Honors Math II Name_____

Unit 1 day 1 Notes: Exponents Period_____Date_____

Given the following expressions, fill in the chart.

	Expression as repeated Multiplication	Simplified
$7^4 \cdot 7^5$		
$(-4)^2 \cdot (-4)^3$		
$x \cdot x^5$		

Simplify the following expressions:

1) $5^2 \cdot 5^3$ 2) $(-6) \cdot (-6)^4$ 3) $m^6 \cdot m^4$ 4) $n^2 \cdot m^5$

Draw a conclusion:

Given the following expressions, fill in the chart.

	Expression as repeated Multiplication	Simplified
$(5^3)^2$		
$[(-6)^2]^4$		
$(a^2)^3$		

Simplify the following expressions:

5) $(10^3)^3$ 6) $[(-2)^3]^4$ 7) $(c^2)^6$ 8) $(-3^2)^2$

Draw a conclusion:

Simplify the following expressions:

9) $(2m)^3$ 10) $(-3n)^2$ 11) $(mn)^2$

Draw a conclusion:

Simplify the following expressions:

12) $\frac{2^7}{2^2}$ 13) $\frac{8^5}{8^2}$ 14) $\frac{x^3}{x}$

Draw a conclusion:

Simplify the following expressions:

15) $\left(\frac{x}{4}\right)^5$ 16) $\left(-\frac{4}{5}\right)^3$ 17) $\left(-\frac{3}{4}\right)^2$

Draw a conclusion:

Properties of Exponents

Product of Powers: $a^m \cdot a^n = a^{m+n}$

Power of a Power: $(a^m)^n = a^{mn}$

Power of a Product: $(ab)^m = a^m b^m$

Quotient of Powers: $\frac{a^m}{a^n} = a^{m-n}, \ a \neq 0$

Power of a Quotient: $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, \ b \neq 0$

QUICK CHECK:

18) $(5pq)^3$ 19) $[(d+9)^7]^3$ 20) $(-20x^3)^2(-x^7)$

21) $\left(\frac{3x^5}{7y^2}\right)^3$ 22) $\left(\frac{2m^5n}{4m^2}\right)^2 \cdot \left(\frac{mn^4}{5n}\right)^2$