Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chapter 4 Assignment – Exponents and Radicals**

1. Evaluate each expression:
	1. $2(2)^{3}$ f. $\frac{1}{4^{3}}$
	2. $-2(-4)^{2}$ g. $\frac{1}{2^{3}+2^{2}}$
	3. $1-5^{2}$ h. $\frac{5(-2)^{3}}{-2^{2}}$
	4. $2\sqrt{49}+\sqrt{36}$ i. $\frac{\sqrt{25}-\sqrt[3]{8}}{3^{2}}$
	5. $\frac{1-\sqrt{36}}{5(-2)^{2}}$ j. $\frac{3\sqrt[3]{27}-(-4)^{2}}{-3^{2}-(-1)^{2}}$
2. Simplify each of the following expressions:
	1. $2^{3}×2^{4}$ e. $(\frac{16x^{2}y^{5}}{20xy^{3}})^{3}$
	2. $(\frac{2a^{2}}{b})^{3}$ f. $(3x^{2}y^{3})^{2}$
	3. $(7a^{2}b^{5})(-3ab^{6})$ g. $\frac{36ab^{2}}{6b}$
	4. $\frac{10a^{8}b}{15a^{6}c}$ h. $(-\frac{3a}{2b})^{0}$

1. Simplify each of the following expressions. Any variables in your final answer should be written with positive exponents and fractional exponents should be converted to a radical:
	1. $(3a^{3})^{-2}$ e. $\frac{-20a^{-\frac{2}{3}}b}{4ab^{-\frac{1}{2}}}$
	2. $(\frac{3}{2})^{-3}$ f. $(a^{5})^{-\frac{3}{5}}$
	3. $(\frac{x^{2}y}{z^{3}})^{-1}$ g. $(\frac{2}{5}x^{-3}y^{-1})^{-3}$
	4. $\frac{(2a)^{3}}{(2a)^{-2}}$ h. $(2^{-\frac{5}{4}})(2^{-\frac{4}{3}})$
2. Write each of the following with rational exponents and simplify:
	1. $\sqrt{\sqrt[3]{a}}$ b. $\sqrt{\sqrt[3]{64a^{6}b^{12}}}$
3. Convert each entire radical to a mixed radical:
	1. $\sqrt{24}$ c. $\sqrt[3]{81}$
	2. $\sqrt{72}$ d. $\sqrt[3]{64}$
4. Convert each mixed radical into an entire radical:
	1. $4\sqrt{2}$ c. $5\sqrt{3}$
	2. $3\sqrt[3]{3}$ d. $2\sqrt[4]{3}$
5. Write each radical as a power:
	1. $(\sqrt[5]{-3})^{4}$ b. $\sqrt{(\frac{3}{4})^{2}}$
6. Write each power as a radical:
	1. $(-7)^{\frac{2}{5}}$ b. $16^{0.25}$
7. Identify whether the following numbers as rational, irrational, or neither:
	1. $\frac{1}{4}$ e. $27^{\frac{1}{3}}$
	2. $\sqrt[3]{8}$ f. $5$
	3. $-\sqrt{2}$ g. $(-2)^{\frac{1}{2}}$
	4. $\frac{3}{0}$ h. $\frac{0}{3}$