◼ KEY ◼

First Name:_____   Last Name:_____

Q1: Simplify. Leave each answer in *EXPONENTIAL* form. *(6 marks)*

$3^2 * 3^8 = $ 3^{10} $2^{23} \div 2^{17} = $ 2^6

$5^0 = $ 1 $(9^{10})^{201} = $ 9^{2010}

$(3x)^3 = $ $3^3 x^3$ $\left(\frac{x}{5}\right)^2 = $ $\frac{x^2}{5^2}$ or $\frac{x^2}{25}$
$\qquad\qquad$ or
$\qquad\quad 27x^3$

Q2: The expression $\dfrac{\left(x^2 y^3 * x^5\right)^4}{(x^2)^3}$ can be simplified to $x^{ab}y^{cd}$, where *a, b, c,* and *d* are ___, ___, ___, and ___.

(Record your **4-***digit answer in the Numerical Response boxes below)*

2	2	1	2

$\dfrac{\left(x^2 y^3 \bullet x^5\right)^4}{(x^2)^3} = \dfrac{\left(x^7 y^3\right)^4}{x^6} = \dfrac{x^{28} y^{12}}{x^6} = x^{22} y^{12}$

$x^{22} y^{12}$ in the form $x^{ab} y^{cd}$

$a = 2$
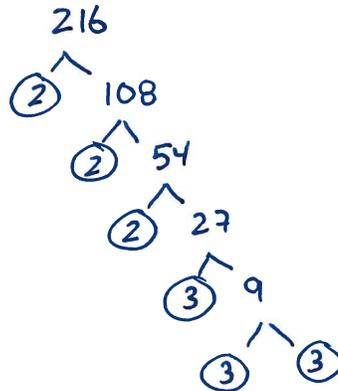$b = 2$
$c = 1$
$d = 2$

Use the following information to answer Q3-Q4:

> The number 216 can be prime factored to determine if it is a perfect square, perfect cube, both, or neither.

Q3: When prime factored, 216 can be written as $(2^a)(3^b)$, where the exponents *a* and *b* are ___ and ___.

*(Record your **two digit** answer in the Numerical Response boxes below)*

3	3		

216

2 108

2 54

2 27

3 9

3 3

So $216 = 2^3 \cdot 3^3$

In the form $2^a \cdot 3^b$, $a = 3$
                                 $b = 3$

Q4: The number 216 is

   a. A perfect square only

   (b.) A perfect cube only $\Longrightarrow$ $(2 \cdot 3)(2 \cdot 3)(2 \cdot 3)$ or $\sqrt{216} = 14.696...$

   c. Both $\sqrt[3]{216} = 6$

   d. Neither

MARKING

Beginning	0.0 – 4.0
Progressing	4.5 – 6.0
Competent	7.0 – 8.0
Exemplary	8.5 – 9.0