Basic Logarithms Investigation KEY

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:

$log_{10}2 =$ 0.301	$log_{10}3 =$ 0.477	$log_{10}6 =$ 0.778
$log_{10}3 =$ 0.477	$log_{10}4 =$ 0.602	$log_{10}12 =$ 1.079
$log_{10}5 =$ 0.699	$log_{10}8 =$ 0.903	$log_{10}40 =$ 1.602
$log_{10}6 =$ 0.778	$log_{10}7 =$ 0.845	$log_{10}42 =$ 1.623

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

The first two numbers in the row multiplied is equal to the third number.

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

The first two answers in the row added together is equal to the third answer.

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.

$log_{10}2 + log_{10}12$ $log_{10}3 + log_{10}8$ $log_{10}4 + log_{10}6$

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

$log_{10}a + log_{10}b = log_{10}ab$

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

$log_{10}30 - log_{10}6 = log_{10}5$

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Levels:

Limited - Filled in #1-2 mostly correctly and noticed patterns.
Adequate - Completed #1-4 mostly correctly
Substantial - Completed #1-5 mostly correctly
Excellent - Completed #1-6 mostly correctly