

## Perfect Domination Ratios of Archimedean Lattices

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A set of vertices  $S$  is said to dominate a graph  $G=(V,E)$  if every vertex in  $V$  is either in set  $S$  or is adjacent to a vertex in set  $S$ . A dominating set is a perfect dominating set if every vertex not in the dominating set is dominated exactly once. For a finite graph  $G$ ,  $D$  is a minimal perfect dominating set if it is a perfect dominating set of  $G$  and has cardinality less than or equal to every other perfect dominating set of  $G$ . The perfect domination ratio of  $G = \frac{|D|}{|V|}$ . We extend the notion of perfect domination ratio to infinite periodic graphs. Archimedean lattices are vertex-transitive infinite graphs formed by regular polygons. We calculate lower and upper bounds for perfect domination ratios of the 11 Archimedean lattices. Furthermore, we have determined exact perfect domination ratios for most Archimedean lattices.

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