

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

Pre-Geometry LESSON #1: PROPERTIES OF RADICALS:

Adding and Subtracting Radicals	Dividing With Radicals	Rationalizing the Denominator
<p>Radicals with the same radicand are called LIKE RADICALS. You can add and subtract like radicals the same way you combine like terms.....</p> $5\sqrt{7} + \sqrt{11} - 8\sqrt{7}$ $-3\sqrt{7} + \sqrt{11}$ <p>Do not assume that radicals with different radicands cannot be added or subtracted. ALWAYS check to see whether you can simplify the radicals. In some cases, the radicals will become like radicals.....</p> $10\sqrt{5} + \sqrt{20}$ $10\sqrt{5} + 2\sqrt{5} = 12\sqrt{5}$ $3\sqrt{2} - \sqrt{6} + 10\sqrt{2}$ $13\sqrt{2} - \sqrt{6}$ $4\sqrt{7} - 6\sqrt{63}$ $4\sqrt{7} - 18\sqrt{7} = -14\sqrt{7}$ $\sqrt{12} + 6\sqrt{3} + 2\sqrt{6}$ $2\sqrt{3} + 6\sqrt{3} + 2\sqrt{6}$ $8\sqrt{3} + 2\sqrt{6}$ $3\sqrt{7} - 5\sqrt{14} + 2\sqrt{28}$ $3\sqrt{7} - 5\sqrt{14} + 4\sqrt{7}$ $7\sqrt{7} - 5\sqrt{14}$	<p>How to simplify radical division.....</p> $\frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$ $\frac{\sqrt{15}}{\sqrt{64}} = \frac{\sqrt{15}}{8}$ $\sqrt{\frac{18}{81}} \rightarrow \sqrt{\frac{2}{9}} \rightarrow \frac{\sqrt{2}}{3}$ $\frac{\sqrt{18}}{\sqrt{81}} = \frac{3\sqrt{2}}{9} = \frac{\sqrt{2}}{3}$ $-4\sqrt{\frac{35}{7}} = -4\sqrt{5}$ $\frac{\sqrt{10}}{2\sqrt{5}} = \frac{1}{2} \sqrt{\frac{10}{5}} = \frac{\sqrt{2}}{2}$	<p>Rule: Radicals are NOT simplified if there is a radical in the DENOMINATOR!! How do you "eliminate" radicals in the denominator? <u>Rationalize the Denominator</u> Here's how.....</p> $\frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5}}{5}$ $\frac{\sqrt{10}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{30}}{3}$ $\frac{\sqrt{54}}{7\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{324}}{42} = \frac{18}{42} = \frac{3}{7}$ $\frac{\sqrt{16}}{3\sqrt{45}} \cdot \frac{\sqrt{45}}{\sqrt{45}} = \frac{\sqrt{720}}{135} = \frac{12\sqrt{5}}{135} = \frac{4\sqrt{5}}{45}$ $\frac{7}{10\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{20}$
	<p>Squaring a Radical Expression (No calculator):</p> $(\sqrt{34})^2 = 34$ $(2\sqrt{7})^2 = (2\sqrt{7})(2\sqrt{7})$	$(-2\sqrt{7})^2 = (-2\sqrt{7})(-2\sqrt{7}) = 28$ $(11\sqrt{3} - 1\sqrt{3})^2 = (10\sqrt{3})^2 = 300$ $(2\sqrt{6} - 5\sqrt{6})^2 = (-3\sqrt{6})^2 = 54$

$$4 \cdot 7 = 28$$