

This worksheet will cover the following:

Objective 1: Factoring by Grouping

Objective 2: Restricted Values of a Rational Expression

Objective 3: Least Common Denominator

Objective 4: Definition of  $a^{\frac{1}{n}}$  and  $a^{\frac{m}{n}}$

Objective 5: Converting Between Rational Exponents and Radical Notation

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Objective 1: Factoring by Grouping

Factor the following by grouping.

1.  $8a^2 - 4ab + 6ac - 3bc$

3.  $5a^2 + 30a - 2a - 12$

2.  $xy - xz + 7y - 7z$

4.  $2p^2 - p - 2p + 1$

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Objective 2: Restricted Values of a Rational Expression

Identify the restricted values.

5.  $\frac{5}{k+2}$

6.  $\frac{-3}{h-4}$

7.  $\frac{x-4}{x^2+9}$

**Objective 3: Least Common Denominator**

Identify the least common denominator for the pair of expressions.

8.  $\frac{4}{w^2 - 3w + 2}$  and  $\frac{w}{w^2 - 4}$

9.  $\frac{-3}{24y + 8}$  and  $\frac{5}{18y + 6}$

**Objective 4: Definition of  $a^{\frac{1}{n}}$  and  $a^{\frac{m}{n}}$** 

Convert the expressions to radical form and simplify.

10.  $144^{\frac{1}{2}}$

12.  $81^{-\frac{3}{2}}$

11.  $243^{\frac{3}{5}}$

13.  $(-8)^{\frac{1}{3}}$

**Objective 5: Converting Between Rational Exponents and Radical Notation**

Convert each expression to radical notation.

14.  $q^{\frac{2}{3}}$

15.  $t^{\frac{3}{5}}$

16.  $6y^{\frac{3}{4}}$

Write each expression using rational exponents rather than radical notation.

17.  $\sqrt[3]{x}$

18.  $\sqrt[3]{y^2}$