

1. (a) Let  $p = 3$  and compute  $a^{\phi(p)} \bmod p$  for  $a = 1, \dots, p - 1$   
(b) Repeat for  $p = 5, 7, 11, 13$   
(c) What do you notice?
  
2. (a) Let  $n = 6$  and compute  $a^{\phi(n)} \bmod n$  for  $a = 1, \dots, n - 1$   
(b) Repeat for  $n = 6, 10, 15, 21, 35$   
(c) What do you notice?

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2. Use the Extended Euclidean Algorithm to write

$$u \cdot 78 + v \cdot 95 = \gcd(78, 95)$$