

## Basic Logarithms Investigation

1. Using a calculator, find the values for the following logarithms and write your answer in the space provided. Round answers to the nearest thousandth. When done, answer the questions that follow:

a)  $\log_{10}2 = \underline{\hspace{2cm}}$        $\log_{10}3 = \underline{\hspace{2cm}}$        $\log_{10}6 = \underline{\hspace{2cm}}$

b)  $\log_{10}3 = \underline{\hspace{2cm}}$        $\log_{10}4 = \underline{\hspace{2cm}}$        $\log_{10}12 = \underline{\hspace{2cm}}$

c)  $\log_{10}5 = \underline{\hspace{2cm}}$        $\log_{10}8 = \underline{\hspace{2cm}}$        $\log_{10}40 = \underline{\hspace{2cm}}$

d)  $\log_{10}6 = \underline{\hspace{2cm}}$        $\log_{10}7 = \underline{\hspace{2cm}}$        $\log_{10}42 = \underline{\hspace{2cm}}$

2. What do you notice about the **questions** in each row?

3. What do you notice about the **answers** in each row?

4. Using the patterns you noticed in #2 and #3, provide 3 different ways of calculating  $\log_{10}24$  without actually entering  $\log_{10}24$  into your calculator.

5. Write a rule to show the relationship you figured out. Use the terms  $\log_{10}a$  and  $\log_{10}b$  .

6. How do you think you would figure out  $\log_{10}5$  if you knew the value of  $\log_{10}30$  and  $\log_{10}6$  ?