

Group:  $\langle \mathbb{Z}_{24}, +_{24} \rangle$

$+_{24}$  = addition modulo 24

$\mathbb{Z}_{24} = \{0, 1, 2, \dots, 23\}$ .

$$\begin{aligned} 5 + 29 \\ = 34 \pmod{24} \\ = \underline{\underline{10}} \end{aligned}$$

The left or right coset of  $G = \mathbb{Z}_{24}$  relative to a subgroup  $H$  of  $G$  is

$$g \cdot H = [g] = (g + H), \quad \forall g \in G = \mathbb{Z}_{24}$$

$$H \cdot g = [g] = (H + g), \quad \forall g \in G = \mathbb{Z}_{24}$$

Construct a subgroup  $H$

$$= \{k \mid k = 0, 1, 2, 3, 4, 5\}$$

$$= \{0, 4, 8, 12, 16, 20\}$$

Then,  $\langle H, +_{24} \rangle$  forms a subgroup of  $\mathbb{Z}_{24}$ .

Distinct.

Left cosets:

$$[0] = (0 +_{24} H) = \{0, 4, 8, 12, 16, 20\}$$

$$[1] = (1 +_{24} H) = \{1, 5, 9, 13, 17, 21\}$$

$$[2] = (2 +_{24} H) = \{2, 6, 10, 14, 18, 22\}$$

$$[3] = (3 +_{24} H) = \{3, 7, 11, 15, 19, 23\}$$