**Radicals and Exponents**

**Properties of Exponents Properties of Radicals**

1. $a^{m}∙a^{n}=a^{m+n}$ 1. $\sqrt[n]{a^{m}}=\sqrt[n]{a}^{m}$
2. $\frac{a^{m}}{a^{n}}=a^{m-n}$ 2. $\sqrt[n]{a}∙\sqrt[n]{b}=\sqrt[n]{ab}$
3. $a^{-n}=\frac{1}{a^{n}}$ 3.$\sqrt[n]{\frac{a}{b}}=\frac{\sqrt[n]{a}}{\sqrt[n]{b}}$
4. $a^{0}=1$
5. $\left(ab\right)^{m}=a^{m}b^{m}$ **Rational Exponents**
6. $\left(\frac{a}{b}\right)^{m}=\frac{a^{m}}{b^{m}}$ 1. $a^{\frac{1}{n}}=\sqrt[n]{a}$
7. $\left(a^{m}\right)^{n}=a^{mn}$ 2. $a^{^{x}/\_{y}}=\sqrt[y]{a^{x}}$ $\frac{x = power}{y = root }$

**Simplify each expression. Assume that all variables are positive.**

 **1.**   **2.**   **3.** 70

 **4.**  **5.**  **6.** 

 **7.**   **8.**   **9.** 

**10.**  **11.**  **12.** 

**13.**  **14.**  **15.** 

**16.**  **17.**  **18.** 

**19.**  **20.**  **21.** 

**Write each expression in radical form.**

**22.**  **23.**  **24.** 

**25.**  **26.** *m*2.4 **27.** *a*1.5

**Write each expression in exponential form.**

**29.**  **30.**  **31.** 

**32.**  **33.**  **34.** 