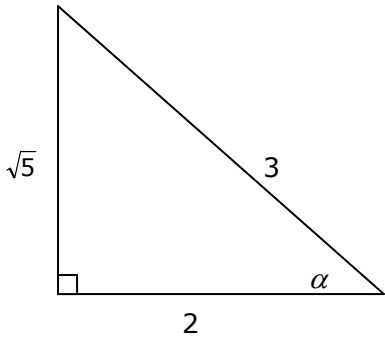


12	13a	Write $\sin\left(2\cos^{-1}\left(\frac{2}{3}\right)\right)$ in the form $a\sqrt{b}$, where a and b are rational.	2
<p>Let $\cos^{-1}\frac{2}{3} = \alpha$</p> <p>$\therefore \cos \alpha = \frac{2}{3}$</p> <p>$\therefore \sin \alpha = \frac{\sqrt{5}}{3}$</p> <p>Now, $\sin\left(2\cos^{-1}\left(\frac{2}{3}\right)\right) = \sin 2\alpha$</p> $= 2 \sin \alpha \cos \alpha$ $= 2 \times \frac{\sqrt{5}}{3} \times \frac{2}{3}$ $= \frac{4\sqrt{5}}{9}$ $= \frac{4}{9}\sqrt{5}$			<p>State Mean: 1.04/2</p>
			

* These solutions have been provided by [projectmaths](http://projectmaths.com.au) and are not supplied or endorsed by the Board of Studies

Board of Studies: Notes from the Marking Centre

Most candidates recognised that $\cos^{-1}\frac{2}{3}$ represented an angle. In many responses, candidates correctly used a double angle formula to find the answer. Some candidates used the t -results. In a significant number of weaker responses, candidates plugged the value into a calculator to produce an answer of 0.9938 ... For this part, candidates were asked to write the answer in the form $a\sqrt{b}$.

Source: http://www.boardofstudies.nsw.edu.au/hsc_exams/