Reference Sheet

# Perimeter, Area, Surface Area, and Volume:

## Review of Terminology, Basic Shapes, and Formulas

## TERMINOLOGY

**area:** the measure of a bounded region of a two-dimensional shape expressed in square units

**circumference:** the distance around the edge of a circle

**diameter:** the distance across a circle through its center point

**hypotenuse:** the side opposite the 90° angle in a right triangle, also the longest side of a right triangle

**perimeter:** the total distance around the outside of a polygon

**pi or $\pi$:** the circumference of any circle divided by its diameter, rounded to the number 3.14

**radius:** the measure from the center of a circle to a point on the circle

**slant:** the diagonal distance from the top of a cone to its base

**slant height:** the height of one of the triangular faces of a pyramid

**surface area:** the sum of all the areas of all surfaces of a three-dimensional object, measured in square units

**volume:** the amount of space inside a three-dimensional shape, measured in cubic units

| ABBREVIATIONS: | d = diameter | r = radius |
|---|---|---|
| A = area | h = height | SA = surface area |
| b = base | l = length | slant h = slant height |
| BA = base area | P = perimeter | V = volume |
| C = circumference | $\pi$ = pi = 3.14 | w = width |

## BASIC SHAPES AND FORMULAS

### 2D SHAPES: PERIMETER AND AREA

**Rectangle**

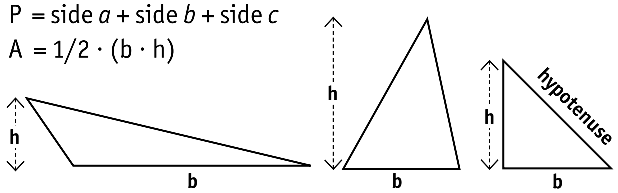
$P = 2 \cdot (l + w)$

$A = l \cdot w$


**Triangle**

P = side *a* + side *b* + side *c*

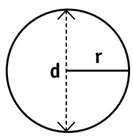
$A = 1/2 \cdot (b \cdot h)$




**Circle**

$C = \pi \cdot d$

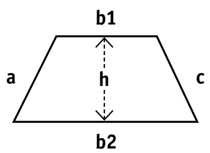
$A = \pi \cdot r^2$




**Trapezoid**

P = side *a* + b1 + b2 + side *c*

$A = 1/2 \cdot (b1 + b2) \cdot h$

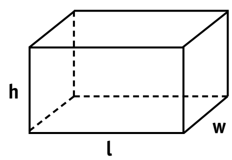



### 3D SHAPES: SURFACE AREA AND VOLUME

**Rectangular Prism**

$SA = 2 \cdot (l \cdot w + l \cdot h + w \cdot h)$

$V = l \cdot w \cdot h$

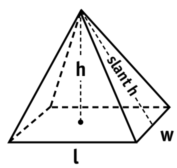



**Square Pyramid**

$SA = (BA) + 1/2 \cdot P \cdot \text{slant h}$

$V = 1/3 \cdot BA \cdot h$

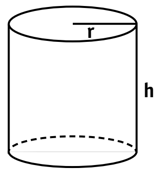
*Note: base area (BA) of a square or rectangular pyramid is l · w of the base, and P is perimeter of the base.*




**Cylinder**

$SA = (2 \cdot \pi \cdot r^2) + (\pi \cdot d \cdot h)$

$V = \pi \cdot r^2 \cdot h$




**Cone**

$SA = (\pi \cdot r^2) + (\pi \cdot r \cdot \text{slant})$

$V = \pi \cdot 1/3 \cdot r^2 \cdot h$