MAP4C1-TEST 3a **Name:_____**

Exponential Expressions and Equations **Date:_____**

PRAYER BEFORE TEST:
Holy Spirit, who gives us light and talents
Help us to do well on this test
Help us to recall all knowledge needed
So we can be rewarded for all our efforts and studying
In the name of the Father and the Son and the
Holy Spirit. Amen

MARKS: K/U: /30 App: /13 Comm: /6 TIPS: /10

Knowledge:

1. Simplify using the Exponent Law. [K/U: /8(1 mark each)]

a) $x^{-5} \times x^{-4} \times x^{2} =$ b) $\frac{a^{10}}{a^{5}} =$ c) $\frac{x^{2}}{x^{-4}} =$

d) $\frac{x^{4} \times x^{-5}}{x^{-3}} =$ e) $(a^{3})^{3} =$ f) $(a^{-2}b^{3})^{2} =$

g) $(\frac{a^{-2}b^{4}}{a^{5}b^{-2}}) =$ h) $\frac{24x^{-3}y^{5}}{8x^{2}y^{2}}$

2. Simplify. [K/U: /4(2 marks each)]

a) $\frac{2a^{3}}{2b^{2}c} \times \frac{4bc^{3}}{2a^{5}} =$ b) $\frac{3ab^{6} \times 16a^{3}b}{8a^{2}b^{4}}$

2. Express in radical form. [K/U: /3]

a) $144^{\frac{1}{2}} =$ b) $27^{\frac{2}{3}} =$ c) $125^{-\frac{2}{3}} =$

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3. **Simplify first** and then evaluate, for x = 2, y = -3 [App: /9(3 marks each)]

a) $\frac{x^4 y^5}{xy^3} =$ c) $\left(\frac{2}{xy}\right)^{-2} =$

4. Write in exponential form. [App: /6(2 marks each)]

a) $\sqrt[3]{a^2} =$ b) $\frac{1}{\sqrt{a}} =$ c) $\frac{1}{\sqrt[4]{a^5}} =$

Application:

1. Solve. (/9 (3 marks each))

a) $3^x = 9^2$ b) $3^{x+3} = \frac{1}{81}$ c) $7(5^x) = 4375$

2. Calculate. Round your answer to **two decimal places.** [/4]

a) $854.25(1.055)^{2.8} =$ b) $550\left(1+\frac{0.06}{4}\right)^{16} =$

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Communication:

1. if $2^x = 8$, describe how to find the value of x. What is the value of x.[/3]

3. What is the difference between -2^4 *and* $(-2)^4$? Explain using math language such that base, exponent, value…etc. [/3]

TIPS:

1. A \$115 000 investment deposited for four years accumulated to \$ 124479.70. If the interest was compounded annually find the annual interest rate. [**Hint:** $A = P(1+i)^n$]

[/5]

2. A cone has a volume of 2 000 cm^3. The height of the cone is twice as big as its diameter. What are the radius and height of the cone? Draw and label a representative diagram

[**Hint:** $V = \frac{1}{3}(\pi)(r)^2(h)$] [/5]