

Name: Key-2015

Date: _____

Block: _____

Unit 7: Exponents and Logs Review

Directions: Convert to the specified form. **CIRCLE YOUR FINAL ANSWER**

Convert to Logarithmic Form:

1. $2^x = 8$

$\log_2 8 = x$

2. $2^x = 1024$

$\log_2 1024 = x$

3. $2^x = 64$

$\log_2 64 = x$

4. $2^x = 32$

$\log_2 32 = x$

5. $10^x = 0.000001$

$\log 0.000001 = x$

Convert to Exponential Form:

6. $\log_2 4 = x$

$2^x = 4$

7. $\log_3 9 = x$

$3^x = 9$

8. $\log_2 256 = x$

$2^x = 256$

9. $\log_2 512 = x$

$2^x = 512$

10. $\log_2 4056 = x$

$2^x = 4056$

Directions: Simplify the following. CIRCLE YOUR FINAL ANSWER.

11. $(5^{12}) + (5^{35})$

$$5^{12} + 5^{35}$$

16. $(4c^3)^2$

$$16c^6$$

12. $(4x^3y^2) - (2x^3y^2) + (3x^2y^2)$

$$2x^3y^2 + 3x^2y^2$$

17. $(-6h^4k^5)^3$

$$-216h^{12}k^{15}$$

13. $(6c^4)(-3c^2d^2)$

$$-18c^6d^2$$

18. $\left(\frac{-2s^8}{t^2r^4}\right)^3$

$$\frac{-8s^{24}}{t^6r^{12}}$$

14. $(-3x^3z)(-2y^3z)(-4xyz)$

$$-24x^4y^4z^3$$

19. $\left(\frac{3d^5}{6d^3}\right)^3$

$$\left(\frac{d^2}{2}\right)^3 = \frac{d^6}{8}$$

15. $(6^2)^4$

$$6^8 = 1679616$$

20. $\frac{a^4b^4c^4}{-a^2b^3c^6}$

$$-\frac{a^2b}{c^2}$$

Directions: Solve for the variable. Round to the nearest hundredth if necessary. **CIRCLE YOUR FINAL ANSWER.**

21. $4^2 = x$

$16 = x$

26. $\log_3 243 = x$

$5 = x$

22. $5^6 = y$

$15625 = y$

27. $\log_2 17 = x$

$4.09 \sim x$

23. $6^x = 216$

$\log_6 216 = x$
 $3 = x$

28. $\log_3 7 = x$

$1.77 \sim x$

24. $7^x = 2401$

$\log_7 2401 = x$
 $4 = x$

29. $\log 1,000,000 = x$

$x = 6$

25. $\log_2 16 = x$

$4 = x$

30. $\log 0.001 = x$

$-3 = x$

Directions: Solve the following. Round to the nearest hundredth if necessary. CIRCLE YOUR FINAL ANSWER.

31. Suppose that a radioactive isotope decays so that the radioactivity present decreases by 20% per day. If 50 kg are present now, find the amount present 8 days from now.

$$A = 50(1 - 0.20)^8$$

$$A = 8.39 \text{ kg}$$

32. If grocery prices increase 2% per month for a whole year, how much would groceries that cost \$50 at the beginning of the year cost at the end of the year?

$$A = \$50(1 + 0.02)^{12}$$

$$A = \$63.41$$

33. An investor is comparing two investment plans:

- Plan A: An 6% annual rate compounded quarterly for 5 years.
- Plan B: A 4.5% annual rate compounded daily for 5 years.

Which plan would the investor go with because he would earn more money on the investment?

$$\star \text{ Plan A: } A = \$100 \left(1 + \frac{0.06}{4}\right)^{(4)(5)} = \$134.69$$

$$\text{Plan B: } A = \$100 \left(1 + \frac{0.045}{365}\right)^{(365)(5)} = \$125.23$$