7 MUST KNOW QUESTIONS TO <u>CONQUER</u>

SURDS

1	Without using a calculator, find the value of a and of b, for which $\dfrac{24}{\sqrt{3}(\sqrt{6}+\sqrt{12})}$ can be expressed as $a - \sqrt{b}$. Ans: $a = 8, b = 32$
2	Without using a calculator, find the exact value of x if $\sqrt{3} - x = \dfrac{\sqrt{48}+5x}{\sqrt{12}}$. Ans: $\dfrac{54-32\sqrt{3}}{13}$
3	The area of triangle is $\left(1 + \dfrac{5\sqrt{5}}{2}\right) cm^2$. If the length of the base of the triangle is $(3 + 2\sqrt{5})$ cm, find without using a calculator, the height of the triangle in the form of $(a + b\sqrt{5})$ cm, where a and b are integers. Ans: $4 - \sqrt{5}$
4	Given that $x = \sqrt{2} - \sqrt{3}$, find without using the calculator, the value of $x^2 - \dfrac{1}{x^2}$. Ans: $-4\sqrt{6}$
5	Without using a calculator, find the value of p and of q such that $\sqrt{\dfrac{1}{p+q\sqrt{5}}} = \dfrac{2-\sqrt{5}}{3-2\sqrt{5}}$. Ans: $p = 21, q = 8$
6	Express $\dfrac{3}{2-\sqrt{3}} - (2 - \sqrt{3})^2$ in the form $m + n\sqrt{3}$, where m and n are integers to be found. Ans: $-1 + 7\sqrt{3}$
7	Find the values of the integers a and b such that $\dfrac{\sqrt{a}+b}{11}$ is the solution of the equation $x\sqrt{24} = x\sqrt{2} + \sqrt{6}$. Ans: $a = 3, b = 6$