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Multiplicative Cipher

Key Selection :-

We should select only coprime number of 26 which should not divisible by [2 or 13]

Message → HELLO

Encryption :-

$$C = (P * k) \bmod 26$$

P → Numeric value of plain txt

k → Key.

H → $(7 \times 3) \bmod 26$ → $21 \bmod 26$ → 21 → V

E → $(4 \times 3) \bmod 26$ → $12 \bmod 26$ → 12 → M

L → $(11 \times 3) \bmod 26$ → $33 \bmod 26$ → 7 → H

L → $(11 \times 3) \bmod 26$ → $33 \bmod 26$ → 7 → H

O → $(14 \times 3) \bmod 26$ → $42 \bmod 26$ → 16 → Q

[VMHHQ] → Encrypted Message

Decryption:.   (Multiplicative cipher)

$$P = (c * \hat{K}-1) \% 26$$

$c \rightarrow$ Numeric Value

$\hat{K}-1 \rightarrow$ Multiplicative inverse of the
    Key.

VMHHQ

$V \rightarrow 21 \rightarrow (21 * 1/3) \bmod 26 \rightarrow (21 * 9) \% 26 \rightarrow 7 \rightarrow H$

$M \rightarrow 12 \rightarrow (12 * 1/3) \bmod 26 \rightarrow (12 * 9) \% 26 \rightarrow 4 \rightarrow E$

$H \rightarrow 7 \rightarrow (7 * 1/3) \bmod 26 \rightarrow (7 * 9) \% 26 \rightarrow 11 \rightarrow L$

$H \rightarrow 7 \rightarrow (7 * 1/3) \bmod 26 \rightarrow (7 * 9) \% 26 \rightarrow 11 \rightarrow L$

$Q \rightarrow 16 \rightarrow (16 * 1/3) \bmod 26 \rightarrow (16 * 9) \% 26 \rightarrow 14 \rightarrow O$

HELLO $\rightarrow$ Decrypted message