

If  $M$  and  $H$  are permutation groups with cycle indices  $Z_M$  and  $Z_H$  respectively, and if  $*$  is some binary operation on permutation groups, then a fundamental problem in enumerative combinatorics is the determination of a formula for  $Z_{M * H}$  in terms of  $Z_M$  and  $Z_H$ . To this end, a number of results have already been obtained (cf. Harary [1], [2], [3]; Harary and Palmer [6]; Harrison and High [7]; Pólya [10]). This paper may be viewed as a continuation of a previous paper (Kamuti [8]) in which I have shown how the cycle index of a semidirect product group  $G = M \rtimes H$  can be expressed in terms of the cycle indices of  $M$  and  $H$  by considering semidirect products called Frobenius groups. Thus if  $G = M \times H$  (internal direct product), the aim of this paper is to express the cycle index of  $G$  in terms of the cycle indices of  $M$  and  $H$  when  $G$  acts on the cosets of  $H$  in  $G$ .