Name:_____ Date:_____

Math 9 Chapter 2.3 to 2.5 Review

Multiplication Rule:

$$a^m \times a^n = a^{m+n}$$

When **multiplying powers** with the same base, you **ADD** the exponents

Division Rule:

$$a^m \div a^n = a^{m-n}$$

When **dividing powers** with the same base, you **SUBTRACT** the exponents

Power to another Power Rule:

$$\left(a^m\right)^n = a^{m\times n}$$

When **taking powers to another exponent**, you **MULTIPLY** them

1. Evaluate each of the following expressions:

a) $8\times3-5+6^2$	b) $2\div8\times4\div2+6$	c) $8-2^2+5-4-6$
d) $2\times3^3+4^2-5^2$	e) $2\times4-(5-8)^2$	f) $6^3\times(-3)^2+12$
g) $9-2\times\left[2-(7-4)\right]^2$	h) $20-3(-6+12)^2$	I) $\left[9+\left(5-(6+2)\right)^3\right]-2^3$

2. Simplify each of the following expressions into a single power:

a) $7^4\times7^3$	b) $2^1\times2^2\times2^3$
c) $4^8\div4^4$	d) $\left(3^4\right)\left(3^{-2}\right)\div3^{-3}$
e) $\left(7^2\right)^5\div7^{11}$	f) $\left(5^3\right)^2\times5^{-2}\times5^3$

3. Evaluate each of the following expressions using BEDMAS:

a) $(-6)^7 \div (-6)^5 - (-6)^4 \div (-6)^3$	b) $3^4\left(3^{12} \div 3^8\right) - 3^4$
c) $\dfrac{12^8 \times 12^4}{12^{10}}$	d) $\left(8^3 \times 8^5\right)^2 - \left(8^{12} \div 8^8\right)^4$
e) $\dfrac{(64)^3 \times 16}{8^{12}} - 2^2 + 2$	f) $\left[(-3)^4 \times (-3)^3\right]^2 + \left[(-3)^4 \times (-3)^3\right]^2$

4. Find the value of ♦ in each expression:

$a)(-3)^4 \times (-3)^{\blacklozenge} = (-3)^5$ ♦ = _____ $b)(-2)^{15} \div (-2)^{10} = (-2)^{\blacklozenge}$ ♦ = _____

$c)7^8 \times 7^7 \div 7^{\blacklozenge} = 7^4$ ♦ = _____ $d)2^{\blacklozenge} \div 2^6 \times 2^{-4} = 2^{11}$ ♦ = _____

$e)\left(6^4\right)^4 = 6^{\blacklozenge}$ ♦ = _____ $f)\left(3^4\right)^3 \div 3^{\blacklozenge} = 3^5$ ♦ = _____

5. Given that "a" and "b" are integers greater than zero, what is the value of "a" and "b"?

a) $\left(a \times b^2\right)^4 = 81 \times 256$	b) $(25 \times 64)^3 = a \times 2^b$
c) $\left(49^2 \times 11\right)^3 = 7^a \times b$	d) $(24)^6 = 2^a \times 3^b$