

## Sec 7-2. Multiplying and Dividing Radical Expressions

### Property

### Multiplying Radical Expressions

If  $\sqrt[n]{a}$  and  $\sqrt[n]{b}$  are real numbers, then  $\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$ .



Simplify.

Assume all variables are positive.

$$\sqrt{24a^5b^6} \cdot \sqrt{2a^3b^5} = \sqrt{48a^8b^{11}}$$

Multiply then simplify

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Simplify then multiply

$$2a^2b^3\sqrt{6a} \cdot a^2b^2\sqrt{2ab}$$

$$2a^3b^5\sqrt{12ab}$$

$$4a^4b^5\sqrt{3b}$$

$$4a^4b^5\sqrt{3b}$$

Simplify.

Assume all variables are positive.

$$\sqrt{80a^5b^6} \cdot \sqrt{54a^3b^5}$$

$$\sqrt{80} \cdot \sqrt{54} \sqrt{a^8b^{11}}$$

$$12a^4b^5\sqrt{30b}$$

Which of these can be simplified?

A.  $\sqrt{5} \cdot \sqrt{6} = \sqrt{30}$

~~B.~~  $\sqrt{10} \cdot \sqrt[3]{7}$

$$\frac{1}{3} + \frac{1}{2} = \frac{2}{6} + \frac{3}{6}$$

C.  $\sqrt[3]{m} \cdot \sqrt{m} = m^{\frac{1}{3}} \cdot m^{\frac{1}{2}} = m^{\frac{5}{6}}$

Simplify. Assume that all variables are positive.

1.

$$\frac{\sqrt{24x^5y^{13}}}{\sqrt{3xy^4}}$$

Divide then simplify

Two ways to complete this problem

Simplify then divide

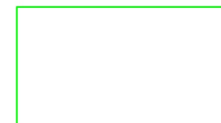
$$\sqrt{\frac{8x^4y^9}{xy^4}} = 2x^{\frac{3}{2}}y^{\frac{5}{2}}\sqrt{2y}$$

$$\frac{2x^{\frac{5}{2}}y^{\frac{13}{2}}}{y^{\frac{4}{2}}\sqrt{3x}} = 2x^2y^4\sqrt{2y}$$

## Property

## Dividing Radical Expressions

If  $\sqrt[n]{a}$  and  $\sqrt[n]{b}$  are real numbers and  $b \neq 0$ , then  $\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$ .



Simplify each. Assume that all variables are positive.

1.  $\frac{\sqrt{48x^9y^8}}{\sqrt{2x^6y^3}}$

$$\sqrt{24x^3y^5}$$

$$2xy^2\sqrt{6xy}$$

2.  $\frac{\sqrt[3]{15ab^{10}}}{\sqrt[3]{5a^7b^2}}$

$$\frac{\sqrt[3]{3b^8}}{a^{\frac{2}{3}}\sqrt[3]{3b^2}} = \frac{b^{\frac{2}{3}}\sqrt[3]{3b^2}}{a^{\frac{2}{3}}}$$

Hwk #3

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