

<p><u>UNIT 5—Multiplying and Dividing Radical Expressions</u></p> <ul style="list-style-type: none"> Students will be able to multiply and divide radical expressions 	<p>Day 2</p> <p>Algebra 3-4</p>
<p>Can radical expressions be multiplied? Divided?</p>	<p><u>Combining radical expressions using multiplication</u></p> <p>If $\sqrt[n]{a}$ and $\sqrt[n]{b}$ are real numbers, then</p> $\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$ <p><u>Examples: Determine if the radical expression can be simplified. If it can, simplify it.</u></p> <p>1. $\sqrt[3]{3} \cdot \sqrt[4]{5}$ NOT POSSIBLE</p> <p>2. $\sqrt{14} \cdot \sqrt{3}$ $= \sqrt{14 \cdot 3} = \sqrt{7 \cdot 2 \cdot 3}$ $\sqrt{42}$</p> <p>3. $\sqrt[4]{4} \cdot \sqrt[4]{8}$ (42) $\sqrt[4]{2 \cdot 2 \cdot 2 \cdot 2}$ $2 \sqrt[4]{2}$</p> <p>4. $\sqrt[3]{9x^2} \cdot \sqrt[3]{3x}$ = $\sqrt[3]{27x^3}$ $\sqrt[3]{3 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x}$ $3x$</p> <p>5. $\sqrt[5]{16a^6} \cdot \sqrt[5]{4a^3}$ $\sqrt[5]{16 \cdot 4 a^9}$ $\sqrt[5]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot a^9}$ $2a \sqrt[5]{2a^4}$</p> <p>Handwritten notes and diagrams:</p> <ul style="list-style-type: none"> For problem 3, a green arrow points from $\sqrt[4]{32}$ to $2 \sqrt[4]{2}$. For problem 5, a prime factorization tree for 16 is shown: $16 \rightarrow 2 \cdot 8 \rightarrow 2 \cdot 2 \cdot 4 \rightarrow 2 \cdot 2 \cdot 2 \cdot 2$. For problem 5, a prime factorization tree for 4 is shown: $4 \rightarrow 2 \cdot 2$. For problem 5, a prime factorization tree for a^9 is shown: $a^9 \rightarrow a \cdot a^8 \rightarrow a \cdot a \cdot a^7 \rightarrow a \cdot a \cdot a \cdot a^4 \rightarrow a \cdot a \cdot a \cdot a \cdot a$.

UNIT 5—Multiplying and Dividing Radical Expressions

- Students will be able to multiply and divide radical expressions

Algebra 3-4

Combining radical expressions using division

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

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

Examples: Determine if the radical expression can be simplified. If it can, simplify it.

1. $\frac{\sqrt{18x^5}}{\sqrt{2x^3}}$

2. $\frac{\sqrt[3]{162y^5}}{\sqrt[3]{3y^2}}$

3. $\frac{\sqrt[3]{21a^{10}}}{\sqrt[3]{7a^5}}$

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<ul style="list-style-type: none"> Students will be able to multiply and divide radical expressions 	
Algebra 3-4	
<i>Is there another way to simplify fractions with radicals?</i>	<p>Simplifying by <u>Rationalizing the Denominator</u></p> <p><u>Examples: Simplify the following radical expressions by rationalizing the denominator.</u></p> <p>1. $\frac{\sqrt{5}}{\sqrt{2}}$</p> <p>2. $\frac{\sqrt[3]{12a^4}}{\sqrt[3]{9a^2}}$</p> <p>3. $\frac{\sqrt{14b^3}}{\sqrt{7b}}$</p>