

1. We know that $\gcd(5,9)=1$, i.e., 5 and 9 are "relatively prime". So 5 has a MI in Z_9 . Which of the following integers is the MI (Multiplicative Inverse) of 5 in Z_9 ?

(3 points)

✓ A. 2

B. 3

C. 4

D. 6

2. For a given prime number p , what is the size of $\varphi(p)$? That is, $|\varphi(p)| = ?$
(3 points)

A. $p-2$

✓ B. $p-1$

C. p

D. $p+1$

3. In RSA encryption, we encrypt the **message** using a public key e that is relatively prime with _____ ?
(3 points)

A. n , the modulus (product of two primes)

B. any integer in Z_n

✓ C. $\varphi(n)$, Euler's totient

D. None of the above