

Name:

Date:

Topic:

Class:

Main Ideas/Questions **Notes/Examples**

RATIONAL EXPONENTS	Expressions with rational exponents can be rewritten as radicals using the following rules:		
	Exponential Form	Meaning	Radical Form
	$a^{\frac{1}{n}}$	The n^{th} root of a	$a^{\frac{1}{n}} =$
	$a^{\frac{m}{n}}$	The n^{th} root of a , raised to the m^{th} power	$a^{\frac{m}{n}} =$

Converting between Exponential & Radical Form	Directions: Write each expression in radical form . Simplify if needed.		
	1. $x^{\frac{1}{4}}$	2. $(15n)^{\frac{1}{2}}$	3. $24^{\frac{1}{3}}$
	4. $7^{\frac{2}{3}}$	5. $k^{\frac{7}{2}}$	6. $3^{\frac{5}{4}}$
	7. $(ab)^{\frac{3}{4}}$	8. $(-6x)^{\frac{2}{3}}$	9. $7(12w)^{\frac{1}{2}}$
	Directions: Write each expression in exponential form .		
	10. $\sqrt[3]{16}$	11. \sqrt{xy}	12. $\sqrt[4]{8w}$
	13. $\sqrt[3]{11^2}$	14. $\sqrt[4]{k^5}$	15. $(\sqrt{3m})^7$
	16. $(\sqrt[4]{-2a})^5$	17. $\sqrt{10^5 a^3 b}$	18. $\sqrt[3]{9x^7 y^4}$

Simplifying
Expressions
with Rational
Exponents

- ① Rewrite all radicals in **exponential form**.
- ② Use the **exponent rules** to simplify the expression.
- ③ Write your **answer as a radical in simplest form**. Rationalize if needed.

19. $x^{\frac{1}{3}} \cdot x^{\frac{4}{3}}$

20. $p^{\frac{1}{4}} \cdot p^{\frac{3}{2}}$

21. $\frac{m^{\frac{5}{2}}}{m^4}$

22. $\left(a^{\frac{1}{3}}\right)^{\frac{5}{2}}$

23. $\left(32^{\frac{1}{2}}\right)^{\frac{1}{2}}$

24. $(8x^2)^{\frac{2}{3}}$

25. $100^{\frac{1}{2}}$

26. $16^{\frac{2}{3}} \cdot 16^{\frac{1}{3}}$

27. $(-216)^{\frac{1}{3}}$

28. $\left(\frac{112}{7}\right)^{-\frac{1}{4}}$

29. $\sqrt[3]{v} \cdot \sqrt{v}$

30. $\sqrt[4]{r^3} \cdot \sqrt{r}$

31. $\frac{4}{\sqrt[3]{4}}$

32. $\frac{\sqrt{7^3}}{\sqrt{7}}$

33. $\sqrt[4]{x^{10}}$

34. $\sqrt[4]{25m^2}$