

**6.4 Introduction to
Logarithms**

Name _____

Write the following exponential equations in logarithmic form.

1. $5^3 = 125$

2. $10^3 = 1000$

3. $4^{\frac{1}{2}} = 2$

4. $2^{-1} = \frac{1}{2}$

5. $2^x = 16$

6. $3^x = 9$

7. $a^0 = 1$

8. $e^1 = e$

Answers: 1. $\log_5 125 = 3$; 3. $\log_4 2 = \frac{1}{2}$; 5. $\log_2 16 = x$; 7. $\log_a 1 = 0$;

Evaluate.	
9. $\log_6 36$	10. $\log_4 64$
11. $\log_3 81$	12. $\log_5 125$
13. $\log_7 \sqrt{7}$	14. $\log_2 \sqrt[3]{2}$
15. $\log 1,000$	16. $\log 0.001$
Answers: 9. 2; 11. 4; 13. $\frac{1}{2}$; 15. 3	

Use a calculator to evaluate to two decimal places (x.xx). Some problems will require the change of base formula.

17. $\log 20$

18. $\log 0.06$

19. $\ln 2$

20. $\ln 10$

21. $\log 0.01$

22. $\log 100,000$

23. $\ln e^2$

24. $\ln \frac{1}{e}$

25. $\log_2 100$

26. $\log_3 79$

27. $\log_\pi 0.0001$

28. $\log_{100} e$

Answers: 17. 1.30; 19. 0.69; 21. -2; 23. 2; 25. 6.64; 27. -8.05