Honors Math Plus
Unit 6

TEST REVIEW **Name** _____

Simplify each expression. Use positive exponents.

1. $m^3n^{-6}p^0$ $\frac{m^3}{n^6}$

2. $(0.25^4)(0.25^{-5})$ $(.25)^{-1}$ $(\frac{1}{4})^{-1}$ 4

3. $\frac{a^4b^{-3}}{ab^{-2}}$ $\frac{a^3}{b}$

4. $(x^{-2}y^{-4}x^3)^{-2}$ $x^4 y^8 x^{-6}$ $x^{-2} y^8$ $\frac{y^8}{x^2}$

5. $\left(\frac{u^2v^{-2}}{u^0v^3}\right)^2$ $\frac{u^4 v^{-4-6}}{1 \cdot v^{6-6}}$ $\frac{u^4}{v^{10}}$ $\frac{u^4v^{-4}}{v^6}$

6. $h^{-4}k^3(-h^2k^{-1})^3$ $h^{-4}k^3 \cdot (-1)^3 h^6 k^{-3}$ $-1h^2$

Simplify the following using exponent rules:

10. $(3x^3y^5z^2)(2x^2z^6)$ $6x^5y^5z^8$

11. $(3x^3y^5z^2)^3$ $27x^9y^{15}z^6$

12. $3(2x^3y^2z^5)^3$ $3 \cdot 8x^9y^6z^{15}$ $24x^9y^6z^{15}$

13. $-3(2x^4y^5)^3(3x^2y^4z^6)^2$ $-3 \cdot 8x^{12}y^{15} \cdot 9x^4y^8z^{12}$ $-216x^{16}y^{23}z^{12}$

14. $\frac{2x^3y^5z^7}{6x^5y^2z^3}$ $\frac{1y^3z^4}{3x^2}$

15. $\frac{(2x^3y^4z)^3}{16x^{12}y^6z}$ $\frac{8x^9y^4z^3}{16x^{12}y^6z}$ $\frac{1y^6z^2}{2x^3}$

16. $\dfrac{-15x^4y^{-2}z^{-4}}{3x^{-5}y^2z^{-3}}$ $\dfrac{-5x^9}{y^4z}$

17. $\left(\dfrac{4x^4y^3z^2}{3x^2y^7z^2}\right)^3$ $\dfrac{64x^{12}y^9z^6}{27x^6y^{21}z^6}$ $\dfrac{64x^6}{27y^{12}}$

18. $\left(\dfrac{x}{x^2}\right)^0$ 1

19. $\dfrac{6^7}{6^3}$ 6^4

20. $y^{-2} \cdot y^2$ 1

$y = 500(1-.40)^x$

21. The value of your new cell phone is $500 and depreciates 40% per year.
a) Write an explicit function representing the value of the phone given its age in years.
b) What is the phone worth in 4 years? $64.80

22. You have two choices of how to invest $5000 over 7 years.
- Bank 1 offers an account that earns 3.5% interest, compounded annually. $A = 506(1+.035)^{12(7)}$ $636.14
- Bank 2 offers an account that earns 3.25% compounded monthly. $A = 500\left(1+\frac{.0325}{12}\right)^{12(7)}$
- Which is the better option and why? $627.54

Bank 1

23. Suppose you invest $6000 in an account with 4% interest compounded annually. How much money will you have in 5 years? $6000(1+.04)^5$ $7299.92

24. Suppose you invest $8000 in an account with 3.5% interest compounded monthly. How much will you have in 4 years. $8000\left(1+\frac{.035}{12}\right)^{48}$ $9200.32

25. Currently, 1,000 students attend Heritage Middle. The school board estimates that the student population will grow by 5% per year for the next several years. How many students will be in the school in 4 years?

26. Find the slope of a line that passes through (2,5) and (-3,4). $\frac{4-5}{-3-2} = \frac{1}{5}$

27. Find the slope of $3x - 4y = 12$ $-4y = -3x+12$ $y = \frac{3}{4}x - 3$

28. Simplify $(x^{\frac{1}{6}})^{18}$ x^3

29. Write the equation of a line that passes through (-6,5) and is perpendicular to y = 3x-7.

$\perp m = \frac{-1}{3}$ $5 = \frac{-1}{3}(-6)+b$ $5 = 2+b$ $3 = b$ $y = \frac{-1}{3}x+3$