PC 12 LG 4 Worksheet (Introduction to Logarithms)

Write each of the following in exponential form.

1. $\log_2 16 = 4$

2. $\log_5 \frac{1}{125} = -3$

3. $\log_2 0.25 = -2$

4. $\log_d e = f$

Write each of the following in logarithmic form.

5. $2^7 = 128$

6. $3^{-2} = \frac{1}{9}$

7. $2^{-3} = 0.125$

8. $z = x^y$

Determine each of the following to 2 decimal places.

9. $\log(5) + \log(12)$

10. $\log(5 \cdot 12)$

11. $\log(8) - \log(3)$

12. $\log\left(\frac{8}{3}\right)$

13. $\log(5^2)$

14. $2\log(5)$

15. $(\log 5)^2$

16. $\log\left(\sqrt{18}\right)$

17. $\frac{1}{2}\log(18)$

18. $\log(10^8)$

19. $10^{\log 8}$

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Determine each of the following exactly.

20. $\log_2(8)$

21. $\log_5(25)$

22. $\log_3\left(\frac{1}{9}\right)$

23. $\log_{\frac{1}{4}}(16)$

Solve for x exactly.

24. $\log_2(16) = x$

25. $\log_x(8) = 3$

26. $\log_3(x) = 81$

27. $\log_x\left(\frac{1}{16}\right) = -4$

28. $\log_5(x) = -2$

29. $\log_x(27) = -3$

Answer Key

1.	$16 = 2^4$	**16.**	0.63
2.	$\frac{1}{125} = 5^{-3}$	**17.**	0.63
3.	$0.25 = 2^{-2}$	**18.**	8
4.	$e = d^f$	**19.**	8
5.	$\log_2(128) = 7$	**20.**	3
6.	$\log_3\left(\frac{1}{9}\right) = -2$	**21.**	2
7.	$\log_2(0.125) = -3$	**22.**	-2
8.	$\log_x(z) = y$	**23.**	-2
9.	1.78	**24.**	4
10.	1.78	**25.**	2
11.	0.43	**26.**	3^{81}
12.	0.43	**27.**	$\frac{1}{2}$
13.	1.40	**28.**	$\frac{1}{25}$
14.	1.40	**29.**	$\frac{1}{3}$
15.	0.49		