

NAME: _____

P.I. A2.A.18: Evaluate logarithmic expressions in any base

1. Evaluate $\log_2 22$. Round your answer to the nearest hundredth.

[A] 4.46 [B] 0.22 [C] 0.69 [D] 3.09

2. Evaluate: $\log_3 \left(\frac{1}{27} \right)$

[A] 4 [B] -3 [C] -4 [D] 3

3. What is the value of $\log_7 2401$?

[A] 16,807 [B] 343 [C] 4 [D] 7

4. Approximate the value to the nearest .0001:
 $\log_{(1/5)} 25$

[A] -3.2189 [B] -2.0000

[C] -0.5000 [D] -1.6094

5. Evaluate: $\log_2 8$

6. Evaluate $\log_3 13$. Round your answer to the nearest hundredth.

7. Find the largest integer that is less than $\log(23)$.

8. Compare the quantity in Column A with the quantity in Column B.

Column A Column B

$\log_{10} 1000$ $\log_5 625$

[A] The quantity in Column A is greater.

[B] The quantity in Column B is greater.

[C] The two quantities are equal.

[D] The relationship cannot be determined on the basis of the information supplied.

9. A company with loud machinery needs to cut its sound intensity to 46% of its original level. By how many decibels should the loudness be reduced? Use the formula $L = 10 \log \frac{I}{I_0}$.

10. A construction explosion has an intensity I of $1.75 \times 10^{-2} \frac{W}{m^2}$. What is the loudness of the sound in decibels? (Use $L = 10 \log \frac{I}{I_0}$ where I is the intensity of the sound in watts per square meter. Use $I_0 = 10^{-12} \frac{W}{m^2}$.)

- [1] A
- [2] B
- [3] C
- [4] B
- [5] 3
- [6] 2.33
- [7] 1
- [8] B
- [9] 3.372 decibels
- [10] 102.4 decibels