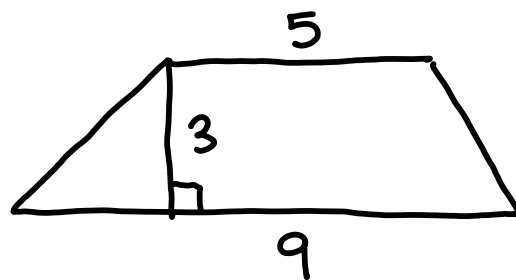
$b_2 = 9$

$A = \frac{1}{2}(3)(5 + 9)$

$= \frac{1}{2}(3)(14)$

$= (3)(7)$

$A = 21$ units squared





Circles: Area and Circumference

$$\underline{\text{Area}} = \pi r^2$$

$$\underline{\text{Circumference}} = D\pi = 2\pi r$$

$$\pi \approx 3.14$$

(use calculator value for more accurate answer)

↑
Diameter

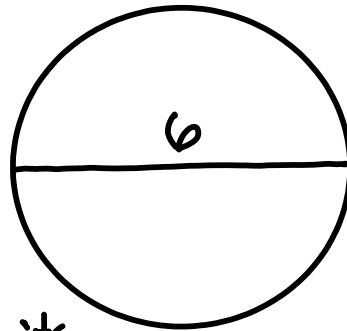
↑
radius

Circumference Example

$$C = D\pi$$

$$C = 6\pi$$

$$C \approx 6(3.14) \approx 18.84 \text{ units}$$



* Note - the circumference is the distance around the circle

Area Example

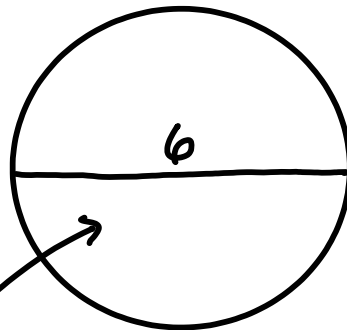
$$A = \pi r^2$$

$$A = \pi(3)^2$$

$$A = 9\pi$$

$$A \approx 9(3.14)$$

$$A \approx 28.26 \text{ units squared}$$



$$D = 6$$

$$\text{radius} = \frac{1}{2}D = \frac{1}{2}(6) = 3$$

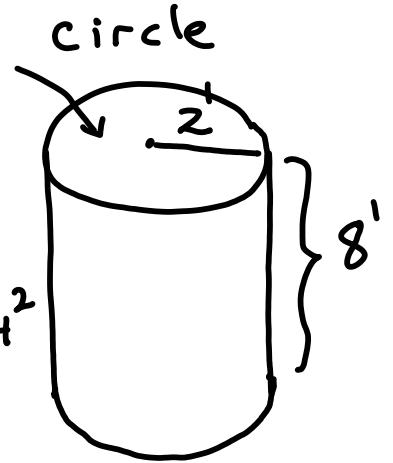


Surface Area of Basic Figures

Cylinder - $SA = 2\pi rh + 2B$

Example $r=2$ $h=8$ $B = \text{area of}$

$$\begin{aligned}
 SA &= 2\pi(2)(8) + 2\pi(2)^2 \\
 &= 32\pi + 8\pi \\
 &= 40\pi \quad \text{or} \quad 40(3.14) \approx 125.6 \text{ ft}^2
 \end{aligned}$$



Prism - $SA = ph + 2B$

Example $p = \text{perimeter of base}$

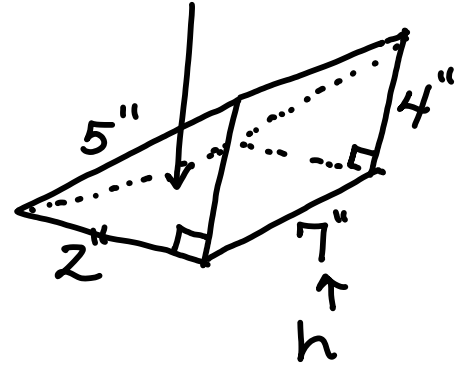
$$p = 2 + 5 + 4 = 11''$$

$$B = \frac{1}{2}(2)(4) = 4 \text{ in}^2$$

$$SA = (11)(7) + 2(4)$$

$$SA = 77 + 8 = 85 \text{ in}^2$$

$B = \text{area of base}$



Pyramid - $SA = n\left(\frac{1}{2}bl\right) + B$

Example

$n = \# \text{ sides} = 4$

$l = \text{length of side} = 6$

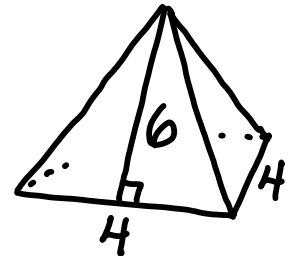
$b = \text{length of base} = 4$

$B = \text{area of base}$

$$B = (4)(4) = 16$$

$$SA = 4\left(\frac{1}{2} \cdot 4 \cdot 6\right) + 16$$

$$SA = 48 + 16 = 64 \text{ units squared}$$



Cone - $SA = \pi r l + B$

Example

$$r = 2$$

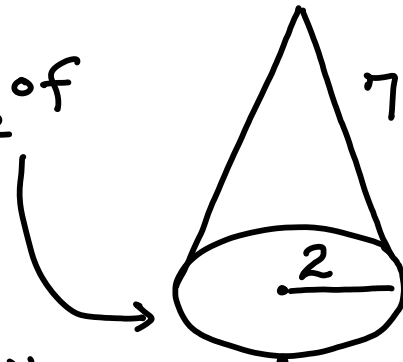
$$l = 7$$

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

$$SA = \pi(2)(7) + 4\pi$$

$$SA = 14\pi + 4\pi = 18\pi \text{ units squared}$$

↓
area of
circle



Sphere - $SA = 4\pi r^2$

Example

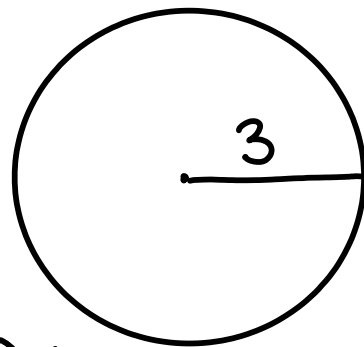
$$r = 3$$

$$SA = 4\pi(3)^2$$

$$= 4\pi \cdot 9$$

$$= 36\pi \text{ or } 36(3.14) \approx$$

$$113.04 \text{ units squared}$$

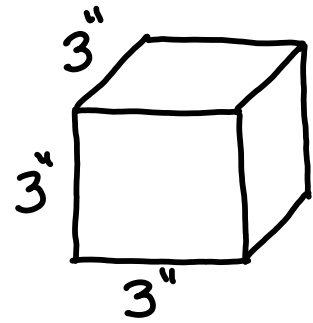




Volume of Basic Figures

Cube - $V = s^3$ $s = 3''$

Example $V = (3)^3 = 27 \text{ in}^3$



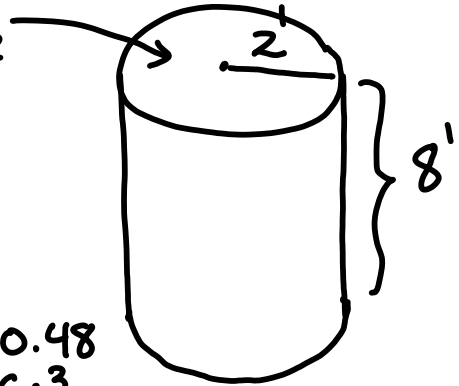
Cylinder - $V = Bh$ $B = \text{area of circle}$

Example

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

$$h = 8$$

$$V = (4\pi)(8) = 32\pi \approx 100.48 \text{ ft}^3$$



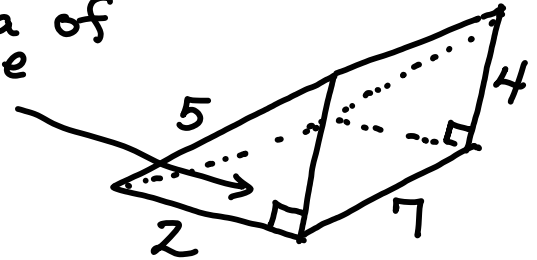
Prism - $V = Bh$ $B = \text{area of base}$

Example

$$B = \frac{1}{2}(2)(4)$$

$$h = 7$$

$$V = (4)(7) = 28 \text{ units cubed}$$



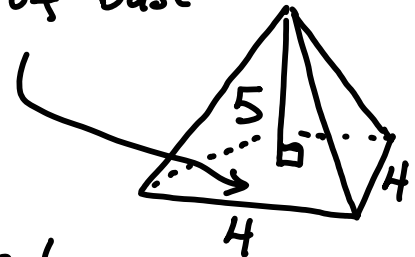
Pyramid - $V = \frac{1}{3}Bh$ $B = \text{area of base}$

Example

$$B = (4)(4) = 16$$

$$h = 5$$

$$V = \frac{1}{3}(16)(5) = \frac{80}{3} = 26.6 \text{ units cubed}$$



Cone -

$$V = \frac{1}{3}Bh \quad B = \text{area of circle}$$

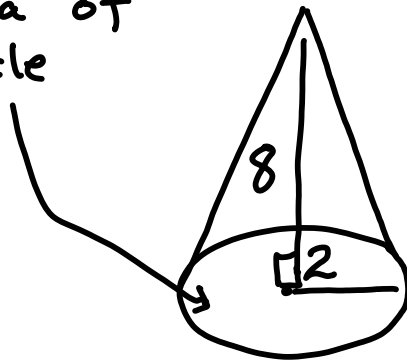
Example

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

$$h = 8$$

$$V = \frac{1}{3}(4\pi)(8)$$

$$V = \frac{32\pi}{3} \approx 33.49 \text{ units cubed}$$



Sphere -

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

Example

$$r = 3$$

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

$$= \frac{4}{3}\pi(27)$$

$$= 4\pi(9) = 36\pi \approx 113.04 \text{ units cubed}$$

