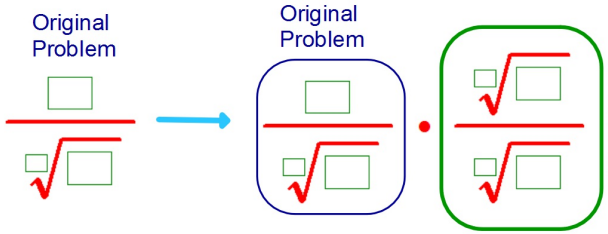
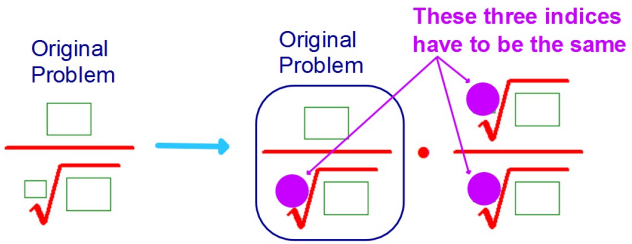
Rationalizing a Denominator

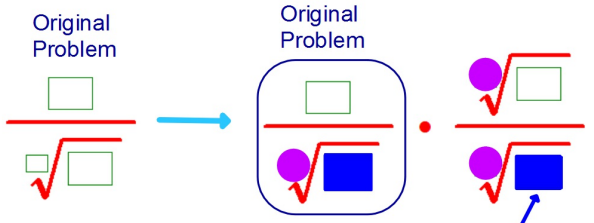
Eliminating radicals from denominators



this fraction has to equal 1 which means the numerator and denominator must be the same.

Since you are multiplying the original problem by 1 you are only changing the way it looks not what it equals.





this should be the smallest quantity needed such that when the two denominators are multiplied you create something that you can take the root of.

Rationalize each denominator. Simplify if possible.

1. $\frac{13}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{13\sqrt{2}}{\sqrt{4}} = \boxed{\frac{13\sqrt{2}}{2}}$

2. $\frac{22}{\sqrt{32}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{22\sqrt{2}}{\sqrt{64}} = \frac{22\sqrt{2}}{8} = \boxed{\frac{11\sqrt{2}}{4}}$

$\frac{22}{\sqrt{32}}$

Rationalize each denominator. Simplify if possible.

3. $\frac{48}{\sqrt{27}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{48\sqrt{3}}{\sqrt{81}} = \frac{48\sqrt{3}}{9} = \boxed{\frac{16\sqrt{3}}{3}}$

4. $\frac{40}{\sqrt[3]{36}} \cdot \frac{\sqrt[3]{6}}{\sqrt[3]{6}} = \frac{40\sqrt[3]{6}}{\sqrt[3]{6^3}} = \frac{40\sqrt[3]{6}}{6} = \boxed{\frac{20\sqrt[3]{6}}{3}}$

($\sqrt[3]{36} = \sqrt[3]{6^2}$)

Rationalize each denominator and simplify.

1. $\frac{13}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}} = \frac{13\sqrt[3]{2^2}}{\sqrt[3]{2^3}} = \boxed{\frac{13\sqrt[3]{2^2}}{2}}$

2. $\frac{17}{\sqrt[3]{49}} \cdot \frac{\sqrt[3]{7}}{\sqrt[3]{7}} = \frac{17\sqrt[3]{7}}{\sqrt[3]{7^3}} = \boxed{\frac{17\sqrt[3]{7}}{7}}$

($\sqrt[3]{49} = \sqrt[3]{7^2}$)

3. $\frac{24}{\sqrt[4]{25}} \cdot \frac{\sqrt[4]{5^2}}{\sqrt[4]{5^2}} = \frac{24\sqrt[4]{5^2}}{\sqrt[4]{5^4}} = \boxed{\frac{24\sqrt[4]{5^2}}{5}}$

($\sqrt[4]{25} = \sqrt[4]{5^2}$)

Rationalize each denominator and simplify.

1. $\frac{15}{\sqrt[4]{27}} \cdot \frac{\sqrt[4]{3}}{\sqrt[4]{3}} = \frac{15\sqrt[4]{3}}{\sqrt[4]{3^4}} = \frac{15\sqrt[4]{3}}{3} = \boxed{5\sqrt[4]{3}}$

($\sqrt[4]{27} = \sqrt[4]{3^3}$)

2. $\frac{15}{\sqrt[5]{36}} \cdot \frac{\sqrt[5]{6^3}}{\sqrt[5]{6^3}} = \frac{15\sqrt[5]{6^3}}{\sqrt[5]{6^5}} = \frac{15\sqrt[5]{6^3}}{6} = \boxed{\frac{5\sqrt[5]{6^3}}{2}}$

($\sqrt[5]{36} = \sqrt[5]{6^2}$)

Rationalize each denominator and simplify. Assume all variables are positive.

1. $\dfrac{5}{\sqrt{m}} \cdot \dfrac{\sqrt{m}}{\sqrt{m}} = \dfrac{5\sqrt{m}}{\sqrt{m^2}} = \dfrac{5\sqrt{m}}{m}$

2. $\dfrac{12}{\sqrt{m^3}} \cdot \dfrac{\sqrt{m}}{\sqrt{m}} = \dfrac{12\sqrt{m}}{\sqrt{m^4}} = \dfrac{12\sqrt{m}}{m^2}$

3. $\dfrac{2}{\sqrt{m^{11}}} \cdot \dfrac{\sqrt{m}}{\sqrt{m}} = \dfrac{2\sqrt{m}}{\sqrt{m^{12}}} = \dfrac{2\sqrt{m}}{m^6}$

Rationalize each denominator and simplify. Assume all variables are positive.

1. $\dfrac{1}{\sqrt[3]{p}} \cdot \dfrac{\sqrt[3]{p^2}}{\sqrt[3]{p}} = \dfrac{\sqrt[3]{p^2}}{\sqrt[3]{p^3}} = \dfrac{\sqrt[3]{p^2}}{p}$

2. $\dfrac{7}{\sqrt[5]{d^2}} \cdot \dfrac{\sqrt[5]{d^3}}{\sqrt[5]{d^3}} = \dfrac{7\sqrt[5]{d^3}}{\sqrt[5]{d^5}} = \dfrac{7\sqrt[5]{d^3}}{d}$

Rationalize the denominator and simplify. Assume all variables are positive.

$$\frac{1}{\sqrt[3]{ab^2}} \cdot \frac{\sqrt[3]{a^2b}}{\sqrt[3]{a^2b}}$$

$$= \frac{\sqrt[3]{a^2b}}{\sqrt[3]{a^3b^3}} = \frac{\sqrt[3]{a^2b}}{ab}$$

Rationalize the denominator and simplify. Assume all variables are positive.

$$\frac{9}{\sqrt[4]{c^2d^3e}} \cdot \frac{\sqrt[4]{c^2de^3}}{\sqrt[4]{c^2de^3}}$$

$$= \frac{9\sqrt[4]{c^2de^3}}{\sqrt[4]{c^4d^4e^4}} = \frac{9\sqrt[4]{c^2de^3}}{cde}$$

Rationalize the denominator and simplify.
Assume all variables are positive.

$$\frac{12a}{\sqrt[4]{6a^3b^5c}} \cdot \frac{\sqrt[4]{6^3ab^3c^3}}{\sqrt[4]{6^3ab^3c^3}}$$

$$= \frac{12a\sqrt[4]{6^3ab^3c^3}}{\sqrt[4]{6^4a^4b^8c^4}} = \frac{12a\sqrt[4]{6^3ab^3c^3}}{6ab^2c}$$

a cancels

$$= \frac{2\sqrt[4]{6^3ab^3c^3}}{b^2c}$$

Rationalize the denominator and simplify.
Assume all variables are positive.

$$\frac{12j^4k}{\sqrt[4]{8j^7k^{17}}} \cdot \frac{\sqrt[4]{2jk^3}}{\sqrt[4]{2jk^3}}$$

$8 = 2^3$

$$= \frac{12j^4k\sqrt[4]{2jk^3}}{\sqrt[4]{2^4j^8k^{20}}} = \frac{12j^4k\sqrt[4]{2jk^3}}{2j^2k^5}$$

$$= \frac{6j^2\sqrt[4]{2jk^3}}{k^4}$$

Rationalize the denominator and simplify.
Assume all variables are positive.

$$\frac{48x^{12}y}{\sqrt[5]{4x^{13}y^{21}}} \cdot \frac{\sqrt[5]{2^3x^2y^4}}{\sqrt[5]{2^3x^2y^4}}$$

$4 = 2^2$

$$= \frac{48x^{12}y\sqrt[5]{2^3x^2y^4}}{\sqrt[5]{2^5x^{15}y^{25}}} = \frac{48x^{12}y\sqrt[5]{2^3x^2y^4}}{2x^3y^5}$$

$$= \frac{24x^9\sqrt[5]{2^3x^2y^4}}{y^4}$$

Rationalize the denominator and simplify.
Assume all variables are positive.

$$\frac{5+\sqrt{2}-\sqrt{3}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{5\sqrt{3}+\sqrt{6}-3}{3}$$

You can now finish Hwk # 35

Sec 7-2

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Due Tomorrow

Problems 28, 30, 31, 34, 47, 48, 50, 51, 54