Algebraic Operations Module Review **Name: _____**

1) List the terms, factors and prime factors in each term in the tables below:.

a) $4a^2 + 2ab - 3a^2b + 5$

Terms	Factors	Prime Factors

b) $xy^2 - 3x^2y^2 - 6y + z$

Terms	Factors	Prime Factors

c) $3x^2 + 5x - 2$

Terms	Factors	Prime Factors

d) $-5 + 2(3a^2 - 2t)$

Terms	Factors	Prime Factors

2) Evaluate the following. Show at least one intermediate step:

a) $\frac{6-2^3}{2}$

b) $-\big(-(1-3)+(5)\big)$

c) $3 \times (6 - 3 + 1) - 4^2$

d) $\frac{2\times(5-1)+2}{4\times(2-1)}$

e) $5 + (1 \times 4 - (2 - 5) - 2)$

f) $4 + |3 - 9|$

g) $8[-6 + 8(-2 + 4)]$

h) $\frac{10.4^2-(-2.35)^2}{1.4(1.5)}$

i) $3.5 \times 10^{-3} - 2.5 \times 10^{-4}$

3) Simplify the following expressions. Show at least one intermediate step. Write your answers as positive exponents.

a) $2x^3x^4$

b) $6(-3) - (-4)^2$

c) $(3x^2)^4$

d) $\frac{y^{-2}}{y^{-6}}$

e) $\left(\frac{3y}{x^3}\right)^2$

f) $(10x^3y^{-2})^0$

g) $\left(\frac{5y^{-1}}{x^4}\right)^{-2}$

h) $\left(\frac{4x^3y^{-2}}{9}\right)^{-1}$

i) $\left(\frac{3y^5}{6x^4}\right)^2$

j) $\left(\frac{2x^7}{5x^4}\right)^2$

4) Write the following numbers in scientific notation.

a) $2 =$

b) $53\ 456.64 =$

c) $0.000\ 000\ 67 =$

d) $345 \times 10^2 =$

5) Write the following in ordinary decimal notation.

a) $4.24585 \times 10^8 =$

b) $6.457 \times 10^{-11} =$

c) $2.05 \times 10^0 =$

d) $1.8 \times 10^1 =$

6) Evaluate the following writing your answer in scientific notation.

a) $\frac{8.8\times10^5}{2.0\times10^4}$

b) $\frac{7.3\times10^5+1.8\times10^3}{4.5\times10^4-8.4\times10^3}$

7) Evaluate the following radicals using a calculator:

a) $\sqrt{61} =$

b) $-\sqrt{73} =$

c) $\sqrt[5]{24} =$

d) $\sqrt[4]{122} =$

e) $\sqrt[3]{-85} =$

f) $\sqrt{4^2 + 2^2} =$

8) Simplify the following radicals without a calculator using. Show at least one intermediate step and leave your answers as exact numbers.

a) $\sqrt{18} =$

b) $\sqrt{128} =$

c) $\sqrt{1023 + 202} =$

d) $\sqrt{7^2 + 3^2} =$

9) Simplify the following expressions:

a) $2x + 3 - 4x - 8$

b) $-[-(3 - x) + (-4 + 2x)]$

c) $2xy^2 - 5x^2y + 2xy^2 - 2x^2y + 7xy$

d) $8z - [5 - (5 + 2z) + 3z] + 2$

e) $4xy + 2x^2y^2 - [xy - 3(xy)^2]$

f) $2x^4(-4x^2)$

g) $(x + 4)^2$

h) $4a(2 - 3b + 3a)$

i) $-(4 - x)(4 + x)$

10) Simplify the following expressions – write your answers with all positive exponents.

a) $\frac{16st^3}{2st}$

b) $\frac{4x^4y^2+12x^3y^5}{2x^2y}$

c) $\frac{(x+3)(x-3)}{(x-3)}$

d) $\frac{-5a^2n-10an^2}{5an}$

11) Solve for x in each of the following equations.

a) $4x = 16$

b) $3x - 2 = 2$

c) $\frac{2x}{5} = 9$

d) $x^2 + 2x - 3 = (x-1)^2$

e) $9.3x - 8.67 = 0.63(4x - 3)$

f) $2x = \frac{3-5(7-3x)}{4}$

12) Solve for the desired variable in each of the following formulas.

a) $V = IR$ for R

b) $Q = mc\Delta T$ for ΔT

c) $d = v_1t + \frac{1}{2}at^2$ for a

d) $C = \frac{5}{9}(F - 32)$ for F