Name

9-5B Lesson Master

Questions on SPUR Objectives
See Student Edition pages 656–659 for objectives.

VOCABULARY

1. a. Write the following sentence as an equation.
y is the logarithm of x to the base 10. _____

b. **Fill in the Blank** y is the common logarithm of x if and only if _____.

2. Write the exponential equation as a logarithmic equation, or vice-versa.

a. $\log 10 = 1$ _____

b. $10^{2.635} \approx 432$ _____

c. $10^r = s$ _____

SKILLS Objective A

In 3–5, evaluate in your head. You may check with a calculator.

3. a. $\log 10^{18} =$ _____ b. $\log 0.001 =$ _____ c. $\log \sqrt[6]{10} =$ _____

4. a. $\log 100 =$ _____ b. $\log 10^{-35} =$ _____ c. $\log \sqrt{100} =$ _____

5. a. $\log 10^{\frac{3}{2}} =$ _____ b. $\log 10{,}000 =$ _____ c. $\log \sqrt[4]{10^6} =$ _____

Fill in the Blanks In 6 and 7, a. Determine in your head what consecutive integers the logarithm is between. b. Check by finding the logarithm to the nearest thousandth with a calculator.

6. a. $\log 316$ is between _____ and _____. b. $\log 316 \approx$ _____.

7. a. $\log 0.000069$ is between _____ and _____. b. $\log 0.000069 \approx$ _____.

SKILLS Objective C

In 8–13, write the equivalent exponential equation; use it to solve the logarithmic equation. Round to 5 decimal places when appropriate.

8. $\log n = 0$ _____

9. $\log a = -4$ _____

10. $\log x = \frac{1}{3}$ _____

11. $\log w = 2.9$ _____

12. $\log p = -3.55$ _____

13. $\log y = 4$ _____

14. Solve $2 \log(x) = 6$ for x. _____

Name _____

15. Solve $2 \log(\sqrt{x}) = 3$ for x. _____

16. Solve $\frac{1}{2} \log x = 3$ for x. _____

17. Solve $\log\left(\frac{1}{4}x\right) = 2$ for x. _____

PROPERTIES Objective E

18. What are the domain and the range of the common logarithm function?

domain _____ range _____

19. What is the logarithm of 1? Justify your answer. _____

20. Use the definition of logarithm of x to the base 10 to explain why $\log(-100)$ does not exist.

_____

_____

21. **Fill in the Blank** The inverse of the function with equation $y = \log x$ is

$y =$ _____.

REPRESENTATIONS Objective K

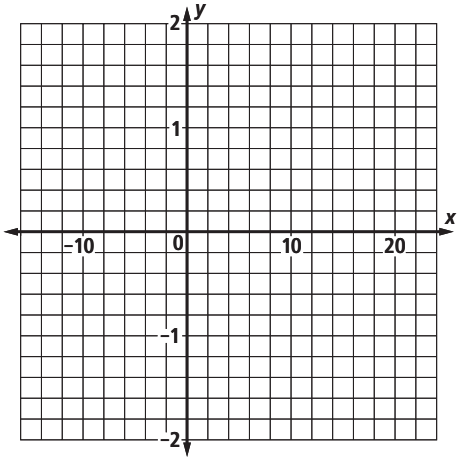
22. a. Complete the table of values at the right. Round to the nearest tenth.

x	0.5	1	2	5	10	20
$y = \log x$						

b. Plot the points from Part a on the grid at the right.

c. Join the points with a smooth curve. What is this curve called?

_____



23. Give the domain and range of the function.

_____

24. Give the x- and y-intercepts of the function, if they exist.

_____