

LESSON
16-1**Properties of Logarithms****Practice and Problem Solving: A/B****Express as a single logarithm. Simplify, if possible.**

1. $\log_3 9 + \log_3 27$

2. $\log_2 8 + \log_2 16$

3. $\log_{10} 80 + \log_{10} 125$

4. $\log_6 8 + \log_6 27$

5. $\log_3 6 + \log_3 13.5$

6. $\log_4 32 + \log_4 128$

Express as a single logarithm. Simplify, if possible.

7. $\log_2 80 - \log_2 10$

8. $\log_{10} 4000 - \log_{10} 40$

9. $\log_4 384 - \log_4 6$

10. $\log_2 1920 - \log_2 30$

11. $\log_3 486 - \log_3 2$

12. $\log_6 180 - \log_6 5$

Simplify, if possible.

13. $\log_4 4^6$

14. $\log_5 5^{x-5}$

15. $7^{\log_7 30}$

16. $12^{\log_{12} 1}$

17. $\log_8 8^5$

18. $\log_3 9^4$

Evaluate. Round to the nearest hundredth.

19. $\log_{12} 1$

20. $\log_3 30$

21. $\log_5 10$

Solve.

22. The Richter magnitude of an earthquake, M , is related to the energy released in ergs, E , by the formula $M = \frac{2}{3} \log \left(\frac{E}{10^{11.8}} \right)$.

Find the energy released by an earthquake of magnitude 4.2. _____