

WARM-UP:

① $(5\sqrt{3}-2)^2$

② $(\sqrt{2})^5$ is equal to...

- a) $\sqrt{10}$
- b) $5\sqrt{2}$
- ✓ c) $4\sqrt{2}$
- d) 32

$$\sqrt{2^5} = \sqrt{32} = 4\sqrt{2}$$

$$\underbrace{\sqrt{2} \sqrt{2}}_2 \underbrace{\sqrt{2} \sqrt{2}}_2 \sqrt{2}$$

$$\frac{2 \cdot 2}{4\sqrt{2}}$$

Does $\frac{10\sqrt{6}}{2\sqrt{2}} = 5\sqrt{3}$

In general, when dividing radicals divide coefficients by coefficients and radicands by radicands

$$\frac{m\sqrt[k]{a}}{n\sqrt[k]{b}} = \frac{m}{n}\sqrt[k]{\frac{a}{b}}$$

Ex. Simplify

a) $\frac{\sqrt{28x^2}}{\sqrt{7x}} = \frac{\sqrt{\cancel{7} \cdot 4 \cdot \cancel{x} \cdot x}}{\sqrt{\cancel{7}x}} = \sqrt{4x} = 2\sqrt{x}$

b) $\frac{2\sqrt{54}}{5\sqrt{24}} = \frac{2\sqrt{9}}{5\sqrt{4}} = \frac{\cancel{2}(3)}{5(\cancel{2})} = \frac{3}{5}$

c) $\frac{2\sqrt{150n^3}}{\sqrt{8n}} = \frac{\cancel{2}\sqrt{75n^2}}{\sqrt{\cancel{4}}} = \sqrt{75n^2} = \sqrt{25 \times 3 \times n^2} = 5n\sqrt{3}$
 $\frac{1 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \frac{\sqrt{3}}{3}$

Sometimes, the roots do not divide and the expression is left with a radical in the denominator. In this case, rationalize the denominator.

Examples.

$$a) \frac{\sqrt{5} \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{\sqrt{10}}{2}$$

$$b) \frac{5\sqrt{2}}{2\sqrt{6}} = \frac{5 \cdot \sqrt{3}}{2\sqrt{3} \cdot \sqrt{3}} = \frac{5\sqrt{3}}{6} \quad \frac{15}{2}$$

$$c) \frac{7\sqrt{32y}}{5\sqrt{63}} = \frac{7(4\sqrt{2y})}{5(3\sqrt{7})} = \frac{28\sqrt{2y} \cdot \sqrt{7}}{15\sqrt{7} \cdot \sqrt{7}} = \frac{28\sqrt{14y}}{105} = \frac{4\sqrt{14y}}{15}$$

$$d) \frac{3}{\sqrt{y}} \cdot \frac{\sqrt{y}}{\sqrt{y}} = \frac{3\sqrt{y}}{y} \quad \sqrt{45} = \sqrt{9 \times 5} = 3\sqrt{5}$$

$$e) \frac{3\sqrt{135m^5}}{\sqrt{21m^3}} = \frac{3\sqrt{45m^2}}{\sqrt{7}} = \frac{9\sqrt{5m^2} \cdot \sqrt{7}}{\sqrt{7} \cdot \sqrt{7}} = \frac{9\sqrt{35m^2}}{7} = \frac{9m\sqrt{35}}{7}$$

$$f) \frac{1}{\sqrt[3]{3}} \cdot \frac{\sqrt[3]{3^2}}{\sqrt[3]{3^2}} = \frac{\sqrt[3]{9}}{3} \quad \frac{\sqrt[3]{x^2}}{\sqrt[3]{x^3}}$$

Quiz next class on add/subtract/multiplying radicals

not allowed Calculators
 - Natural view
 - Write view.