

READY, SET, GO!

Name _____

Period _____

Date _____

READY

Topic: Solving simple exponential and logarithmic equations

You have solved exponential equations before based on the idea that $a^x = a^y$, **if and only if** $x = y$.

You can use the same logic on logarithmic equations. $\log_a x = \log_a y$, **if and only if** $x = y$

Rewrite each equation so that you set up a one-to-one correspondence between all of the parts. Then solve for x .

Example: Original equation	Rewritten equation:	Solution:
a.) $3^x = 81$	$3^x = 3^4$	$x = 4$
b.) $\log_2 x - \log_2 5 = 0$	$\log_2 x = \log_2 5$	$x = 5$

1. $3^{x+4} = 243$ $x = 1$

2. $\left(\frac{1}{2}\right)^x = 8$ $x = -3$

3. $\left(\frac{3}{4}\right)^x = \frac{27}{64}$ $x = 3$

4. $\log_2 x - \log_2 13 = 0$

$x = 13$

5. $\log_2(2x - 4) - \log_2 8 = 0$

$x = 6$

6. $\log_2(x + 2) - \log_2 9x = 0$

$x = \frac{1}{4}$

7. $\frac{\log 2x}{\log 14} = 1$

$x = 7$

8. $\frac{\log(5x-1)}{\log 29} = 1$

$x = 6$

9. $\frac{\log 5^{(x-2)}}{\log 625} = 1$

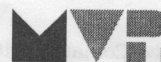
$x = 6$

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SET

Topic: Rewriting logs in terms of known logs

Use the given values and the properties of logarithms to find the indicated logarithm.

Do not use a calculator to evaluate the logarithms.

Given: $\log 16 \approx 1.2$
 $\log 5 \approx 0.7$
 $\log 8 \approx 0.9$

10. Find $\log \frac{5}{8} \approx -0.2$

11. Find $\log 25 \approx 1.4$

12. Find $\log \frac{1}{2} \approx 0.3$

13. Find $\log 80 \approx 1.9$

14. Find $\log \frac{1}{64} \approx -1.8$

Given $\log_3 2 \approx 0.6$
 $\log_3 5 \approx 1.5$

15. Find $\log_3 16 \approx 2.4$

16. Find $\log_3 108 \approx 4.2$

17. Find $\log_3 \frac{3}{50} \approx 3.4$

18. Find $\log_3 \frac{8}{15} \approx 2.3$

19. Find $\log_3 486 \approx 5.6$

20. Find $\log_3 18 \approx 2.6$

21. Find $\log_3 120 \approx 4.3$

22. Find $\log_3 \frac{32}{45} \approx 0.5$

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