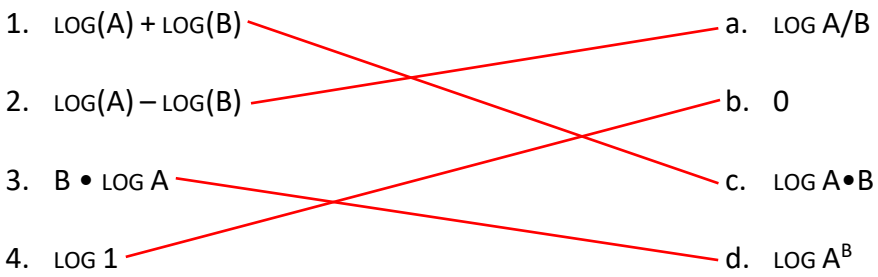
Name:
Date:

Check for Understanding 1

Required Materials: Throughout this activity you may use any FiCycle LOGS you like.

Part I: Match each expression with the equivalent expression.



Part II: Basic Exercises. Simplify each expression to a single LOG of a number.

5. LOG 5 + LOG 4 = *LOG 20*

6. LOG ½ + LOG ¾ = *LOG 3/8*

7. LOG 10 – LOG 5 = *LOG 2*

8. LOG 100 – LOG 5 = *LOG 20*

9. LOG 30 – LOG 30= *LOG 1 = 0*

10. 5 • LOG 2 = *LOG 2^5 = LOG 32*

11. 2 • LOG 8 = *LOG 8^2 = LOG 64*

12. 3 • LOG 5 = *LOG 5^3 = LOG 125*

Part III: Express each single LOG as a sum or difference of LOGS.

13. LOG (5•10) = LOG __*5*__ + LOG __*10*__

14. LOG $8x$ = LOG __*8*__ + LOG __*x*__

15. LOG xy = LOG __*x*__ + LOG __*y*__

16. LOG $\frac{16}{4}$ = LOG __*16*__ – LOG __*4*__

17. LOG $\frac{x}{4}$ = LOG __*x*__ – LOG __*4*__

18. LOG $\frac{x}{y}$ = LOG __*x*__ – LOG __*y*__

Part IV: Express each LOG as a product.

19. LOG x^2 = *Z LOG x*

20. LOG 5^x = *X LOG 5*

21. LOG x^z = *2 LOG x*

Part V: These questions are a little harder and may require you to use findings from multiple lessons.

22. LOG x^2 + LOG x^{10} = *LOG x^{12}*

23. LOG (2X) = LOG 2 + LOG *x*

24. LOG 10 = LOG 2 + LOG *5*

25. LOG 10 = LOG 100 – LOG *10*

26. LOG $\left(\frac{Q}{7}\right)$ = LOG *Q* – LOG *7*

27. 6 • LOG 2 + 4 • LOG 2 = *LOG 2^6 + LOG 2^4*
LOG 2^{10}

28. 2 • LOG 3 + 4 • LOG 2 = *LOG 3^2 + LOG 2^4*
LOG 9 + LOG 16
LOG (9 · 16)

29. 20 • LOG 2 – 10 • LOG 2 = *LOG 2^{20} – LOG 2^{10}*
LOG 2^{10}

30. ¼ • LOG 16 = *LOG $16^{1/4}$*
LOG $\sqrt[4]{16}$
LOG 2

31. ½ • LOG 16 = *LOG $16^{½}$*
LOG $\sqrt{16}$
LOG 4

32. 5,434 • LOG 1 +3 π • LOG 1 = *0*

33. LOG 1 • $(\sum_{n=1}^{100} e^{n+1} \cdot 27\pi n)$= *0*

Part VI: Using the LOG rules, break apart each single LOG into a sum, product, and/or difference of as many different LOGS as possible.

34. LOG $\frac{2x}{7y}$ =
LOG 2x – LOG 7y
(LOG 7 + LOG x) – (LOG 7 + LOG y)
LOG 2 + LOG x – LOG 7 – LOG y

35. LOG $\left(\frac{5x}{3y}\right)^4$ = *4 · LOG $\frac{5x}{3y}$*
4 (LOG 5x – LOG 3y)
4 (LOG 5x) – 4(LOG 3y)
4(LOG 5 + LOG x) – 4(LOG 3 + LOG y)
4 LOG 5 + 4 LOG x – 4 LOG 3 – 4 LOG y

36. LOG $\left(\frac{8x^3}{9y}\right)^4$ =
4 · LOG $\left(\frac{8x^3}{9y}\right)$
4 · (LOG $8x^3$ – LOG 9y)
4 · (LOG 8 + LOG x^3) – 4 · (LOG 9 + LOG y)
4 · (LOG 8 + 3 LOG x) – 4 · (LOG 9 + LOG y)
4 LOG 8 + 12 LOG x – 4 LOG 9 – 4 LOG y