

## Radical &amp; Rational Exponents

Date \_\_\_\_\_ Period \_\_\_\_\_

**Simplify.**

1)  $(216x^9)^{\frac{1}{3}}$

2)  $(81n^4)^{\frac{1}{2}}$

3)  $(49x^2)^{\frac{1}{2}}$

4)  $(x^5)^{\frac{1}{5}}$

**Write each expression in radical form.**

5)  $(6m^2)^{\frac{1}{3}}$

6)  $(6k)^{\frac{5}{3}}$

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

8)  $(5m)^{\frac{3}{4}}$

9)  $(10n)^{\frac{7}{4}}$

**Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.**

10)  $\left(\frac{a^{-\frac{1}{2}}b^{-\frac{5}{3}} \cdot a}{ab}\right)^{\frac{3}{2}}$

11)  $\frac{(nm^2)^3}{m^{\frac{4}{3}}n^{\frac{3}{2}} \cdot m^2n^{\frac{3}{2}}}$

12)  $\frac{yx^{-\frac{1}{2}} \cdot yx^{\frac{4}{3}}}{\left(x^{-\frac{2}{3}}y^2\right)^{-1}}$

13)  $\frac{\left(x^{-1}y^{-\frac{3}{2}}\right)^{\frac{1}{2}}}{x^{\frac{1}{2}}y^{-\frac{3}{2}} \cdot xy^{\frac{7}{4}}}$

14)  $\frac{(mn)^{-2}}{m^{-\frac{1}{2}}n^{-1} \cdot m^{\frac{4}{3}}n^{-\frac{4}{3}}}$

**Write each expression in exponential form.**

15)  $\sqrt[3]{6n}$

16)  $(\sqrt[4]{5m})^5$

17)  $(\sqrt[4]{3n})^5$

18)  $(\sqrt{7r})^5$

19)  $(\sqrt[3]{4x})^5$