



**Simplifying
Rational
Exponents
Foldable**

Thank you for buying my foldable!

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Instructions

Print or copy page 3 and 4 double sided.

Place the paper so the examples are face down.

Cut along the dotted lines to create flaps.

Flip and fold the flaps inwards.

Glue the foldable into notes or on a piece of construction paper.

Go through the foldable with your students.

**Rewrite the
expression using
Radical Notation**

**Rewrite the
expression using
Rational
Exponents**

**Quotient Rule
with Rational
Exponents**

**Product Rule
with Rational
Exponents**

**Negative
and Zero Powers
with Rational
Exponents**

**Power Rule with
Rational
Exponents**

PREVIEW

Rewrite the expression using Rational Exponent Notation.
Then simplify if possible.

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

1) $9^{\frac{1}{2}}$

2) $8^{\frac{2}{3}}$

3) $x^{\frac{3}{5}}$

4) $\sqrt[5]{13}$

5) $\sqrt[5]{}$

6) $(\sqrt{7})^5$

Rewrite the expression using Radical Notation

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

Product Rule with Rational Exponents

$$a^m \cdot a^n = a^{m+n}$$

7) $x^{\frac{1}{5}} \cdot x^{\frac{3}{5}}$

8) $\sqrt[4]{x} \cdot \sqrt[3]{x^2}$

9)

10) $\frac{\sqrt[6]{x^5}}{\sqrt[6]{x^2}}$

Quotient Rule with Rational Exponents

Negative and Zero Rules with Rational Exponents

$$a^{-n} = \left(\frac{1}{a}\right)^n \quad a^0 = 1$$

11) $\left(x^{}\right)^{}$

12) $\left(x^{}\right)^{}$

13) $\left(\frac{4}{9}\right)^{-\frac{3}{2}}$

14) $\left(x^{\frac{3}{4}}\right)^0$

PREVIEW

Rewrite the expression using Rational Exponent Notation.
Then simplify if possible.

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

$$\begin{aligned} 1) \quad 9^{\frac{1}{2}} &= \sqrt[2]{9^1} \\ &= \sqrt{9} \\ &= 3 \end{aligned}$$

$$\begin{aligned} 2) \quad 8^{\frac{2}{3}} &= \sqrt[3]{8^2} \\ &= \sqrt[3]{64} \\ &= 4 \end{aligned}$$

$$3) \quad x^{\frac{3}{5}} = \sqrt[5]{x^3}$$

Rewrite the expression using Radical Notation

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

$$4) \quad \sqrt[5]{13} = 13^{\frac{1}{5}}$$

$$5) \quad \sqrt[3]{5^2} = 5^{\frac{2}{3}}$$

$$6) \quad \left(\sqrt[7]{7}\right)^5 = 7^{\frac{5}{7}}$$

Product Rule with Rational Exponents

$$a^m \cdot a^n = a^{m+n}$$

$$7) \quad x^{\frac{1}{5}} \cdot x^{\frac{3}{5}} = x^{\frac{4}{5}}$$

$$8) \quad \sqrt[4]{x} \cdot \sqrt[3]{x^2} = x^{\frac{1}{4} + \frac{2}{3}} = x^{\frac{11}{12}}$$

$$9) \quad x^{\frac{7}{10}} \cdot x^{\frac{3}{10}} = x^{\frac{10}{10}} = x^1 = x$$

Quotient Rule with Rational Exponents

$$10) \quad \frac{\sqrt[6]{x^5}}{\sqrt[6]{x^2}} = \frac{x^{\frac{5}{6}}}{x^{\frac{2}{6}}} = x^{\frac{3}{6}} = x^{\frac{1}{2}}$$

Negative and Zero Rules with Rational Exponents

$$a^{-n} = \left(\frac{1}{a}\right)^n$$

$$a^0 = 1$$

$$13) \quad \left(\frac{4}{9}\right)^{-\frac{3}{2}} = \left(\frac{9}{4}\right)^{\frac{3}{2}}$$

$$14) \quad \left(x^4\right)^0 = 1$$

$$= \left(\sqrt[2]{\frac{9}{4}}\right)^3 = \frac{27}{8}$$

PREVIEW