Algebra I
Review for Quiz #5-2
Properties of Exponents (10.1-10.3)

NAME:_____
DATE:_____ HOUR:____

Part I. Multiple Choice. Circle your answer.

1. Simplify the following.
$(6a)^3$
a. $6a^3$ b. $18a^3$ c. $216a^3$ d. $6a^4$

2. Simplify the following.
$\left[\frac{5x}{y^2}\right]^4$
a. $\frac{625x^4}{y^8}$ b. $\frac{20x^4}{y^8}$ c. $\frac{5x^4}{y^8}$ d. $\frac{5x^4}{y^2}$

3. Simplify the following.
$(-2r^2\ t^4)(5r^3\ t)$
a. $-10r^6\ t^4$ b. $-10r^5\ t^5$ c. $-10r^5\ t^4$ d. $10r^5\ t^5$

4. What does $(a^b)^c$ equal?
a. a^{b+c} b. a^{b-c} c. a^{bc} d. $a^{b\div c}$

5. Which of the following is false?
a. $\frac{a^3b^2c^0}{b^2} = a^3$ b. $x^0 = 0$ c. $(4x^2y^5)^0 = 1$ d. $4x^0y^{-2} = \frac{4}{y^2}$

6. Which of the following is equivalent to $\frac{a^3b^{-4}c}{ab^2}$?
a. $\frac{a^2b^6}{c}$ b. $\frac{a^2c}{b^8}$ c. $\frac{a^2b^{-6}}{c}$ d. $\frac{a^2c}{b^6}$

7. Which of the following is equivalent to 5^{-2}?
a. $\frac{1}{25}$ b. -25 c. $-\frac{1}{25}$ d. 25

8. Which of the following is equivalent to $-(5^{-2})$?
a. $\frac{1}{25}$ b. -25 c. $-\frac{1}{25}$ d. 25

9. Choose the expression which is equivalent to
$(2^4)^3$
a. 2^{12} b. 2^7 c. 2^1 d. 8^{12}

10. Which of the following is 5^3?
a. 15 b. 125 c. 243 d. 53

Part II. Short Answer.

1. Simplify the following.

$(2xy^2 z^3)^2 (-3xy^3 z)^3$ $\quad (-x^4)(-3xyz^2)$ $\quad (r^4s^3)^2(rs^2)^3$

expand _____ _____ _____

simplify _____ _____

2. Write the following without negative or zero exponents.

$x^0 y^4 z^{-2}$ $\quad (4a^2 b^{-2} c^{-5})^0$ $\quad \dfrac{6d^{-2}e^6}{d^{-5}e^7}$

_____ _____ _____

3. What does $a^b \cdot a^c$ equal? _____

4. What does $\dfrac{a^b}{a^c}$ equal? _____

5. Evaluate the following. **(no decimals)**

$\dfrac{5^4}{5^2}$ $\quad 8^{-3}$ $\quad (-7)^{-2}$

_____ _____ _____

6. Express as a single power of 10, then evaluate.

$10^5 \cdot 10^2$

_____

7. True or False.

$(2^5)^3 = (2^3)^5$

_____

8. True or False.

$4c^2 = (4c)^2$

_____

9. Evaluate the following.

$\dfrac{(b^4)(b^2)}{b^3}$

_____

10. Simplify the following.

$\dfrac{12xy^4}{-6x^3y^4}$

_____

In 1–6, simplify.

1. $m^8 \cdot m^5$ **1.** _____

2. $x^3(y^2x^7)$ **2.** _____

3. $\frac{55t^{16}}{11t^9}$ **3.** _____

4. $6\left(\frac{t}{3}\right)^2$ **4.** _____

5. $(-4)^4$ **5.** _____

6. $(5m^3n^5)^2$ **6.** _____

7. Rewrite 2^{-7} without an exponent. **7.** _____

8. Rewrite 4^{-3} as a simple fraction. **8.** _____

9. b^{-n} = ___?___ **9.** _____

10. b^0 = ___?___ **10.** _____

11. Simplify $a^{11} \cdot b^0 \cdot b^8 \cdot a^{-3}$. **11.** _____

12. Evaluate $\left(5 \cdot 10^3\right) + \left(8 \cdot 10^0\right)$. **12.** _____

13. *True or false* $\frac{y^2 \cdot y^4}{y^8} = 1$ for all values of $y \neq 0$. **13.** _____

In 14 and 15, simplify.

14. $\frac{12x^5}{8x^7}$ _____ **15.** $\frac{18d}{(10d^{-4})(9d^2)}$ _____

In 1–6, write as a decimal or as a simple fraction.

1. $7^2 \cdot 7^3$ _____ **2.** $8^3 \cdot 8^0$ _____ **3.** $\frac{5^4}{5^2}$ _____

4. $\frac{6^3}{6^0}$ _____ **5.** $(0.5^2)^3$ _____ **6.** $\left(\frac{1}{2}\right)^4$ _____

In 7–9, solve.

7. $\frac{12^5}{12^2} = 12^y$ **8.** $(5 \cdot 6)^3 = x^3$ **9.** $(8^6)^2 = 8^n$

y= _____ x= _____ n= _____

In 10–18, simplify.

10. $(x^4)^7$ _____ **11.** $(12p^8)^2$ _____ **12.** $8a^5 \cdot 6a^3$ _____

13. $\frac{r^{15}}{r^3}$ _____ **14.** $\frac{t^{21}}{(t^7)^2}$ _____ **15.** $\frac{m^0}{m^4}$ _____

16. $(2x^a)^0$ _____ **17.** $\left(\frac{a}{b}\right)^n$ _____ **18.** $\left(\frac{x^n}{y^2}\right)^3$ _____

19. Simplify $(5x^{-2}y^3)(-xy^2)$.

a. -5x3y5 b. $\frac{-5y^5}{x}$ c. $\frac{-y^5}{5x}$ d. $-5xy^5$

20. Simplify $\frac{-3a^2b^6}{-18a^5b^2}$.

a. $\frac{-b^3}{6a^3}$ b. $6a^3b^4$ c. $\frac{-b^4}{6a^3}$ d. $\frac{b^4}{6a^3}$

21. Simplify $(3c^2d^5)(2c^3d^0)^2$.

a. $6c^8d^7$ b. $12c^7d^5$ c. $12c^8d^5$ d. $6c^{12}d$

22. Simplify $(2p^2q^3)^2$.

a. $4p^2q^3$ b. $4p^4q^6$ c. $2p^4q^6$ d. $2p^3q^3$

Simplify.

23. $a(3a^2)^2$ **24.** $5m(6m)^2$ **25.** $x^3(x^5y)^2$ **26.** $2a(-3ab)^3$

_____ _____ _____ _____

27. $(2x^2)(xy^3)^2(xy^2)^3$ **28.** $(ab)^3(a^2b)^3(a^3b)$ **29.** $(5ab)^2(a^4b)^2(ab^6)$

expand _____ _____ _____

simplify _____ _____ _____