1. We have permutations $f=(123)(45)$ and $g=(1234)$ with 5 elements.
   Determine 1) $f \circ g$, 2) $g \circ f$, 3) f^3, 4) g^4

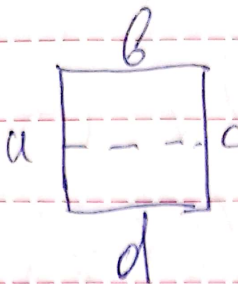$$\text{①} 1) f \circ g = (123)(45)(1234) = (13245)$$
$$2) g \circ f = (1234)(123)(45) = (13542)$$
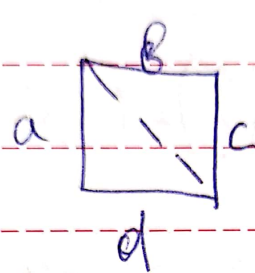$$3) f^3 = (123)^3(45)^3 = (45)$$
$$4) g^4 = (1234)^4 = ()$$

2. How to describe the edge-symmetry group of a square if the edges are labeled with a, b, c and d?

② Horizontal/Vertical
$$\begin{pmatrix} a & b & c & d \\ a & d & c & b \end{pmatrix}$$

Diagonal
$$\begin{pmatrix} a & b & c & d \\ b & a & d & c \end{pmatrix}$$