

**Title :** The number of Homomorphisms from the Cartesian product of paths  $P_n \times P_2$  to the path  $P_n$

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## ABSTRACT

Let  $G$  and  $H$  be graphs. A mapping  $f$  from the vertices of  $G$  to the vertices of  $H$  is called a homomorphism from  $G$  to  $H$  if, for every pair of adjacent vertices  $x$  and  $y$  in  $G$ , the vertices  $f(x)$  and  $f(y)$  are adjacent in  $H$ . Our work aims to determine the cardinalities of the homomorphisms from the Cartesian product of two paths to a path.

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