WHEN LUMBERJACKS PLAY MUSIC, WHY DO THEY USE A LARGE SOUP CAN INSTEAD OF A BASS DRUM?

Logarithms are exponents.

If $\log_b(a) = x$, then $b^x = a$. $\log_2(8) = 3$ because $2^3 = 8$.

Match each logarithmic expression with the value of x.

1) $\log_2 4 = x$ 2	2) $\log_2 x = 3$ 8	3) $\log_4 64 = x$ 3	4) $\log_2 64 = x$ 6
5) $\log_x 81 = 2$ $x^2=81$ $x=9$	6) $\log_5 x = 2$ 25	7) $\log_x 7 = 1$ $x^1=7$ $x=7$	8) $\log_4 x = -\frac{1}{2}$ $4^{-1/2}=x$ $(\frac{1}{4})^{1/2}=x$ $\sqrt{\frac{1}{4}}=x$ $\frac{1}{2}=x$
9) $\log_8 x = \frac{1}{3}$ $8^{1/3}=x$ $\sqrt[3]{8}=x$ $2=x$	10) $\log_7 x = -1$ $7^{-1}=x$ $\frac{1}{7}=x$	11) $\log_{64} x = \frac{1}{2}$ $64^{1/2}=x$ $\sqrt{64}=x$ $8=x$	12) $\log_5 x = 4$ 625
13) $\log_3\left(\frac{1}{3}\right) = x$ $3^x=\frac{1}{3}$ $3^x=3^{-1}$ $x=-1$	14) $\log_x 1000 = 3$ $x^3=1000$ $x=10$	15) $\log_{5/2}\left(\frac{2}{5}\right) = x$ $\left(\frac{5}{2}\right)^x=\frac{2}{5}$ $x=-1$	16) $\log_5 1 = x$ $5^x=1$ $x=0$
17) $\log_x 4 = \frac{2}{3}$ $x^{2/3}=4$ $\sqrt[3]{x^2}=4^3$ $x^2=64$ $x=8$	18) $\log_2\left(\frac{1}{4}\right) = x$ $2^x=\frac{1}{4}$ $2^x=2^{-2}$ $x=-2$	19) $\log_2 x = 0$ 1	20) $\log_8 x = -\frac{2}{3}$ $8^{-2/3}=x$ $(\frac{1}{8})^{1/3}=x$ $\sqrt[3]{\frac{1}{8}}^2=x$ $(\frac{1}{2})^2=x$ $\frac{1}{4}=x$
21) $\log_{1/2} x = -1$ $(\frac{1}{2})^{-1}=x$ $2^1=x$ $2=x$	22) $\log_{10} 10^8 = x$ $10^x=10^8$ $x=8$	23) $\log_4 x = 1$ 4	24) $\log_{16} x = \frac{1}{2}$ $16^{1/2}=x$ $\sqrt{16}=x$ $x=4$
25) $\log_{13} 169 = x$ $13^x=169$ $13^x=13^2$ $x=2$	26) $\log_x 125 = \frac{3}{4}$ $x^{3/4}=125$ $\sqrt[4]{x^3}=125$ $\sqrt[4]{x^3}=\sqrt[4]{125}$ $x=625$	27) $\log_{\sqrt{3}} x = 2$ $\sqrt{3}^2=x$ $3=x$	28) $\log_{1/3} x = -2$ $(\frac{1}{3})^{-2}=x$ $3^2=x$ $x=9$
29) $\log_{2/3}\left(\frac{9}{4}\right) = x$ $(\frac{2}{3})^x=\frac{9}{4}$ $(\frac{2}{3})^x=(\frac{3}{2})^2$ $x=-2$	30) $\log_x 0.1 = -1$ $x^{-1}=.1$ $x^{-1}=\frac{1}{10}$ $\frac{1}{x}=\frac{1}{10}$ $x=10$	31) $\log_{81} x = \frac{1}{4}$ $(81)^{1/4}=x$ $\sqrt[4]{81}=x$ $3=x$	32) $\log_x 5 = \frac{1}{2}$ $x^{1/2}=5$ $\sqrt{x}=5$ $x=25$
33) $\log_x\left(\frac{1}{4}\right) = -1$ $x^{-1}=\frac{1}{4}$ $\frac{1}{x}=\frac{1}{4}$ $x=4$	34) $\log_a 1 = x$ $a^x=1$ $x=0$	35) $\log_a a = x$ $a^x=a$ $x=1$	36) $\log_x .001 = -3$ $x^{-3}=.001$ $x^{-3}=\frac{1}{1000}$ $\frac{1}{x^3}=\frac{1}{1000}$ $x=10$

Answers

A. 2	B. 6	C. $\frac{1}{7}$	D. 11	E. 4	F. –4	G. 625	H. 0	I. $\frac{1}{2}$	J. 5
L. 1	M. 3	N. 25	O. 10	R. –1	S. 8	T. –2	U. 7	W. $\frac{1}{4}$	Y. 9

C	O	M	M	O	N
10	36	3	27	14	6

L	O	G	G	E	R
19	30	12	26	33	13

R	H	Y	T	H	M	S
15	16	5	18	34	31	2

A	L	W	A	Y	S
9	35	20	21	28	17

U	S	E
7	11	23

A
1

B	A	S	E
4	25	22	24

T	H	N
29	8	32

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