# Total domino irregularity strength of some special graphs
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The total $H$ irregular labeling of a graph $G$ is a mapping from the vertices and edges of $G$ onto a set of positive integers such that, for each subgraph $H$ of $G$, the weight of $H$, that is, the sum of all labels in $H$, is distinct. The mapping is $f : V(G) \cup E(G) \rightarrow \{1, 2, \ldots, \alpha\}$ and the condition is given by $W(H_i) \neq W(H_j)$ all $i \neq j$ where $W(H) = \Sigma_{v \in V(H)} f(v) + \Sigma_{e \in E(H)} f(e)$. The smallest $\alpha$ for which this condition holds is called the total $H$-strength of the graph and, for a graph $G$, is written $tHs(G)$.

A domino is a simple graph that may be described as two 4-cycles sharing an edge or, alternatively a 6-cycle with a diametric chord. Dominoes are one of many structures used in tilings of certain plane graphs. We will look at the total domino strength for tilings of gears and grids.