

Instructions: In-class exercises are meant to introduce you to a new topic and provide some practice with the new topic. **Work in a team of up to 4 people to complete this exercise.** You can work simultaneously on the problems, or work separate and then check your answers with each other. **Turn in one copy of the exercise per group.**

Names:

Number Theory: The Euclidean Algorithm

The Euclidean Algorithm ^a

Input: a and b (nonnegative integers, not both zero).

Output: The Greatest Common Divisor of a and b .

```
gcd( a, b ) {  
    if ( a < b )  
        swap ( a, b );  
  
    while ( b != 0 ) {  
        r = a mod b;  
        a = b;  
        b = r;  
    }  
  
    return a;  
}
```

^aFrom Discrete Mathematics by Johnsonbaugh, p 249

Question 1

Step through the Euclidean Algorithm to solve each of the following.

a. $\gcd(3, 9) =$

b. $\gcd(9, 131) =$

c. $\gcd(2000, 256) =$