Name _____ Date _____ Pd _____

6.5 Properties of Logarithmic Functions and Change of Base Formula DAY TWO CYU

☑ *Use when you get it right all by yourself*

S *Use when you did it all by yourself, but made a silly mistake*

H *Use when you could do it alone with a little help from teacher or peer*

G *Use when you completed the problem in a group*

X *Use when a question was attempted but wrong (get help)*

N *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Evaluating logarithmic expressions	1 - 3	4	
Expanding logarithmic expressions	7	8	9, 10
Condensing logarithmic expressions	11	12, 13	14
Change-of-base formula	15 - 17		18
Making an Argument			19
Error Analysis		20	

Use $\log_7 4 \approx 0.712$ & $\log_7 12 \approx 1.277$ to evaluate the logarithm. Show all work to earn full credit.

1. $\log_7 3$

2. $\log_7 16$

3. $\log_7 48$

4. $\log_7 \frac{1}{4}$

Expand the logarithmic expression. Show all steps to earn full credit.

7. $\log_3 4x$

8. $\log 10x^5$

9. $\ln \frac{x}{3y}$

10. $\log_7 5\sqrt{x}$

Condense the logarithmic expression. Show all steps to earn full credit.

11. $\log_4 7 - \log_4 10$

12. $6 \ln x + 4 \ln y$

13. $\log_5 4 + \frac{1}{3}\log_5 x$

14. $\log_3 4 + 2\log_3 \frac{1}{2} + \log_3 x$

Use the change-of-base formula to evaluate the logarithms. Give the exact (CRF) and the approximate answer, rounded to the thousandths.

15. $\log_4 7$

16. $\log_9 15$

17. $\log_6 17$

18. $\log_7 \frac{3}{16}$

19. **MAKING AN ARGUMENT** Your friend claims you can use the change-of-base formula to graph y = $\log_3 x$ using a graphing calculator. Is your friend correct? Explain your reasoning.

20. **ERROR ANALYSIS** Describe and correct the error in expanding the logarithmic expression.

a)

✗

$$\log_2 5x = (\log_2 5)(\log_2 x)$$

b)

✗

$$\ln 8x^3 = 3 \ln 8 + \ln x$$

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

1	2	3	4	5	6	7	8
Basic		Intermediate			Advanced		Solved ALL!