## Analytic Trigonometry Unit 06 Readings:

## The Laws of Sines and Cosines

**Oblique triangles - do not have a right angle**

**Law of Sines:**

 $\frac{a}{sinA}$ = $\frac{b}{sinB}$ = $\frac{c}{sinC}$ or $\frac{sinA}{a}$ = $\frac{sinB}{b}$ = $\frac{sinC}{c}$

SAA triangles

SSA triangles

Ambiguous case:

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 a > h a = h a < h a > h

 a > b a < b

**Area of an Oblique Triangle :**

Area =  cb sin A =  ab sin C =  ac sin B

**Law of Cosines:**

 *a*2 = *b*2 + *c*2 – 2*bc* cos*A*

 *b*2 = *a*2 + *c*2 – 2*ac* cos*B*

 *c*2 = *a*2 + *b*2 – 2*ab* cos*C*

SAS triangle

 SSS triangle

**Which do you use?**

Vikki’s Rule:

**If you have a BIG and a little of the same letter, you can use Law of Sines**

Book rule:

 Moving from left to right across the triangle:

ASA SSA SAA if the last known value is an angle - use the Law of Sines

SAS SSS if the last known value is a side - use the Law of Cosines

NOTE: If you start using Law of Cosines - KEEP USING IT!

Do NOT change over to Law of Sines

Law of Cosines calculator:

[**https://www.engineeringtoolbox.com/law-cosines-d\_1857.html**](https://www.engineeringtoolbox.com/law-cosines-d_1857.html)

For Wolframalpha:

**triangle A=120 degrees b=7 c=8**