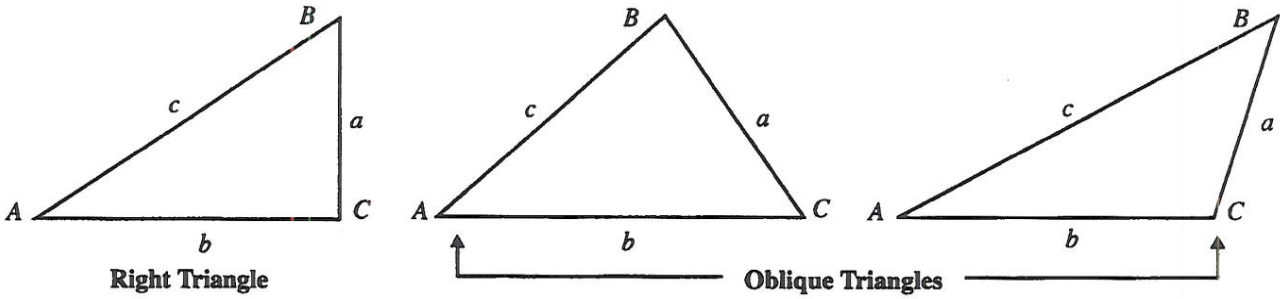


Right Triangle — **Oblique Triangles**

Solution of Right Triangles

For Angle A. $\sin = \frac{a}{c}$, $\cos = \frac{b}{c}$, $\tan = \frac{a}{b}$, $\cot = \frac{b}{a}$, $\sec = \frac{c}{b}$, $\text{cosec} = \frac{c}{a}$

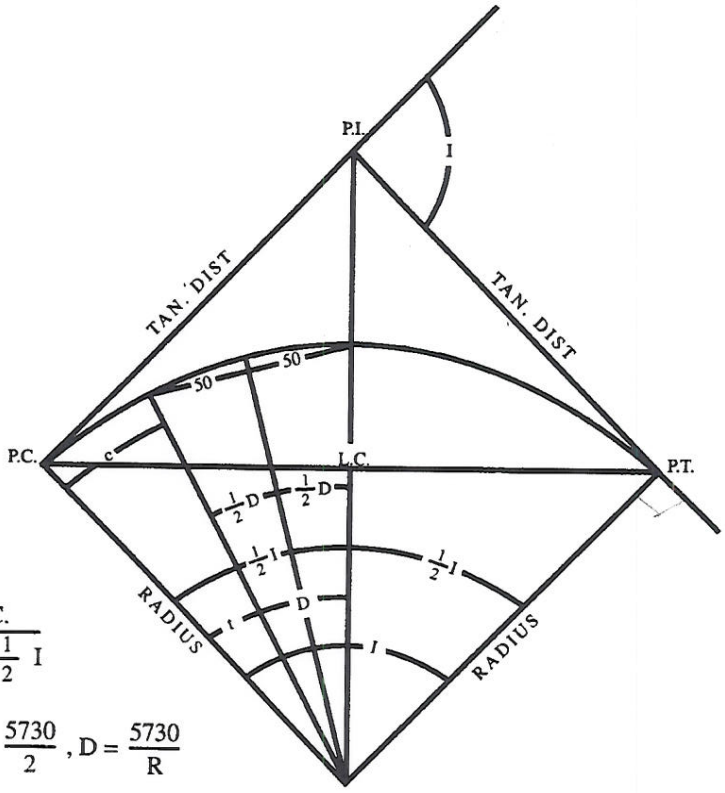
Given	Required	
a,b	A,B,c	$\tan A = \frac{a}{b} = \cot B,\ c = \sqrt{a^2 + b^2} = a\sqrt{1 + \frac{b^2}{a^2}}$
a,c	A,B,b	$\sin A = \frac{a}{c} = \cos B,\ b = \sqrt{(c + a)(c - a)} = c\sqrt{1 - \frac{a^2}{c^2}}$
A,a	B,b,c	$B = 90° - A,\ b = a \cot A,\ c = \frac{a}{\sin A}$
A,b	B,a,c	$B = 90° - A,\ a = b \tan A,\ c = \frac{b}{\cos A}$
A,c	B,a,b	$B = 90° - A,\ a = c \sin A,\ b = c \cos A$

Solution of Oblique Triangles

Given	Required	
A,B,a	b,c,C	$b = \frac{a \sin B}{\sin A},\ C = 180° - (A + B),\ c = \frac{a \sin C}{\sin A}$
A,a,b	B,c,C	$\sin B = \frac{b \sin A}{a},\ C = 180° - (A + B),\ c = \frac{a \sin C}{\sin A}$
a,b,C	A,B,c	$A + B = 180° - C,\ \tan \frac{1}{2}(A - B) = \frac{(a - b) \tan \frac{1}{2}(A + B)}{a + b},\ c = \frac{a \sin C}{\sin A}$
a,b,c	A,B,C	$s = \frac{a + b + c}{2},\ \sin \frac{1}{2}A = \sqrt{\frac{(s - b)(s - c)}{b c}},\ \sin B = \frac{1}{2}\sqrt{\frac{(s - a)(s - c)}{a c}},\ C = 180° - (A + B)$
a,b,c	Area	$s = \frac{a + b + c}{2},\ \text{area} = \sqrt{s(s - a)(s - b)(s - c)}$
A,b,c	Area	$\text{area} = \frac{b c \sin A}{2}$
A,B,C,a	Area	$\text{area} = \frac{a^2 \sin B \sin C}{2 \sin A}$

CURVE FORMULA

D = Degree of Curve
1° = 1-Degree of Curve
2° = 2-Degree of Curve
P.C. = Point of Curve
P.T. = Point of Tangent
P.I. = Point of Intersection
I = Intersection of Angle, Angle between to Tangents
L = Length of Curve
T = Tangent Distance
E = External Distance
R = Radius
L.C. = Length of Cord
M = Length of Middle Ordinate
c = Length of Sub-Cord
d = Angle of Sub-Cord



$$R = \frac{L.C.}{2 \sin \frac{1}{2} I} \quad T = R \tan \frac{1}{2} I = \frac{L.C.}{2 \cos \frac{1}{2} I}$$

$$\frac{L.C.}{2} = R \sin \frac{I}{2}, \quad D\,1° = R = 5730, \quad D\,2° = \frac{5730}{2}, \quad D = \frac{5730}{R}$$

$$M = R(1 - \cos \tfrac{1}{2} I), = R - R \cos \frac{I}{2}$$

$$\frac{E + R}{R} = \sec \frac{I}{2}, \quad \frac{R - M}{R} = \cos \frac{I}{2}$$

$$c = 2 R \sin \frac{1}{2} t$$

$$L.C. = 2 R \sin \tfrac{1}{2} I, \quad E = R (\sec \tfrac{1}{2} I - 1), = R \sec \frac{I}{2} - R$$

MISCELLANEOUS CONVERSION FACTORS

1 Meter = 3.280833 feet
1 Foot = 0.304801 meters
1 Link = 0.66 feet
1 Chain = 66 feet
80 Chains = 5280 feet = 1 mile
1 Acre = 43,560 square feet
640 Acres = 1 square mile
1 Kilometer = 0.621 miles
1 Mile = 1.609 kilometers
1 Hectare = 2.471 or 2 1/2 acres
π = 3.14159
1 Radian = 57.2958 degrees