

OPERATIONS WITH RADICALS - DIVIDING & RATIONALIZING THE DENOMINATOR

☐ Explore ☐ Explain ☐ Execute ☐ Enrich

Look at the example problem below and see if you can figure out how they arrived at the answer!

Explore:

$$\begin{aligned}\sqrt{2} \cdot \sqrt{2} \\ &= \sqrt{4} \\ &= 2\end{aligned}$$

What is $\sqrt{3} \cdot \sqrt{3}$ equal to?

If I had the fraction $\frac{2}{\sqrt{3}}$, what could I multiply the denominator by to eliminate the radical in the denominator?

Explain:

When finding the quotient of radical expressions, we _____ the coefficients and _____ the radicands (numbers inside the radical). When we cannot divide, we _____.

In order to completely simplify the radical, we cannot leave a radical in the _____. We must _____ the denominator by multiplying the entire fraction by the _____.

Ex 1: $\frac{6\sqrt{8}}{3\sqrt{2}}$

Answer: _____

Ex 2: $\frac{3}{9\sqrt{5}}$

Answer: _____

Ex 3: $\frac{4\sqrt{3}}{8\sqrt{18}}$

Answer: _____

Ex 4: $\frac{21\sqrt{8}}{7\sqrt{12}}$

Answer: _____

Execute: Simplify the following expressions.

A. $\frac{18\sqrt{10}}{9\sqrt{5}}$

Answer: _____

B. $\frac{\sqrt{6}}{4\sqrt{3}}$

Answer: _____

C. $\frac{\sqrt{42}}{2\sqrt{7}}$

Answer: _____

D. $\frac{3\sqrt{21}}{21\sqrt{28}}$

Answer: _____

E. $\frac{6\sqrt{10}}{3\sqrt{30}}$

Answer: _____

F. $\frac{13\sqrt{2}}{39\sqrt{5}}$

Answer: _____

Enrich

G. $\frac{5\sqrt{2}(2\sqrt{10})}{2\sqrt{5}}$

Answer: _____