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Title:	Groups with Divisibility Property-I
Authors:	Singh, Mahender (/jspui/browse?type=author&value=Singh%2C+Mahender)
Keywords:	Groups divisibility p-groups Automorphism group
Issue Date:	2018
Publisher:	Springer-Verlag
Citation:	Springer Monographs in Mathematics, pp. 117-155
Abstract:	Every finite non-cyclic abelian p-group of order greater than $p^2$ has the property that its order divides that of its group of automorphisms (Theorem 3.34). The problem whether every non-abelian p-group of order greater than $p^2$ possesses the same property has been a subject of intensive investigation. As discussed in the introduction, this property is referred to as the Divisibility Property. While several classes of p-groups have been shown to have Divisibility Property, it is now known that not all finite p-groups admit this property [46]. An exposition of these developments is presented in the remaining part of this monograph. In this chapter, some reduction results, due to Buckley [14], are presented in Sect. 4.1. Among other results, it is proved that one can confine attention to the class of purely non-abelian p-groups. In subsequent sections it is shown that Divisibility Property is satisfied by p-groups of nilpotency class 2 [33], p-groups with metacyclic central quotient [18], modular p-group [22], p-abelian p-groups [19], and groups with small central quotient [20]. In view of Theorem 3.34, it can be assumed that the groups under consideration are non-abelian p-groups. The main ingredient in verifying Divisibility Property for various classes of groups $G$ is the subgroup $IC(G) = Inn(G)Autcent(G)$ of the automorphism group $Aut(G)$ of $G$ .
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