

## Quiz/Attendance 2M

Firstname Lastname

ID#

1. Suppose we are working in  $\mathbb{Z}_{10}$ , the additive group of integers mod 10.

Then  $5 + 7 + 9 =$    $(\text{mod } 10)$ .

Write your answer as it is conventionally written in  $\mathbb{Z}_{10}$ .

2. Suppose we are working in  $\mathbb{Z}_{11}^*$ , the multiplicative group of integers modulo 11.

Then  $5 \cdot 7 =$    $(\text{mod } 11)$ .

Write your answer as it is conventionally written in  $\mathbb{Z}_{11}^*$ .

3. Let  $X, C \in \{0, 1\}^{128}$  be 128-bit strings. How many values  $Y \in \{0, 1\}^{128}$  are there such that  $X \oplus Y = C$ ?