

## Bell Work 1-22

Simplify

$$1) \left( \frac{3^3}{3^5} \right)^2$$

$$\frac{3^{3 \cdot 2}}{3^{2 \cdot 5}} = \frac{3^6}{3^{10}}$$

$$3^{6-10} = \frac{3^{-4}}{1}$$

$$\frac{1}{3^4}$$

$$(2) \frac{9x^9y^2}{15x^6y^5}$$

$$\frac{9 \div 3}{15 \div 3} = \frac{3}{5}$$

$$x^{9-6} = x^3$$

$$y^{2-5} = y^{-3}$$

$$\frac{3x^3y^{-3}}{5} = \boxed{\frac{3x^3}{5y^3}}$$

Writing a radical expression in exponential form.

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

Labels in the diagram:  
 -  $n$ : index-denominator  
 -  $a$ : base  
 -  $x$ : exponent (power) / numerator

\* if index is blank, it is automatically a 2 \*

Write each expression in exponential form

$$1) \sqrt{a^5} = a^{\frac{5}{2}} \qquad 2) \sqrt[3]{(43x)^2} = (43x)^{\frac{2}{3}}$$

Try these

$$3) \sqrt{(2m)^4} = (2m)^{\frac{4}{2}} = (2m)^2$$

$$4) \sqrt[3]{80m^2} = 80^{\frac{1}{3}} m^{\frac{2}{3}} \quad \text{Note: } 80 = 80^1$$

## Writing an exponential expression as a radical.

$$a^{\frac{x\text{-exponent (power)}}{n\text{-index}}} = \sqrt[n]{a^x}$$

1. draw radical
2. place denominator in index
3. place numerator inside

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

$$\sqrt[5]{x^3}$$

$$6) (30x^7)^{\frac{1}{3}}$$

$$\sqrt[3]{(30x^7)^1}$$

$$7) 14x^{\frac{5}{6}}$$

$$14\sqrt[6]{x^5}$$

Try these

$$8) 19x^{\frac{4}{3}}$$

$$19\sqrt[3]{x^4}$$

$$9) (28x^3)^{\frac{7}{4}}$$

$$\sqrt[4]{(28x^3)^7}$$

