

## Oliver's Method

Complete the chart below. Then use your chart to answer the questions. [Adapted from a Texas Instruments resource, 1998]. GCD or GCF represents the greatest common divisor or factor, and LCM represents the least common multiple.

<b>a</b>	<b>b</b>	<b>GCD or GCF</b>	<b>LCM</b>	<b>GCD x LCM</b>	<b>a x b</b>
16	40				
18	72				
9	12				
7	5				
6	20				
8	16				
15	9				
11	12				
16	14				
36	48				

1. How is the product of the two numbers (a and b) related to the product of the GCD and the LCM? This is Oliver's Method.

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2. Using  $a = 12$  and  $b = 18$ , show that your conclusion from #1 is true. Use prime factorization in your reasoning.

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3. Suppose you have a four-function calculator that will only add, subtract, multiply, and divide. You know that the GCD of 40 and 48 is 8, and you need to know the LCM of 40 and 48. Explain the set of keystrokes you could use on the calculator to find the LCM.

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4. Suppose you have a four-function calculator that will only add, subtract, multiply, and divide. You know that the LCM of 15 and 12 is 60, and you need to know the GCD of 15 and 12. Explain the set of keystrokes you could use on the calculator to find the GCD.

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5. James and Andrew are training for a bicycle race. James can go around the park on the bike path in 20 minutes, and Andrew can go the same distance in 16 minutes. If they start at the same time, when will they be side-by-side again? Use GCD or LCM in your reasoning.

6. Oliver's Method can also be used to find the LCM of two numbers. We'll illustrate this using the numbers 18 and 72.

Step 1: Write these numbers as a fraction. \_\_\_\_\_

Step 2: Simplify completely. \_\_\_\_\_

Step 3: Multiply the original fraction by the reciprocal of the simplified fraction, and the LCM is in both the numerator and the denominator.

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7. Use Oliver's Method to find the LCM of 9 and 12. Show all 3 steps.

8. Use Oliver's Method to find the LCM of 16 and 20. Show all 3 steps.