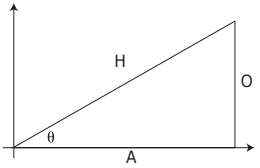
Numeracy Skills

Trigonometry

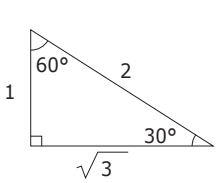


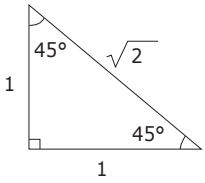
$\sin\theta = \frac{O}{H}$ opposite / hypotenuse SOH

$\cos\theta = \frac{A}{H}$ adjacent / hypotenuse CAH

$\tan\theta = \frac{O}{A}$ opposite / adjacent TOA

Remember! SOH CAH TOA





$\sin 30° = \frac{1}{2}$ $\sin 60° =$ _____ $\sin 45° =$ _____

$\cos 30° = \frac{\sqrt{3}}{2}$ $\cos 60° =$ _____ $\cos 45° =$ _____

$\tan 30° = \frac{1}{\sqrt{3}}$ $\tan 60° =$ _____ $\tan 45° =$ _____

Rules of Indices:

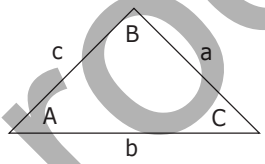
$a^n \times a^m = a^{(n+m)}$ $(a^n)^m = a^{nm}$

$a^n \div a^m = a^{(n-m)}$ $\sqrt{a} = a^{½}$

$a^o = 1$ $a^{-n} = 1/a^n$

Sine Law:

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



Cosine Law:

$a^2 = b^2+c^2-2bc\ \cos A$

$b^2 = a^2+c^2-2ac\ \cos B$

$c^2 = a^2+b^2-2ab\ \cos C$

Algebra

Addition:

$a+b = b+a$

$a+(b+c) = (a+b)+c$

Multiplication:

$ab = ba$

$a(bc) = (ab)c$

Expanding Brackets:

$a(b+c) = ab+ac$

$(a+b)^2 = a^2+2ab+b^2$

$(a+b)^3 = a^3+3a^2b+3ab^2+b^3$

$a(b-c) = ab-ac$

$(a-b)^2 = a^2-2ab+b^2$

$(a-b)^3 = a^3-3a^2b+3ab^2-b^3$

$(a+b)(a-b) = a^2 - b^2$

$(a+b)(c+d) = ac+ad+bc+bd$

$(a+b)(a+c) = a^2+ac+ab+bc$

Factorising:

$a^2-b^2 = (a+b)(a-b)$

$a^3+b^3 = (a+b)(a^2-ab+b^2)$

$a+2ab+b^2 = (a+b)^2$

$a^3-b^3 = (a-b)\ (a^2+ab+b^2)$

$a^2-2ab+b^2 = (a-b)^2$

$a^3b-ab = ab(a+1)(a-1)$

The Quadratic Equation:

For $ax^2+bx+c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$