



FiCycle LOGs Questions

Connect any two LOGs together and compare the numbers on the LOGs to the number on a single LOG of the same length.

1



FiCycle LOGs Questions

How many ways can you combine LOGs to be the same length as LOG 100?

What is the fewest number of LOGs?

The greatest number of LOGs?

2



FiCycle LOGs Questions

What LOG do you get when you subtract one LOG from another? What is the relationship between the numbers on these LOGs?

3



FiCycle LOGs Questions

Subtracting is the same as adding a negative number. Express $-\text{LOG } 2$ as the LOG of a number.

What about $-\text{LOG}(100)$?

4



FiCycle LOGs Questions

What happens when you combine several LOGs with the same number? Can you make any generalizations about the resulting LOG and its relationship to the original LOGs you built it from?

5



FiCycle LOGs Questions

If you can, match the length of LOG 64 as the sum of two identical LOGs. Match the length of LOG 64 as the sum of three identical LOGs. If you cannot, explain why.

6



FiCycle LOGs Questions

How would you use the LOGs to find the square root of a number?

What about the cube root?

7



FiCycle LOGs Questions

What LOGs do you get by repeatedly using both LOG 2 and LOG 5?

8

What is the greatest number of LOGs you can use to be the same length as LOG 32?
What is the greatest number of LOGs you can use to be the same length as LOG 25?
What do you call the numbers on the LOGs that you used to get to the greatest number of LOGs? (They are a part of a special group of numbers)

2

Examples:

$$\begin{aligned}\text{LOG } 2 + \text{LOG } 2 &= \text{LOG } ??? \\ \text{LOG } 4 + \text{LOG } 2 &= \text{LOG } ??? \\ \text{LOG } 2 + \text{LOG } 5 &= \text{LOG } ???\end{aligned}$$

1

Hint:

Think about how subtraction works for LOGs. The answer may not be a whole number/integer.

4

Examples:

$$\begin{aligned}\text{LOG } 10 - \text{LOG } 2 &= \text{LOG } ??? \\ \text{LOG } 40 - \text{LOG } 5 &= \text{LOG } ??? \\ \text{LOG } 64 - \text{LOG } 8 &= \text{LOG } ???\end{aligned}$$

3

Which LOGs have the same length as two matching LOGs?
Which LOGs have the same length as three matching LOGs?

6

Hint: You can power through this problem with examples.

Examples:

$$\begin{aligned}\text{LOG } 2 + \text{LOG } 2 + \text{LOG } 2 &= \text{LOG } ??? \\ \text{LOG } 2 + \text{LOG } 2 + \text{LOG } 2 + \text{LOG } 2 &= \text{LOG } ???\end{aligned}$$

5

One LOG with length less than LOG 100 which fits this pattern is not included in the set. Which one is it?
Challenge question:
Repeating decimals like $1/3 = .333333\dots$ are infinite. Terminating decimals like $1/4 = .25$ are finite. Are the reciprocals of the powers of 2 and 5 repeating or terminating?

8

Hint: Look back to Card 6.

7



FiCycle LOGs Questions

What is the length of LOG 1?

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FiCycle LOGs Questions

What is $\text{LOG}_{10}100$?

What is $\text{LOG}_{10}1000$?

10



FiCycle LOGs Questions

Use the LOG ruler to find:

$\text{Log}_2 = ???$ (LOG base 2 of 2)

$\text{Log}_2 4 = ???$

$\text{Log}_2 64 = ???$

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FiCycle LOGs Questions

Use the LOG Ruler to find $\text{Log}_{10}2$ and Log_210 .

What is the length of LOG 10 relative to LOG 2? (How many LOG 2s are in a LOG 10?)

What is the length of LOG 2 Relative to LOG 10? (How many LOG 10s are in a LOG 2?)

12



FiCycle LOGs Questions

If $\text{Log}_{10}2 = A$ (The number you found on card 12),
what is $\text{LOG}_{10}4$ expressed in terms of A? What is $\text{LOG}_{10}2^n$
expressed in terms of A?

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FiCycle LOGs Questions

Which is a bigger difference?

$\text{LOG } 4 - \text{LOG } 2$

$\text{LOG } 64 - \text{LOG } 32$

$\text{LOG } 100 - \text{LOG } 50$

14

Challenge: What is $\text{LOG}_{10}(0.01)$?

Hint: Look back at Card 4.

10

Examples:

$$\text{LOG } 2 - \text{LOG } 2 = \text{LOG } ???$$

$$\text{LOG } 5 - \text{LOG } 5 = \text{LOG } ???$$

9

Challenge: How can you use the fact that 10^3 and 2^{10} are close to each other to estimate the numbers you found on the ruler?

12

Challenge: How are LOGs related to exponents? What role does the base play?

11

Why is a LOG scale often used to show performance of the stock market, like the DOW JONES INDUSTRIAL INDEX or the STANDARD & POORS 500?

14

Challenge: Why don't the FiCycle LOGs have a base?

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