1. $A^\circ + B^\circ + C^\circ = 180^\circ$ for all triangles!

2. The **Law of Sin** is $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
   - We can use the Law of Sin to find missing sides and angles of a triangle if we are given:
     - Any 2 angles and 1 side
     - 2 sides and an *opposite* angle e.g. $a, A, b$
   - If we’re given 2 sides and an opposite angle, there may be *2 different triangles* that are solutions, and you will be expected to find them *both*.

3. The **Law of Cos** is $a^2 = b^2 + c^2 - 2bc \cos A$.
   - By changing the labels on our triangle, we also get $b^2 = a^2 + c^2 - 2ac \cos B$ and $c^2 = a^2 + b^2 - 2ab \cos C$.
   - We can use the Law of Cos to find missing sides and angles of a triangle if we are given:
     - All 3 sides
     - 2 sides and the *included* angle e.g. $a, b, C$
4. Know how to find the \textbf{area of a triangle} given certain information about its sides and/or angles.

- If you know or can determine 2 sides and the included angle, the area is \( K = \frac{1}{2}ab \sin C \).
- By changing the labels on our triangle, we also get \( K = \frac{1}{2}bc \sin A \) and \( K = \frac{1}{2}ac \sin B \).
- The \textit{semiperimeter} of a triangle is \( s = \frac{a + b + c}{2} \) i.e. \textit{half} the perimeter.
- If you know or can determine all 3 sides, the area is \( K = \sqrt{s(s-a)(s-b)(s-c)} \).

5. Know how to apply information about triangles to word problems, including how to correctly and \textit{neatly} draw and label proper diagrams.

6. Know how to \textbf{solve trig equations} by finding the \textit{solution set} on the interval \([0, 2\pi]\) and by finding the \textit{general solution}.

- Some techniques to use are simplifying, factoring, substitution, and trig identities.
- Remember that when you take a square root it is \( \pm \).

\textit{Sample problems:} Find all solutions to \( \cos(9\theta) = \frac{1}{2} \) on \([0, 2\pi]\). Find the general solution to \( 7 \cos \theta = -3 \).

7. Remember the Pythagorean theorem and the definitions of the six basic trig functions are based on \textit{right triangles}. Only a right triangle has a hypotenuse!

8. Know how to interpret navigational bearings in word problems e.g. \( N30^\circ E \) or \( S17^\circ E \).