Rational exponent –

For any nonnegative real number *b*,

 $b^{\frac{1}{2}}=$

Ex1: Write each expression in radical form, or write each radical in exponential form.

a) $25^{\frac{1}{2}}$ b) $\sqrt{18}$ c) $5x^{\frac{1}{2}}$ d) $\sqrt{8p}$

1a) $a^{\frac{1}{2}}$ 1b) $\sqrt{22}$ 1c) $\left(7w\right)^{\frac{1}{2}}$ 1d) $2\sqrt{x}$

Recall: Prime Numbers:

Ex2: Simplify the following
a) $\sqrt[3]{27}$ b) $\sqrt[5]{32}$ 2a) $\sqrt[3]{64}$

For any positive real numbers *b* and any positive integer *n* > 1,

 $b^{\frac{1}{n}}=$

Ex3: Simplify
a) $125^{\frac{1}{3}}$ b) $1296^{\frac{1}{4}}$ c) $27^{\frac{1}{3}}$ d) $256^{\frac{1}{4}}$

For any positive real number *b* and any positive integers m and n > 1,

 $b^{\frac{m}{n}}=$

Ex4: Simplify
a) $64^{\frac{2}{3}}$ b) $36^{\frac{3}{2}}$ 4a) $27^{\frac{2}{3}}$ 4b) $256^{\frac{5}{4}}$

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| **Write each expression in radical form, or write each radical in exponential form.** |
| 1. $\sqrt{13}$ | 2. $\sqrt{37}$ | 3. $\sqrt{17x}$ |
| 4. $\left(7ab\right)^{\frac{1}{2}}$ | 5. $21z^{\frac{1}{2}}$ | 6. $13\left(ab\right)^{\frac{1}{2}}$ |
| **Simplify** |
| 7. $\left(\frac{1}{81}\right)^{\frac{3}{4}}$ | 8. $\sqrt[5]{1024}$ | 9. $512^{\frac{1}{3}}$ |
| 10. $\left(\frac{32}{1024}\right)^{\frac{1}{5}}$ | 11. $\sqrt[4]{1296}$ | 12. $3125^{\frac{2}{5}}$ |