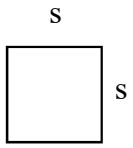
BASIC GEOMETRIC FORMULAS AND PROPERTIES

This handout is intended as a review of **basic geometric formulas and properties**. For further or more advanced geometric formulas and properties, consult with a SLAC counselor.

Square:

Perimeter: $P = 4s$ or $2s + 2s$

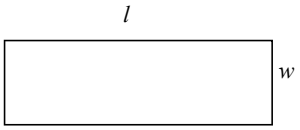
Area: $A = s^2$



Rectangle:

Perimeter: $P = 2w + 2l$

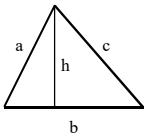
Area: $A = l \times w$



Triangles:

Perimeter: $P = a + b + c$

Area: $A = (1/2) \times b \times h$

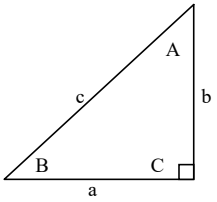


Types of Triangles:

- Isosceles (two equal sides)
- Equilateral (all sides equal)
- Right (one 90^o or right angle)

Pythagorean Theorem (for right triangles only):

$a^2 + b^2 = c^2$



Sum of the Angles (all triangles):

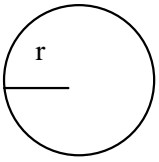
$A + B + C = 180^o$

Circle:

Diameter: $d = 2r$

Circumference: $C = 2 \pi r = \pi d$

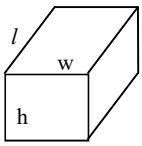
Area: $A = \pi r^2$



Rectangular Solid:

Volume: $V = l \times w \times h$

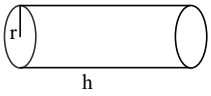
Surface Area: $S = (2 \times h \times w) + (2 \times l \times h) + (2 \times l \times w)$



Right Circular Cylinder:

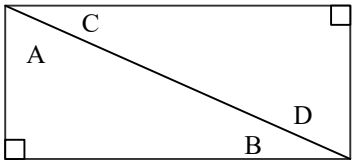
Volume: $V = \pi r^2 h$

Surface Area: $S = 2 \pi r h + 2 \pi r^2$



Complementary Angles:

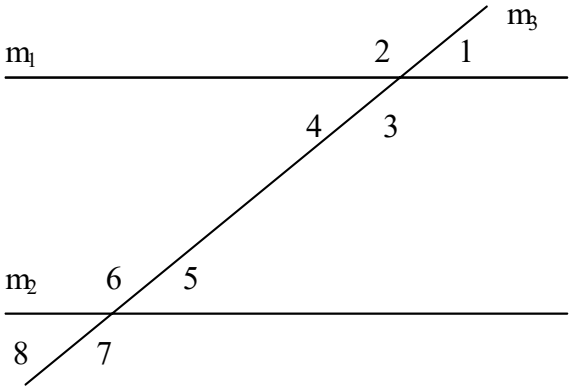
Two angles are complementary if the sum of their measures is 90^o. Angles A and B are complementary angles. Angles A and C are complementary angles.



Supplementary Angles:

Two angles are supplementary if the sum of their measures is 180^o.

Angles 1 and 2 are supplementary angles. Angles 2 and 4 are supplementary angles.



Opposite/Vertical Angles:

The intersection of two lines, m_1 and m_3, form four angles. Opposite (vertical) angles are congruent (have equal measures).

Angles 1 and 4 are congruent.
Angles 2 and 3 are congruent.

Alternate Interior and Exterior Angles:

Lines m_1 and m_2 are parallel. Angles 4 and 5 are called alternate interior angles. Alternate interior angles are congruent.

Angles 3 and 6
are also alternate interior angles.
Angles 2 and 7 are called alternate exterior angles.

Alternate exterior angles are congruent.

Angles 1 and 8
are also alternative exterior angles.

Note: Angles 1 and 4 are congruent. (opposite/vertical angles)
Angles 4 and 5 are congruent. (alternate interior angles)
Angles 5 and 8 are congruent. (opposite/vertical angles)
Angles 1 and 8 are congruent. (alternate exterior angles)
Angles 2 and 6 are congruent. (corresponding angles)
Angles 3 and 7 are congruent. (corresponding angles)
etc.

Straight Lines:

Straight lines have degrees measuring 180^o. If D to B is a straight line, then angle DCB is 180^o.