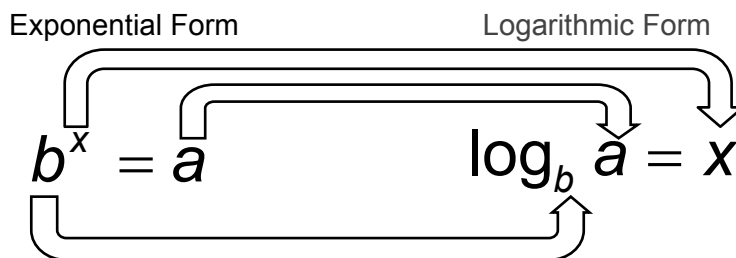


**LESSON**  
**15-1**

# Defining and Evaluating a Logarithmic Function

## Reteach



### Example

|  |  |
|--|--|
| Write the exponential equation in logarithmic form. $3^4 = 81$ | Write the logarithmic equation in exponential form. $\log_5 125 = 3$ |
| $3^4 = 81 \rightarrow \log_3 81 = 4$                           | $\log_5 125 = 3 \rightarrow 5^3 = 125$                               |

Write the given exponential equation in logarithmic form.

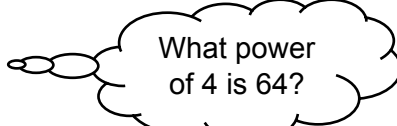
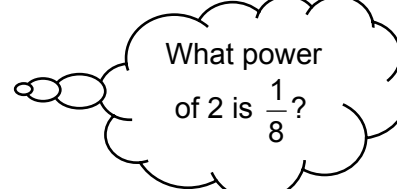
- |               |                            |                                   |
|---------------|----------------------------|-----------------------------------|
| 1. $2^6 = 64$ | 2. $4^{-2} = \frac{1}{16}$ | 3. $\frac{1^3}{3} = \frac{1}{27}$ |
| _____         | _____                      | _____                             |

Write the given logarithmic equation in exponential form.

- |                    |                               |                    |
|--------------------|-------------------------------|--------------------|
| 4. $\log_7 49 = 2$ | 5. $\log_2 \frac{1}{16} = -4$ | 6. $\log_8 48 = x$ |
| _____              | _____                         | _____              |

You can evaluate logarithms using your knowledge of exponents.

### Example

|                      |   |  |
|----------------------|---|--|
| $\log_4 64$          |  | $4^2 = 64$<br>$4^3 = 64$<br>$\log_4 64 = 3$                                |
| $\log_2 \frac{1}{8}$ |  | $2^2 = \frac{1}{8}$<br>$2^{-3} = \frac{1}{8}$<br>$\log_2 \frac{1}{8} = -3$ |

Evaluate each logarithm.

- |                 |               |                         |
|-----------------|---------------|-------------------------|
| 7. $\log_5 625$ | 8. $\log_8 2$ | 9. $\log_3 \frac{1}{9}$ |
| _____           | _____         | _____                   |