

**7-3****Practice**

Form G

**Logarithmic Functions as Inverses****Write each equation in logarithmic form.**

1.  $9^2 = 81$

3.  $8^3 = 512$

5.  $2^9 = 512$

7.  $5^4 = 625$

**Evaluate each logarithm.**

9.  $\log_2 128$

11.  $\log_6 (27)$

13.  $\log_{\frac{1}{3}} \frac{1}{9}$

15.  $\log_7 7^6$

**In 2004, an earthquake of magnitude 7.0 shook Papua, Indonesia. Compare the intensity level of that earthquake to the intensity level of each earthquake below.**

17. magnitude 6.1 in Costa Rica, in 2009

19. magnitude 7.8 in the Fiji Islands, in 2007

**Graph each logarithmic function.**

21.  $y = \log x$

23.  $y = \log_6 x$

**7-3****Practice** (continued)

Form G

## Logarithmic Functions as Inverses

Describe how the graph of each function compares with the graph of the parent function,  $y = \log_b x$ .

25.  $y = \log_8(x - 8)$

27.  $y = \log_2(x - 4) + 1$

Write each equation in exponential form.

29.  $\log_7 1 = 0$

31.  $\log 10 = 1$

33.  $\log_8 \frac{1}{64} = -2$

35.  $\log_{17} 289 = 2$

37.  $\log_{12} \frac{1}{144} = -2$

39.  $\log_3 6561 = 8$

For each pH given, find the concentration of hydrogen ions  $[H^+]$ . Use the formula  $pH = -\log[H^+]$ .

41. 7.2

43. 8.2

45. 5.6

47. 7.0

Find the inverse of each function.

49.  $y = \log_2 x$

51.  $y = \log_{100} x$

53.  $y = \log_2(4x)$

Find the domain and range of each function.

55.  $y = \log_3 x - 2$

57.  $y = \log(x + 1)$