

Surds - Past Paper Questions

- 1) Express $\frac{4}{\sqrt{8}}$ with a rational denominator.
Give your answer in its simplest form. 3
- 2) Express $\frac{12}{\sqrt{2}}$ with a rational denominator. Give your answer in its simplest form. 3
- 3) Express $\frac{7}{\sqrt{2}}$ as a fraction with a rational denominator. 2
- 4) Simplify $\frac{\sqrt{3}}{\sqrt{24}}$. Express your answer as a fraction with a rational denominator. 3
- 5) Simplify $\frac{\sqrt{24}}{\sqrt{2}}$ 2
- 6) Express $\frac{\sqrt{40}}{\sqrt{2}}$ as a surd in its simplest form. 2
- 7) Simplify $2\sqrt{75}$ 2
- 8) Simplify $\sqrt{27} + 2\sqrt{3}$ 2
- 9) Simplify $2\sqrt{20} - 3\sqrt{5}$, leave your answer as a surd. 2
- 10) Express $\sqrt{45} - 2\sqrt{5}$ as a surd in its simplest form. 2
- 11) Express $\sqrt{40} + 4\sqrt{10} + \sqrt{90}$ as a surd in its simplest form. 3
- 12) Express $\sqrt{45} + 6\sqrt{5} - \sqrt{20}$ as a surd in its simplest form. 3
- 13) Express $\sqrt{63} + \sqrt{28} - \sqrt{7}$ as a surd in its simplest form. 3
- 14) Express $2\sqrt{5} + \sqrt{20} - \sqrt{45}$ as a surd in its simplest form. 3
- 15) Express $\sqrt{12} + 5\sqrt{3} - \sqrt{27}$ as a surd in its simplest form. 3
- 16) Simplify $\sqrt{2}(\sqrt{3} + \sqrt{2}) - \sqrt{6}$ 2
- 17) Three of the following have the same value.
$$2\sqrt{6}, \quad \sqrt{2} \times \sqrt{12}, \quad 3\sqrt{8}, \quad \sqrt{24}$$

Which one has a different value?
You must give a reason for your answer. 2
- 18) Solve for x , $\sqrt{x} + \sqrt{18} = 4\sqrt{2}$ 3
- 19) $f(x) = 4\sqrt{x} + \sqrt{2}$
 - a) Find the value of $f(72)$ as a surd in its simplest form. 3
 - b) Find the value of t , given that $f(t) = 3\sqrt{2}$. 3

- 20) a) Simplify $\sqrt{2} \times \sqrt{18}$ 1
- b) Simplify $\sqrt{2} + \sqrt{18}$ 1
- c) Hence show that $\frac{\sqrt{2} \times \sqrt{18}}{\sqrt{2} + \sqrt{18}} = \frac{3\sqrt{2}}{4}$ 2