

Name:

Date:

LOG 1

Required Materials: $2 \times \text{LOG } 2$, $2 \times \text{LOG } 4$, $2 \times \text{LOG } 5$, $\text{LOG } 8$, $\text{LOG } 16$

Directions: *At this point, we've learned about how we can add LOGS, how we can subtract LOGS, and what happens when we have multiple logs. In this activity, we will learn to assign a number to LOG 1. In later lessons, we will learn to assign numbers to other LOGS.*

There are two ways to think about: $\text{LOG } 4 - \text{LOG } 4$:

Method 1: $\text{LOG } 4 - \text{LOG } 4$ can be seen as a difference of LOGS.

RULE: To calculate the difference in the height of LOGS we need to divide their arguments.

Examples:

a. $\text{LOG } 16 - \text{LOG } 2 = \text{LOG } \frac{16}{2} = \text{LOG } 8$

b. $\text{LOG } 4 - \text{LOG } 4 = \text{LOG } \frac{4}{4} = \text{LOG } 1$

Method 2: $\text{LOG } 4 - \text{LOG } 4$ can be seen as a difference of two numbers.

RULE: Any number subtracted from itself is always equal to 0.

Examples:

a. $105 - 105 = 0$

b. $\text{LOG } 4 - \text{LOG } 4 = 0$

1. Calculate each in both ways:

Method 1

a. $\text{LOG } 5 - \text{LOG } 5 = \text{LOG } \underline{1}$ or

Method 2

$\text{LOG } 5 - \text{LOG } 5 = \underline{0}$

b. $\text{LOG } 2 - \text{LOG } 2 = \text{LOG } \underline{1}$ or

$\text{LOG } 2 - \text{LOG } 2 = \underline{0}$

c. $\text{LOG } 20 - \text{LOG } 20 = \text{LOG } \underline{1}$ or

$\text{LOG } 20 - \text{LOG } 20 = \underline{0}$

d. $\text{LOG } N - \text{LOG } N = \text{LOG } \underline{1}$ or

$\text{LOG } N - \text{LOG } N = \underline{0}$



2. Putting these ideas together, we can see that:

- $\text{LOG } A - \text{LOG } A = 0$
- $\text{LOG } A - \text{LOG } A = \text{LOG } \frac{A}{A} = \text{LOG } 1$

What's the pattern? Is there a general rule? $\text{LOG } 1 = \underline{0}$

3. You may have noticed that there is no LOG 1 FiCycle LOG.

Explain why.

There is no LOG 1 FiCycle LOG because $\text{LOG } 1 = 0$.