

NAME _____ INDEX NUMBER _____

SCHOOL _____ DATE _____

SURDS

	<i>KCSE 1989 – 2012 Form 3 Mathematics</i>	Working Space
1.	<p>1996 Q 16 P2</p> <p>Simplify $(1 + \frac{\sqrt{3}}{1 + \sqrt{3}})(1 - \frac{\sqrt{3}}{1 + \sqrt{3}})$ (1 mark)</p> <p>Hence evaluate $\frac{1}{1 + \sqrt{3}}$ to 3 s.f given that $\sqrt{3} = 1.7321$ (1 mark)</p>	
7 8 9		
2.	<p>1997 Q 12 P2</p> <p>If $\frac{\sqrt{14}}{\sqrt{7} - \sqrt{2}} - \frac{\sqrt{14}}{\sqrt{7} + \sqrt{2}} = a\sqrt{7} + b\sqrt{2}$, Find the values of a and b where b are rational numbers</p> <p style="text-align: right;">(4 marks)</p>	
3.	<p>1998 Q 3 P2</p> <p>Simplify as far as possible, leaving your answer in the form of surd</p>	

	$\frac{1}{\sqrt{14-2\sqrt{3}}} - \frac{1}{\sqrt{14+2\sqrt{3}}}$ $\frac{1}{\sqrt{14-2\sqrt{3}}} - \frac{1}{\sqrt{14+2\sqrt{3}}}$	Working Space
4.	<p>2003 Q 10 P2</p> <p>Given that $a = \frac{1}{\sqrt{3}}$ and $b = \sqrt{13}$, express $2\sqrt{3} - 6\sqrt{39}$ in terms of a and b and Simplify the answer.</p>	
5.	<p>2004 Q 16 P2</p> <p>Without using mathematical tables, simplify</p> $\frac{2}{3-\sqrt{7}} - \frac{2}{3+\sqrt{7}}$ <p>in the form $a\sqrt{b}$</p> <p style="text-align: right;">(3 marks)</p>	
6.	<p>2005 Q 2 P2</p> <p>Without using mathematical Tables, simplify</p> $\frac{\sqrt{63} + \sqrt{72}}{\sqrt{32} + \sqrt{28}}$	

	(3 marks)	
7.	<p>2006 Q 6 P2</p> <p>Without using a calculator or mathematical tables,</p> $\frac{3\sqrt{2} - \sqrt{3}}{2\sqrt{3} - \sqrt{2}}$ <p>simplify</p> <p>(3 marks)</p>	Working Space
8.	<p>2007 Q 15 P2</p> $\frac{3}{\sqrt{5} - 2} + \frac{1}{\sqrt{5}}$ <p>Simplify leaving the answer in the form $a + b\sqrt{c}$, where a, b and c are rational numbers</p> <p>(3 marks)</p>	
9.	<p>2008 Q 13 P2</p> <p>Without using a calculator or mathematical tables, express</p> $\frac{\sqrt{3}}{1 - \cos 30^\circ}$ <p>in surd form and simplify</p> <p>(3marks)</p>	

10	<p>2009 Q 10 P2</p> $\frac{\sqrt{3}}{\sqrt{3}-\sqrt{2}}$ <p>Simplify (2 marks)</p> <p style="text-align: right;">(2 marks)</p>	
11	<p>2010 Q 2 P2</p> $\frac{4}{\sqrt{5}+\sqrt{2}} - \frac{3}{\sqrt{5}-\sqrt{2}}$ <p>Simplify</p> <p style="text-align: right;">(3 marks)</p>	Working Space
112	<p>2011 Q 8 P2</p> <p>Write $\sin 45^\circ$ in the form $\frac{1}{\sqrt{a}}$ where a is a positive integer. Hence simplify $\frac{\sqrt{8}}{1+\sin 45^\circ}$ leaving the answer in surd form.</p> <p style="text-align: right;">(3 marks)</p>	

130 2012 Q10 P2

Simplify $\frac{\sqrt{5}}{\sqrt{5}-2} - \frac{\sqrt{5}}{\sqrt{5}-2}$, leaving the answer in the form

$a + b\sqrt{c}$ where a, b and c are integers. (2 marks)