

Name: _____ Date: _____ Block: _____ # _____

**Dynamics of Algebra 2
Logarithms Worksheet**

Write each equation in exponential form.

1. $\log_2 64 = 6$

2. $\log_4 \frac{1}{64} = -3$

3. $\log(.01) = -2$

4. $\log_{14} 196 = 2$

5. $\log_6 1 = 0$

6. $\log_{64} 16 = \frac{2}{3}$

Write each equation in logarithmic form.

7. $2^5 = 32$

8. $5^{-\frac{1}{2}} = \frac{\sqrt{5}}{5}$

9. $10^{-1} = \frac{1}{10}$

10. $361^{\frac{1}{2}} = 19$

11. $3^3 = 27$

12. $11^{-2} = \frac{1}{121}$

Condense each expression to a single logarithm.

13. $2\log_6 u - 8\log_6 v$

14. $8\log_3 12 + 2\log_3 5$

15. $\log_4 x - 18\log_4 y$

16. $3\log_7 x - 7\log_7 y + 5\log_7 x$

17. $\frac{1}{2}\log_2 64 + 4\log_2 m - \log_2 4$

18. $\log 7 + \log x - 4\log y - 3\log z$

Expand each logarithm.

19. $\log x^6 y^3$

20. $\log_7 \frac{x^6}{y^3}$

21. $\log_8 3a^6 b^5$

22. $\log_2 \frac{5\sqrt{x^3}}{y}$

Evaluate the expression. Hint – set = x and solve for x.

23. $\log_2 8$

24. $\log_8 64$

25. $\log_7 7$

26. $\log_6 1$

27. $\log_8 \frac{1}{8}$

28. $\log_7 \frac{1}{49}$

29. $\log_5 \sqrt{5}$

30. $\log_9 3$

31. $\log_{\frac{1}{2}} 16$