Name: _____ Date: _____ **Unit 8 Class Work**

Rewriting Radical Expressions Using Exponents Class Work

Objective: *You will be able to rewrite radical expressions using exponents.*

Quick Review!

★ Rational Exponent Property

$\sqrt[n]{x^m} =$

★ Integer Exponent Properties

Example	Generalization
$x^3 * x^4 =$	$x^m * x^n =$
$\frac{x^5}{x^2} =$	$\frac{x^m}{x^n} =$
$(x^3)^2 =$	$(x^m)^n =$

Zero & Negative Exponents: *Can you discover the pattern?!*

$2^3 =$ _____ $2^2 =$ _____ $2^1 =$ _____ $2^0 =$ _____ $2^{-1} =$ _____ $2^{-2} =$ _____

In General: $x^0 =$ _____ and $x^{-m} =$ _____

★ **Guided Example A:** Simplify $\frac{\sqrt{49x^3y^5} * x^2}{y}$ (no radicals in final expression for today).

★ **Guided Example B:** Simplify $\frac{\sqrt{x^4y^{-5}} * (x^2)^8}{y^{12}}$ (no radicals in final expression for today).

Now You Try Some! *Simplify each expression.*
Do not include any radicals or roots in your final answers (for today).

1. $\dfrac{d^{-1}}{(3c^{-2})^3 * 2d}$

2. $\dfrac{\sqrt[3]{27k^9v^2} * (v^2)^3}{k^{10}}$

3. $\left(\dfrac{\sqrt{36v^2w}}{w^3}\right)^{-1}$

4. $\left(\dfrac{\sqrt[3]{p^9q^4}}{(p^3)^{-4}}\right)^{-1}$

5. $\left(\dfrac{\sqrt{100x^4z}}{x^2\sqrt{z}}\right)^2$

6. $\dfrac{p^3 * \sqrt{p} * p}{(p^{-3})^3}$

7. $\dfrac{3\left(\sqrt{p}\right)^5}{\sqrt[3]{p}}$

8. $\dfrac{27\left(\sqrt{rs}\right)^3}{3\sqrt[4]{rs^2}}$

9. $\sqrt{4x^3y^{-1}} * (2x^3y^{-2})^3$

10. $(3x^2y^{-1})^4 * \sqrt[3]{125xy^{-6}}$

11. $\sqrt{\sqrt[3]{(x+y)^7}}$

12. $\sqrt{\sqrt[5]{(m-n)^3}}$

13. $\sqrt[5]{\sqrt{(c+d)^{-3}}}$

14. $\dfrac{\sqrt[5]{\sqrt{(yz)^{-1}}}}{y^2z}$

15. $2\sqrt{bcd} - 8\sqrt{bc^3} + 6\sqrt{bd^2}$

16. $14\sqrt{vw} - 56\sqrt{v^5w} - 28\sqrt{w}$

Write any questions you still have regarding simplifying expressions using exponents.

★ **MIXED PRACTICE:** *Simplify each expression.*
Express your final expressions in both forms (radical and exponent), where applicable.

1. $(m^3n^2)^{\frac{3}{4}}$

2. $(x^2y^3)^{1/2}$

3. $x^{\frac{3}{2}} * x^{\frac{1}{3}}$

4. $(-64y)^{\frac{5}{3}}$

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5. $\dfrac{(8z)}{(8z)^{\frac{3}{2}}}$

6. $\dfrac{2(z)^{\frac{1}{4}}}{z^{\frac{1}{3}}}$

7. $\left((-8x^2)^{\frac{1}{3}}\right)^{-2}$

8. $\left((b^3c^5)^{\frac{2}{3}}\right)^{-\frac{1}{2}}$

9. $\dfrac{x^{\frac{1}{3}}y^{\frac{3}{2}}}{x^{\frac{-1}{2}}y}$

10. $\left(\dfrac{2w^{\frac{3}{4}}y^{\frac{1}{2}}}{w^{\frac{1}{2}}}\right)^{-2}$

11. $\left(\frac{r^2 s^{\frac{5}{2}}}{r^{\frac{1}{2}} s}\right)^{-3}$

12. $\left(\frac{27 r^3 s}{r^6 s^{\frac{1}{5}}}\right)^{-\frac{1}{3}}$

***Create!** Create any expression involving a radical and at least two variables. Switch with a partner, and simplify each other's expressions! ☺