AChor/MPM1D **Name: _____**
Date: _____

Worksheet 2-2: Powers with Rational Base

Rational numbers

Rational numbers are numbers that can be written in fractional form

e.g., $2.3 = \frac{23}{10}$ $4.67 = \frac{467}{100}$ $0.78 = \frac{78}{100} = \frac{39}{50}$

Powers with Rational Base

Powers with rational base are powers whose base is a rational number (a fraction or a decimal)**.**

e.g., 2.3^2 Base = 2.3 $\left(\frac{2}{7}\right)^3$ Base = $\frac{2}{7}$

Practice:

1. State the base, exponent and expanded form of the following powers.

(a) 3.9^4

Base =
Exponent =
Product =

(b) -4.5^2

Base =
Exponent =
Product =

(c) $(-2.8)^3$

Base =
Exponent =
Product =

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

Base =
Exponent =
Product =

(e) $-\left(\frac{2}{5}\right)^4$

Base =
Exponent =
Product =

(f) $\left(-\frac{3}{4}\right)^5$

Base =
Exponent =
Product =

Assigned Work: WS 2-2; Textbook: Do p. 114 #4, #5 (d to i), #6 (d to f), #7

2. Evaluate. (Use your calculator.)

(a) 2.9^3 to the nearest tenth

(b) -7.4^2 to the nearest hundredth

(c) 10.27^4 to the nearest thousandth

(d) $(-4.9)^6$ to the nearest ten thousandth

Evaluating Power of a Fraction

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$\left(-\frac{a}{b}\right)^n = \frac{(-a)^n}{b^n} or = \frac{a^n}{(-b)^n}$$

3. Simplify then evaluate. Write answer as a fraction.

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

(b) $\left(\frac{2}{3}\right)^4$

(c) $\left(-\frac{3}{4}\right)^2$

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

Answers: 2. (a) 24.4, (b) –54.76, (c) 11124.533, (d) 13841.2872**; 3.** (a) $\frac{1}{8}$**,** (b) $\frac{16}{81}$, (c) $\frac{9}{16}$, (d) $-\frac{1}{125}$