

Math Sheet

Name _____ Score _____ / 24 Teacher _____ Date _____

Writing Logs in Terms of Others

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

1. Use the supplied rounded values. No calculator is required.

$$\log_8 7 \approx 0.9 \quad \log_8 4 \approx 0.7 \quad \log_8 10 \approx 1.1$$

$$\log_8 \frac{7}{4}$$

2. Use the supplied rounded values. No calculator is required.

$$\log_2 4 \approx 2.0 \quad \log_2 9 \approx 3.2 \quad \log_2 3 \approx 1.6$$

$$\log_2 \frac{16}{9}$$

3. Use the supplied rounded values. No calculator is required.

$$\log_4 8 \approx 1.5 \quad \log_4 7 \approx 1.4 \quad \log_4 9 \approx 1.6$$

$$\log_4 224$$

4. Use the supplied rounded values. No calculator is required.

$$\log_{10} 8 \approx 0.9 \quad \log_{10} 6 \approx 0.8 \quad \log_{10} 3 \approx 0.5$$

$$\log_{10} \frac{5}{32}$$

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Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

5. Use the supplied rounded values. No calculator is required.

$$\log_7 9 \approx 1.1 \quad \log_7 4 \approx 0.7 \quad \log_7 10 \approx 1.2$$

$$\log_7 \frac{1}{729}$$

6. Use the supplied rounded values. No calculator is required.

$$\log_7 4 \approx 0.7 \quad \log_7 5 \approx 0.8 \quad \log_7 2 \approx 0.4$$

$$\log_7 40$$

7. Use the supplied rounded values. No calculator is required.

$$\log_5 2 \approx 0.4 \quad \log_5 8 \approx 1.3 \quad \log_5 7 \approx 1.2$$

$$\log_5 4$$

8. Use the supplied rounded values. No calculator is required.

$$\log_7 10 \approx 1.2 \quad \log_7 9 \approx 1.1 \quad \log_7 4 \approx 0.7$$

$$\log_7 90$$

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Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

9. Use the supplied rounded values. No calculator is required.

$$\log_7 3 \approx 0.6 \quad \log_7 9 \approx 1.1 \quad \log_7 5 \approx 0.8$$

$$\log_7 \frac{1}{243}$$

10. Use the supplied rounded values. No calculator is required.

$$\log_8 7 \approx 0.9 \quad \log_8 2 \approx 0.3 \quad \log_8 4 \approx 0.7$$

$$\log_8 56$$

11. Use the supplied rounded values. No calculator is required.

$$\log_3 2 \approx 0.6 \quad \log_3 8 \approx 1.9 \quad \log_3 9 \approx 2.0$$

$$\log_3 \frac{1}{2}$$

12. Use the supplied rounded values. No calculator is required.

$$\log_5 9 \approx 1.4 \quad \log_5 3 \approx 0.7 \quad \log_5 6 \approx 1.1$$

$$\log_5 1$$

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Writing Logs in Terms of Others

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

13. Write the logarithm in terms of A, B, and C.

$$\log_5 3 = A \quad \log_5 4 = B \quad \log_5 9 = C$$

$$\log_5 \frac{3}{16}$$

14. Write the logarithm in terms of A, B, and C.

$$\log_6 5 = A \quad \log_6 4 = B \quad \log_6 9 = C$$

$$\log_6 \frac{1}{125}$$

15. Write the logarithm in terms of A, B, and C.

$$\log_5 4 = A \quad \log_5 10 = B \quad \log_5 9 = C$$

$$\log_5 200$$

16. Write the logarithm in terms of A, B, and C.

$$\log_9 2 = A \quad \log_9 7 = B \quad \log_9 6 = C$$

$$\log_9 84$$

17. Write the logarithm in terms of A, B, and C.

$$\log_6 8 = A \quad \log_6 10 = B \quad \log_6 7 = C$$

$$\log_6 80$$

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Writing Logs in Terms of Others

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

18. Write the logarithm in terms of A, B, and C.

$$\log_{10} 4 = A \quad \log_{10} 9 = B \quad \log_{10} 2 = C$$

$$\log_{10} 64$$

19. Write the logarithm in terms of A, B, and C.

$$\log_9 10 = A \quad \log_9 8 = B \quad \log_9 5 = C$$

$$\log_9 \frac{25}{2}$$

20. Write the logarithm in terms of A, B, and C.

$$\log_8 9 = A \quad \log_8 10 = B \quad \log_8 3 = C$$

$$\log_8 \frac{8}{729}$$

21. Write the logarithm in terms of A, B, and C.

$$\log_7 6 = A \quad \log_7 9 = B \quad \log_7 8 = C$$

$$\log_7 \frac{2}{3}$$

22. Write the logarithm in terms of A, B, and C.

$$\log_{10} 5 = A \quad \log_{10} 9 = B \quad \log_{10} 7 = C$$

$$\log_{10} \frac{5}{9}$$

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Writing Logs in Terms of Others

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

23. Write the logarithm in terms of A, B, and C.

$$\log_4 7 = A \quad \log_4 3 = B \quad \log_4 2 = C$$

$$\log_4 343$$

24. Write the logarithm in terms of A, B, and C.

$$\log_9 5 = A \quad \log_9 10 = B \quad \log_9 2 = C$$

$$\log_9 100$$

Writing Logs in Terms of Others

Answer Key

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

1. Use the supplied rounded values. No calculator is required.
 $\log_8 7 \approx 0.9$ $\log_8 4 \approx 0.7$ $\log_8 10 \approx 1.1$

$$\log_8 \frac{7}{4}$$

Work:

$$\log_8 \frac{7}{4} = \log_8 7 - \log_8 4$$

$$\log_8 7 - \log_8 4 \approx 0.9 - 0.7$$

$$0.9 - 0.7 = 0.2$$

2. Use the supplied rounded values. No calculator is required.
 $\log_2 4 \approx 2.0$ $\log_2 9 \approx 3.2$ $\log_2 3 \approx 1.6$

$$\log_2 \frac{16}{9}$$

Work:

$$\log_2 \frac{16}{9} = 2 \cdot \log_2 4 - \log_2 9$$

$$2 \cdot \log_2 4 - \log_2 9 \approx 2 \cdot 2.0 - 3.2$$

$$2 \cdot 2.0 - 3.2 = 0.8$$

3. Use the supplied rounded values. No calculator is required.
 $\log_4 8 \approx 1.5$ $\log_4 7 \approx 1.4$ $\log_4 9 \approx 1.6$

$$\log_4 224$$

Work:

$$\log_4 224 = 1 + \log_4 8 + \log_4 7$$

$$1 + \log_4 8 + \log_4 7 \approx 1 + 1.5 + 1.4$$

$$1 + 1.5 + 1.4 = 3.9$$

4. Use the supplied rounded values. No calculator is required.
 $\log_{10} 8 \approx 0.9$ $\log_{10} 6 \approx 0.8$ $\log_{10} 3 \approx 0.5$

$$\log_{10} \frac{5}{32}$$

Work:

$$\log_{10} \frac{5}{32} = 1 - 2 \cdot \log_{10} 8$$

$$1 - 2 \cdot \log_{10} 8 \approx 1 - 2 \cdot 0.9$$

$$1 - 2 \cdot 0.9 = -0.8$$

Writing Logs in Terms of Others

Answer Key

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

5. Use the supplied rounded values. No calculator is required.

$$\log_7 9 \approx 1.1 \quad \log_7 4 \approx 0.7 \quad \log_7 10 \approx 1.2$$

$$\log_7 \frac{1}{729}$$

Work:

$$\log_7 \frac{1}{729} = -3 \cdot \log_7 9$$

$$-3 \cdot \log_7 9 \approx -3 \cdot 1.1$$

$$-3 \cdot 1.1 = -3.3$$

6. Use the supplied rounded values. No calculator is required.

$$\log_7 4 \approx 0.7 \quad \log_7 5 \approx 0.8 \quad \log_7 2 \approx 0.4$$

$$\log_7 40$$

Work:

$$\log_7 40 = \log_7 4 + \log_7 5 + \log_7 2$$

$$\log_7 4 + \log_7 5 + \log_7 2 \approx 0.7 + 0.8 + 0.4$$

$$0.7 + 0.8 + 0.4 = 1.9$$

7. Use the supplied rounded values. No calculator is required.

$$\log_5 2 \approx 0.4 \quad \log_5 8 \approx 1.3 \quad \log_5 7 \approx 1.2$$

$$\log_5 4$$

Work:

$$\log_5 4 = 2 \cdot \log_5 2$$

$$2 \cdot \log_5 2 \approx 2 \cdot 0.4$$

$$2 \cdot 0.4 = 0.8$$

8. Use the supplied rounded values. No calculator is required.

$$\log_7 10 \approx 1.2 \quad \log_7 9 \approx 1.1 \quad \log_7 4 \approx 0.7$$

$$\log_7 90$$

Work:

$$\log_7 90 = \log_7 10 + \log_7 9$$

$$\log_7 10 + \log_7 9 \approx 1.2 + 1.1$$

$$1.2 + 1.1 = 2.3$$

Writing Logs in Terms of Others

Answer Key

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

9. Use the supplied rounded values. No calculator is required.
 $\log_7 3 \approx 0.6$ $\log_7 9 \approx 1.1$ $\log_7 5 \approx 0.8$

$$\log_7 \frac{1}{243}$$

Work:

$$\begin{aligned} \log_7 \frac{1}{243} &= \log_7 3 - 3 \cdot \log_7 9 \\ \log_7 3 - 3 \cdot \log_7 9 &\approx 0.6 - 3 \cdot 1.1 \\ 0.6 - 3 \cdot 1.1 &= -2.7 \end{aligned}$$

10. Use the supplied rounded values. No calculator is required.
 $\log_8 7 \approx 0.9$ $\log_8 2 \approx 0.3$ $\log_8 4 \approx 0.7$

$$\log_8 56$$

Work:

$$\begin{aligned} \log_8 56 &= \log_8 7 + \log_8 2 + \log_8 4 \\ \log_8 7 + \log_8 2 + \log_8 4 &\approx 0.9 + 0.3 + 0.7 \\ 0.9 + 0.3 + 0.7 &= 1.9 \end{aligned}$$

11. Use the supplied rounded values. No calculator is required.
 $\log_3 2 \approx 0.6$ $\log_3 8 \approx 1.9$ $\log_3 9 \approx 2.0$

$$\log_3 \frac{1}{2}$$

Work:

$$\begin{aligned} \log_3 \frac{1}{2} &= 2 \cdot \log_3 2 - \log_3 8 \\ 2 \cdot \log_3 2 - \log_3 8 &\approx 2 \cdot 0.6 - 1 \cdot 1.9 \\ 2 \cdot 0.6 - 1 \cdot 1.9 &= -0.7 \end{aligned}$$

12. Use the supplied rounded values. No calculator is required.
 $\log_5 9 \approx 1.4$ $\log_5 3 \approx 0.7$ $\log_5 6 \approx 1.1$

$$\log_5 1$$

Work:

$$\begin{aligned} \log_5 1 &= \log_5 9 - 2 \cdot \log_5 3 \\ \log_5 9 - 2 \cdot \log_5 3 &\approx 1.4 - 2 \cdot 0.7 \\ 1.4 - 2 \cdot 0.7 &= 0.0 \end{aligned}$$

Writing Logs in Terms of Others

Answer Key

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

13. Write the logarithm in terms of A, B, and C.

$$\log_5 3 = A \quad \log_5 4 = B \quad \log_5 9 = C$$

$$\log_5 \frac{3}{16}$$

Work:

$$\log_5 \frac{3}{16} = \log_5 3 - 2 \cdot \log_5 4$$

$$\log_5 3 - 2 \cdot \log_5 4 = A - 2 \cdot B$$

14. Write the logarithm in terms of A, B, and C.

$$\log_6 5 = A \quad \log_6 4 = B \quad \log_6 9 = C$$

$$\log_6 \frac{1}{125}$$

Work:

$$\log_6 \frac{1}{125} = -3 \cdot \log_6 5$$

$$-3 \cdot \log_6 5 = -3 \cdot A$$

15. Write the logarithm in terms of A, B, and C.

$$\log_5 4 = A \quad \log_5 10 = B \quad \log_5 9 = C$$

$$\log_5 200$$

Work:

$$\log_5 200 = 1 + \log_5 4 + \log_5 10$$

$$1 + \log_5 4 + \log_5 10 = 1 + A + B$$

16. Write the logarithm in terms of A, B, and C.

$$\log_9 2 = A \quad \log_9 7 = B \quad \log_9 6 = C$$

$$\log_9 84$$

Work:

$$\log_9 84 = \log_9 2 + \log_9 7 + \log_9 6$$

$$\log_9 2 + \log_9 7 + \log_9 6 = A + B + C$$

17. Write the logarithm in terms of A, B, and C.

$$\log_6 8 = A \quad \log_6 10 = B \quad \log_6 7 = C$$

$$\log_6 80$$

Work:

$$\log_6 80 = \log_6 8 + \log_6 10$$

$$\log_6 8 + \log_6 10 = A + B$$

Writing Logs in Terms of Others

Answer Key

Use logarithm properties and the three supplied values. Numeric answers are estimates from the displayed tenths; no calculator is required.

18. Write the logarithm in terms of A, B, and C.

$$\log_{10} 4 = A \quad \log_{10} 9 = B \quad \log_{10} 2 = C$$

$$\log_{10} 64$$

Work:

$$\log_{10} 64 = 3 \cdot \log_{10} 4$$

$$3 \cdot \log_{10} 4 = 3 \cdot A$$

19. Write the logarithm in terms of A, B, and C.

$$\log_9 10 = A \quad \log_9 8 = B \quad \log_9 5 = C$$

$$\log_9 \frac{25}{2}$$

Work:

$$\log_9 \frac{25}{2} = 2 \cdot \log_9 10 - \log_9 8$$

$$2 \cdot \log_9 10 - \log_9 8 = 2 \cdot A - 1 \cdot B$$

20. Write the logarithm in terms of A, B, and C.

$$\log_8 9 = A \quad \log_8 10 = B \quad \log_8 3 = C$$

$$\log_8 \frac{8}{729}$$

Work:

$$\log_8 \frac{8}{729} = 1 - 3 \cdot \log_8 9$$

$$1 - 3 \cdot \log_8 9 = 1 - 3 \cdot A$$

21. Write the logarithm in terms of A, B, and C.

$$\log_7 6 = A \quad \log_7 9 = B \quad \log_7 8 = C$$

$$\log_7 \frac{2}{3}$$

Work:

$$\log_7 \frac{2}{3} = \log_7 6 - \log_7 9$$

$$\log_7 6 - \log_7 9 = A - 1 \cdot B$$

22. Write the logarithm in terms of A, B, and C.

$$\log_{10} 5 = A \quad \log_{10} 9 = B \quad \log_{10} 7 = C$$

$$\log_{10} \frac{5}{9}$$

Work:

$$\log_{10} \frac{5}{9} = \log_{10} 5 - \log_{10} 9$$

$$\log_{10} 5 - \log_{10} 9 = A - 1 \cdot B$$

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23. Write the logarithm in terms of A, B, and C.

$$\log_4 7 = A \quad \log_4 3 = B \quad \log_4 2 = C$$

$$\log_4 343$$

Work:

$$\log_4 343 = 3 \cdot \log_4 7$$

$$3 \cdot \log_4 7 = 3 \cdot A$$

24. Write the logarithm in terms of A, B, and C.

$$\log_9 5 = A \quad \log_9 10 = B \quad \log_9 2 = C$$

$$\log_9 100$$

Work:

$$\log_9 100 = \log_9 5 + \log_9 10 + \log_9 2$$

$$\log_9 5 + \log_9 10 + \log_9 2 = A + B + C$$