

The Meaning Of Logarithms

Date _____ Period _____

Rewrite each equation in exponential form.

1) $\log_6 36 = 2$

2) $\log_{289} 17 = \frac{1}{2}$

3) $\log_{14} \frac{1}{196} = -2$

4) $\log_3 81 = 4$

Rewrite each equation in logarithmic form.

5) $64^{\frac{1}{2}} = 8$

6) $12^2 = 144$

7) $9^{-2} = \frac{1}{81}$

8) $\left(\frac{1}{12}\right)^2 = \frac{1}{144}$

Rewrite each equation in exponential form.

9) $\log_u \frac{15}{16} = v$

10) $\log_v u = 4$

11) $\log_{\frac{7}{4}} x = y$

12) $\log_2 v = u$

13) $\log_u v = -16$

14) $\log_y x = -8$

Rewrite each equation in logarithmic form.

15) $u^{-14} = v$

16) $8^b = a$

$$17) \left(\frac{1}{5}\right)^x = y$$

$$18) 6^y = x$$

$$19) 9^y = x$$

$$20) b^a = 123$$

Evaluate each expression.

$$21) \log_4 64$$

$$22) \log_6 216$$

$$23) \log_4 16$$

$$24) \log_3 \frac{1}{243}$$

$$25) \log_5 125$$

$$26) \log_2 4$$

$$27) \log_{343} 7$$

$$28) \log_2 16$$

$$29) \log_{64} 4$$

$$30) \log_6 \frac{1}{216}$$

Simplify each expression.

$$31) 12^{\log_{12} 144}$$

$$32) 5^{\log_5 17}$$

$$33) x^{\log_x 72}$$

$$34) 9^{\log_3 20}$$

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$$6^2 = 36$$

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$$14^{-2} = \frac{1}{196}$$

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$$3^4 = 81$$

Rewrite each equation in logarithmic form.

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$$\log_{64} 8 = \frac{1}{2}$$

6) $12^2 = 144$

$$\log_{12} 144 = 2$$

7) $9^{-2} = \frac{1}{81}$

$$\log_9 \frac{1}{81} = -2$$

8) $\left(\frac{1}{12}\right)^2 = \frac{1}{144}$

$$\log_{\frac{1}{12}} \frac{1}{144} = 2$$

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$$u^v = \frac{15}{16}$$

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$$\log_8 a = b$$

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$$29) \log_{64} 4$$

$$\frac{1}{3}$$

$$30) \log_6 \frac{1}{216}$$

$$-3$$

Simplify each expression.

$$31) 12^{\log_{12} 144}$$

$$144$$

$$32) 5^{\log_5 17}$$

$$17$$

$$33) x^{\log_x 72}$$

$$72$$

$$34) 9^{\log_3 20}$$

$$400$$