Name: Key

Date: _____

5.P – Powers of Monomials

1) Simplify

a) $(x^3)^2$ x^6

b) $(n^4)^2$ n^8

c) $(-m^5)^3$ $(-1)^3 m^{15}$ $-m^{15}$

d) $(-p^3)^4$ $(-1)^4 p^{12}$ p^{12}

e) $(-y)^4$ $(-1)^4 y^4$ y^4

2) Simplify

a) $(mn)^2$ m^2n^2

b) $(2xy)^3$ $2^3x^3y^3$ $8x^3y^3$

c) $(-2x^2y)^2$ $(-2)^2x^4y^2$ $4x^4y^2$

d) $(-2x^2y)^3$ $(-2)^3x^6y^3$ $-8x^6y^3$

e) $-(3p^2r^3)^2$ $-3^2p^4r^6$ $-9p^4r^6$

3) Simplify

a) $(-a^5b^7)^8$ $(-1)^8a^{40}b^{56}$ $a^{40}b^{56}$

b) $(-4x^2y)^3$ $(-4)^3x^6y^3$ $-64x^6y^3$

c) $(-4xy^2)^2$ $(-4)^2x^2y^4$ $16x^2y^4$

d) $(3x^4y^0)^2$ $3^2x^8y^0$ $9x^8$

e) $-(2m^6n^2)^0$ $-2^0m^0n^0$ $=-1$

4) Simplify

a) $\left(\frac{x}{2}\right)^3$ $\frac{x^3}{2^3} = \frac{x^3}{8}$

b) $\left(\frac{3x}{2y}\right)^2$ $\frac{3^2x^2}{2^2y^2} = \frac{9x^2}{4y^2}$

c) $\left(\frac{-m^4}{2n^5}\right)^2$ $\frac{(-1)^2m^8}{2^2n^{10}}$ $= \frac{m^8}{4n^{10}}$

d) $\left(\frac{-3y^3}{-2x}\right)^3$ $\frac{(-3)^3y^9}{(-2)^3x^3}$ $\frac{-27y^9}{-8x^3} = \frac{27y^9}{8x^3}$

5) Simplify

a) $(2m^2n^3)^3(mn^2)^2$ $2^3m^6n^9(m^2n^4)$ $= 8m^8n^{13}$

b) $(-3x^4y^5)^3(-xy^3)^2$ $(-3)^3x^{12}y^{15}(-1)^2x^2y^6$ $-27x^{12}y^{15}(x^2y^6)$ $-27x^{14}y^{21}$

c) $(10ab^4c)^2(-ab)^3(2a^4c^2)^2$ $10^2a^2b^8c^2(-1)^3a^3b^3)(2^2a^8c^4)$ $100a^2b^8c^2(-a^3b^3)(4a^8c^4)$ $-400a^{13}b^{11}c^6$