

pg 456 # 3-24 x 3, 38-48 even

3.  $5^x = 81.2$

$$x \log_5 5 = \log_5 81.2$$

$$x = \frac{\log 81.2}{\log 5}$$

$$x = 2.7320$$

12.  $\log_4 8 = \frac{\log 8}{\log 4} = 1.5$

$$1.5 = \log_8 X$$

$$1.5 = \frac{\log X}{\log 8}$$

$$1.5(\log 8) = \log X$$

$$1.3546 = \log X$$

$$10^{1.3546} = 10^{\log X} \quad X = 22.6274$$

21.  $7^{x+2} = 54$

$$x+2 \log_7 7 = \log_7 54$$

$$x+2 = \frac{\log 54}{\log 7}$$

$$x+2 = 2.0499$$

$$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$$

$$x = 0.0499$$

38.  $\log(x-2) = 1$

$$10^{\log(x-2)} = 10^1$$

$$x-2 = 10$$

$$x = 12$$

48.  $\frac{x}{3} \log 2 = \frac{\log 80}{\log 2}$

$$\frac{x}{3} = 6.3219$$

$$x = 18.9658$$

$$\log_2 2^{x/3} = \log_2 80$$

$$\frac{x}{3} = \frac{\log 80}{\log 2}$$

$$\frac{x}{3} = 6.3219$$

$$\begin{array}{r} \cdot 3 \quad \cdot 3 \\ \hline \end{array}$$

$$x = 18.9658$$

**Answers for Lesson 8-5, pp. 456–460 Exercises**

1. 1.5850      2. 2.1240      ③. 2.7320      4. 3:0101  
 5. 3      ⑥. 3.4650      7. 0.9534      8. 0.3579  
 ⑨. 3.2056      10. 0.2720  
 11. 3.1699;  $\log_8 729$       ⑫. 1.5;  $\log_8 22.627$   
 13. 3.6309;  $\log_8 1901.3$       14. 2.5643;  $\log_8 206.93$   
 ⑮. 3.1827;  $\log_8 748.56$       16. 2.8074;  $\log_8 343$   
 17. 3.8737;  $\log_8 3149.6$       ⑱. 0.0792;  $\log_8 1.1790$   
 19. 2.3219      20. 0.8496      ⑳. 0.0499      22. 3.0101  
 23. 1.0219      ㉒. 0.9746      25. 0.2009      26. 5.2379  
 27. 0.5690      28. 1.2871      29. 4.7027      30. 14.4894  
 31. about 7.1 years      32. about 2018  
 33. 0.05      34.  $\frac{\sqrt{10}}{10}$ , or  $\approx 0.3162$   
 35. 33      36. 10,000  
 37.  $\frac{1}{60}$ , or  $\approx 0.0167$       ⑳. 12  
 39.  $\sqrt{10}$ , or  $\approx 3.1623$       ㉑.  $100\sqrt{10} - 1$ , or  $\approx 315.2$   
 41. 2      ㉒.  $3 \times 10^8$   
 43.  $100,000\sqrt{5}$ , or  $\approx 223,606.8$       ㉓. 5  
 45.  $\frac{1}{4}$       ㉔. 1357.2  
 47. 7  
 48. ①. 18.9658  
     ②. 18.9658  
     ③. Answers may vary. Sample: You don't have to use the Change of Base formula with the base-10 method, but there is less algebra with the base-2 method.

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