Simplifying Exponents & Radicals Interactive Worksheet

1. Write each of the following in radical form:

a. $3^{\frac{1}{2}}$ b. $(-3)^{\frac{2}{3}}$ c. $-(5)^{\frac{5}{3}}$

$\sqrt{}$ $\sqrt{}$ $\sqrt{}$

$$\sqrt[d]{x^n} = x^{\frac{n}{d}}$$

2. Write each of the following in exponential form:

a. $\sqrt{15}$ b. $\sqrt[5]{2}$ c. $\sqrt[4]{6^3}$

$\square^{\frac{\square}{\square}}$ $\square^{\frac{\square}{\square}}$ $\square^{\frac{\square}{\square}}$

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

3. Write as a single positive power and then evaluate:

a. $(-2)^3 \times (-2)^4$ b. $3^8 \div 3^4$ c. $(2^3)^2$

$= \square^{\square\square\square}$ $= \square^{\square\square\square}$ $= \square^{\square\square\square}$

$= \square^{\square}$ $= \square^{\square}$ $= \square^{\square}$

$= \square$ $= \square$ $= \square$

$$\frac{x^m}{x^n} = x^{m} \div x^{n} = x^{}$$

$$(x^m)^n = x^{m \cdot n}$$

d. $(-2)^5 \div (-2)^3 - (-2)^2$

$= \square^{\square\square\square} \square \square$

$= \square^{\square} \square \square$

$= \square \square \square$

$= \square$

e. $\dfrac{(3^2)^2 \times 3^{-2}}{2 + 2^0}$

$= \dfrac{\square^{\square\square\square\square\square}}{\square \square \square}$

$= \dfrac{\square^{\square}}{\square}$

$= \dfrac{\square}{\square}$

$= \square$

$$x^0 = 1$$

4. Simplify

$4\sqrt{98} = 4\sqrt{\ } \times \sqrt{\ } = 4 \cdot \square\sqrt{\ } = \square\sqrt{\ }$

$$x^{-m} = \frac{1}{x^m} = \left(\frac{1}{x}\right)^m$$