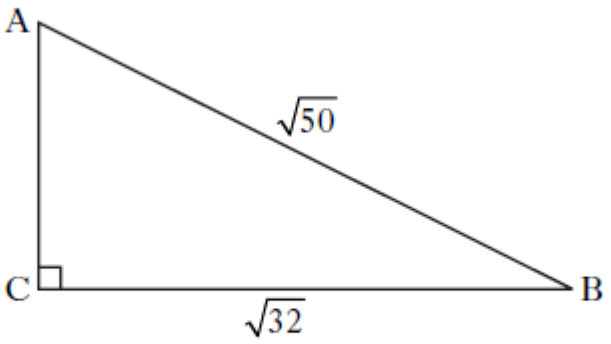
National 5 Surds

Solutions can be found from the school maths website

(http://www.dunblanehighschool.org.uk/maths/course/national-5/nat-5-past-papers/)

1. 01 P1	Simplify $\frac{\sqrt{3}}{\sqrt{24}}$. Express your answer as a fraction with a rational denominator.
2. 02 P1	Simplify $\sqrt{27} + 2\sqrt{3}$.
3. 03 P1	**Simplify** $\frac{\sqrt{24}}{\sqrt{2}}$.
4. 04 P1	**(*a*) Simplify $2\sqrt{75}$.**
5. 05 P1	$f(x) = 4\sqrt{x} + \sqrt{2}$ (*a*) Find the value of $f(72)$ as a surd in its simplest form. (*b*) Find the value of t, given that $f(t) = 3\sqrt{2}$.
6. 06 P2	Simplify, leaving your answer as a surd $2\sqrt{20} - 3\sqrt{5}$.

7. 08 P1	A right angled triangle has dimensions as shown.  Calculate the length of AC, leaving your answer as a surd **in its simplest form**.
8. 11 P1	Solve for x, $\sqrt{x} + \sqrt{18} = 4\sqrt{2}$.
9. 14 P1	Express $\sqrt{40} + 4\sqrt{10} + \sqrt{90}$ as a surd in its simplest form.
10. 10 P1	(a) Simplify $\sqrt{2} \times \sqrt{18}$. (b) Simplify $\sqrt{2} + \sqrt{18}$. (c) Hence show that $\frac{\sqrt{2} \times \sqrt{18}}{\sqrt{2} + \sqrt{18}} = \frac{3\sqrt{2}}{4}$.
11. 11 P1	Solve for x, $\sqrt{x} + \sqrt{18} = 4\sqrt{2}$.
12. 15 P1	Express $\frac{4}{\sqrt{8}}$ with a rational denominator. Give your answer in its simplest form.
13. 16 P1	The function $f(x)$ is defined by $f(x) = \frac{2}{\sqrt{x}}$, $x > 0$. Express $f(5)$ as a fraction with a rational denominator.

14. 18 P1	Express $\frac{9}{\sqrt{6}}$ with a rational denominator. Give your answer in its simplest form.
15. 19 P1	Express $\frac{\sqrt{2}}{\sqrt{40}}$ as a fraction with a rational denominator. Give your answer in its simplest form.