Rationalising the Denominator - RED

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question** | **Multiply** | **Simplify** | **Simplify** | **Answer** |
| $$\frac{10}{\sqrt{20}}$$ | $$\frac{10x\sqrt{20}}{\sqrt{20}x\sqrt{20}}$$ | $$\frac{10x2\sqrt{5}}{20}$$ | $$\frac{20\sqrt{5}}{20}$$ | $$\sqrt{5}$$ |
| $$\frac{\sqrt{2}}{\sqrt{8}}$$ | $$\frac{\sqrt{2}x\sqrt{8}}{\sqrt{8}x\sqrt{8}}$$ | $$\frac{\sqrt{16}}{8}$$ |  |  |
| $$\frac{5\sqrt{2}}{\sqrt{5}}$$ | $$\frac{5\sqrt{2}x\sqrt{5}}{\sqrt{5}x\sqrt{5}}$$ |  |  |  |
| $$\frac{5}{3\sqrt{7}}$$ | $$\frac{5x\sqrt{7}}{3\sqrt{7}x\sqrt{7}}$$ |  |  |  |
| $$\frac{4}{2\sqrt{2}}$$ |  |  |  |  |
| $$\frac{4}{6\sqrt{7}}$$ |  |  |  |  |
| $$\frac{5}{3\sqrt{8}}$$ |  |  |  |  |
| $$\frac{7}{9\sqrt{3}}$$ |  |  |  |  |
| $$\frac{1}{3\sqrt{18}}$$ |  |  |  |  |
| $$\frac{7}{3\sqrt{24}}$$ |  |  |  |  |
| $$\frac{9}{18\sqrt{3}}$$ |  |  |  |  |
| $$\frac{2}{4\sqrt{45}}$$ |  |  |  |  |
| $$\frac{3\sqrt{4}}{2\sqrt{5}}$$ |  |  |  |  |
| $$\frac{3+\sqrt{3}}{4-\sqrt{3}}$$ | $$\frac{(3+\sqrt{3})(4+\sqrt{3)}}{(4-\sqrt{3})(4+\sqrt{3})}$$ |  |  |  |
| $$\frac{4-\sqrt{2}}{5+\sqrt{2}}$$ |  |  |  |  |
| $$\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$$ |  |  |  |  |

Rationalising the Denominator – AMBER

Cut out the below surds and match the questions to their answers.

No matching answer? Check your working out!

|  |  |  |  |
| --- | --- | --- | --- |
| **Question** | **Question** | **Answer** | **Answer** |
| $$\frac{10}{\sqrt{20}}$$ | $$\frac{1}{3\sqrt{18}}$$ | $$\frac{1}{2}$$ | $$4-\sqrt{15}$$ |
| $$\frac{\sqrt{2}}{\sqrt{8}}$$ | $$\frac{7}{3\sqrt{24}}$$ | $$\frac{5\sqrt{7}}{21}$$ | $$\sqrt{10}$$ |
| $$\frac{5\sqrt{2}}{\sqrt{5}}$$ | $$\frac{9}{18\sqrt{3}}$$ | $$\sqrt{2}$$ | $$\frac{5\sqrt{2}}{12}$$ |
| $$\frac{5}{3\sqrt{7}}$$ | $$\frac{2}{4\sqrt{45}}$$ | $$\frac{15+7\sqrt{3}}{13}$$ | $$\frac{7\sqrt{3}}{27}$$ |
| $$\frac{4}{2\sqrt{2}}$$ | $$\frac{3\sqrt{4}}{2\sqrt{5}}$$ | $$\frac{2\sqrt{7}}{21}$$ | $$\frac{\sqrt{2}}{18}$$ |
| $$\frac{4}{6\sqrt{7}}$$ | $$\frac{3+\sqrt{3}}{4-\sqrt{3}}$$ | $$\frac{3\sqrt{5}}{5}$$ | $$\frac{7\sqrt{6}}{36}$$ |
| $$\frac{5}{3\sqrt{8}}$$ | $$\frac{4-\sqrt{2}}{5+\sqrt{2}}$$ | $$\frac{22-9\sqrt{2}}{23}$$ | $$\frac{\sqrt{3}}{6}$$ |
| $$\frac{7}{9\sqrt{3}}$$ | $$\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$$ | $$\sqrt{5}$$ | $$\frac{\sqrt{5}}{30}$$ |

Rationalising the Denominator – GREEN

|  |  |  |
| --- | --- | --- |
| **Question** | **Working out** | **Answer** |
| $$\frac{10}{\sqrt{20}}$$ |  |  |
| $$\frac{\sqrt{2}}{\sqrt{8}}$$ |  |  |
| $$\frac{5\sqrt{2}}{\sqrt{5}}$$ |  |  |
| $$\frac{5}{3\sqrt{7}}$$ |  |  |
| $$\frac{4}{2\sqrt{2}}$$ |  |  |
| $$\frac{4}{6\sqrt{7}}$$ |  |  |
| $$\frac{5}{3\sqrt{8}}$$ |  |  |
| $$\frac{7}{9\sqrt{3}}$$ |  |  |
| $$\frac{1}{3\sqrt{18}}$$ |  |  |
| $$\frac{7}{3\sqrt{24}}$$ |  |  |
| $$\frac{9}{18\sqrt{3}}$$ |  |  |
| $$\frac{2}{4\sqrt{45}}$$ |  |  |
| $$\frac{3\sqrt{4}}{2\sqrt{5}}$$ |  |  |
| $$\frac{3+\sqrt{3}}{4-\sqrt{3}}$$ |  |  |
| $$\frac{4-\sqrt{2}}{5+\sqrt{2}}$$ |  |  |
| $$\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$$ |  |  |