Area of Oblique Triangles p. 68

Area of a Triangle Given 2 Sides & 1 Angle	$A=\frac{1}{2}\,a\cdot b\cdot sinC$ $A=\frac{1}{2}\,a\cdot c\cdot \sin B$ $A=\frac{1}{2}\,\mathrm{b}\cdot c\cdot \sin A$
Area of a Triangle Given 3 Sides (Heron's Formula)	$A=\sqrt{s(s-a)(s-b)(s-c)}$ $when \quad s=\frac{a+b+c}{2}$

Given 2 sides & 1 angle:

1. Find the area of the Δ given a=90 m, b=52 m, & C=102°.

$Area = \frac{1}{2}ab\sin C$

$A = \frac{1}{2}(90)(52)\sin 102$

$A = 2{,}288.9\ m^2$

2. Find the area of the Δ given a=103 cm, c=58 cm, & B=74°30'.

$Area = 1/2\ ac\sin B$

$A = .5(103)(58)\sin 74°30'$

$A = 2{,}878.4\ cm^2$

3. Find the area of the Δ given c=5.2, A=32°, & B=78°.

$a=2.9$ $A=32$
$b=$ $B=78$
$c=5.2$ $C=70$

$C=180-32-78$

$\frac{a}{\sin A}=\frac{c}{\sin C}$

$\frac{a}{\sin 32}=\frac{5.2}{\sin 70}$

$a=2.9$

$Area=.5(a)(c)\sin B$

$A=.5(2.9)(5.2)\sin 78$

$A=7.4\ unit^2$

Given 3 sides use Heron's formula:

1. Find the area of the Δ given a=9, b=3, & c=11.

$S=\frac{a+b+c}{2}$

$S=\frac{9+3+11}{2}$

$S=11.5$

$Area=\sqrt{S(S-a)(S-b)(S-c)}$

$A=\sqrt{11.5(11.5-9)(11.5-3)(11.5-11)}$

$A=\sqrt{122.1875}$

$A=11.1\ u^2$

2. Find the area of the Δ given a=6, b=8, & c=12.

$S=\frac{6+8+12}{2}$

$S=13$

$A=\sqrt{13(13-6)(13-8)(13-12)}$

$A=\sqrt{455}$

$A=21.3\ u^2$

HW: p.298 #37-42all