

p. 16-17 Radical Form/Rational Exponent Form 6.4

Warm-up:

p. 16

Exploration of Rational Exponents

Name: _____

Using your notes and calculator, complete the following table.

Note: When entering a fraction as your exponent on your calculator, you may need place in parentheses.

Expression	Numerical Value	Expression	Numerical Value
$(4)^{\frac{1}{2}}$	2	$\sqrt[2]{4}$	2
$(64)^{\frac{1}{3}}$	4	$\sqrt[3]{64}$	4
$(100)^{\frac{1}{2}}$	10	$\sqrt{100}$	10
$(16)^{\frac{1}{4}}$	2	$\sqrt[4]{16}$	2
$(4)^{\frac{2}{4}}$	2	$\sqrt[4]{4^2}$	2

1. What did you notice about the Numerical Values of the problems in the same rows? *same*
2. What are some similarities between the Expressions in the same row? What is the same? Do you notice a pattern? *base same; format different*
3. Given the expression $\sqrt[4]{81}$, what expression using a fractional exponent would yield the same value?

$81^{\frac{1}{4}}$

p. 17

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

Rewrite the expressions from radical form to exponential form. Then simplify completely.

1. $\sqrt[3]{x^4} = x^{\frac{4}{3}}$
2. $\sqrt[4]{y^7} = y^{\frac{7}{4}}$
3. $\sqrt[5]{z^2} = z^{\frac{2}{5}}$
4. $\sqrt[3]{a^2} = a^{\frac{2}{3}}$

5. $\sqrt{7x} = (7x)^{\frac{1}{2}} = 7^{\frac{1}{2}}x^{\frac{1}{2}}$
6. $\sqrt{7x^3} = 7^{\frac{1}{2}}x^{\frac{3}{2}}$
7. $\sqrt[4]{(7x)^3} = (7x)^{\frac{3}{4}}$
8. $\sqrt[3]{(5xy)^6} = (5xy)^{\frac{6}{3}}$

$(5xy)^2$
 $5^2x^2y^2$
 $25x^2y^2$

