Things I Need to Know

1. SohCahToa

2. All Students Take Calculus

3. 30°, 60°, 90° 's (1, $\sqrt{3}$, 2)

4. 45°, 45°, 90° 's (1, 1, $\sqrt{2}$)

5. Pythagorean Theorem: $a^2 + b^2 = c^2$

   Pythagorean Triples: (3,4,5) (5,12,13) (8,15,17) (7,24,25)

6. s = rq (arc length), A=$\frac{1}{2}r^2q$ (area of a sector)
   {convert *è* to radians!}

7. $p = 180°$ and p = 3.1415927…radians

8. Law of Sines: $\frac{SinX}{x} = \frac{SinY}{y} = \frac{SinZ}{z}$ (ASA, AAS)

9. Law of Cosines: $a^2 = b^2 + c^2 - 2bcCosA$ (SAS, SSS)
   $b^2 = a^2 + c^2 - 2acCosB$
   $c^2 = a^2 + b^2 - 2abCosC$

10. Trigonometric Identities: (memorize the first, solve the others)

    a) $\sin^2 q + \cos^2 q = 1$
    b) $\csc^2 q = 1 + \cot^2 q$
    c) $\sec^2 q = 1 + \tan^2 q$

11. Area of a = $\frac{1}{2}ab\sin C$, $\frac{1}{2}bc\sin A$, $\frac{1}{2}ac\sin B$

12. ∠ Addition Formulas:

sin(A+B)= sinAcosB + sinBcosA
sin(A-B)= sinAcosB – sinBcosA

cos(A+B)= cosAcosB – sinAsinB
cos(A-B)= cosAcosB + sinAsinB

$\tan(A+B)= \dfrac{\tan A+\tan B}{1-\tan A\tan B}$

$\tan(A-B)= \dfrac{\tan A-\tan B}{1+\tan A\tan B}$

13. Double-Angle Formulas

$\sin 2q = 2\sin q\cos q$

$$\begin{aligned}\cos 2q &= \cos^2 q - \sin^2 q \\ &= 1-2\sin^2 q \\ &= 2\cos^2 q - 1\end{aligned}$$

$\tan 2q = \dfrac{2\tan q}{1-\tan^2 q}$