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David E Brown, Department of Mathematics and Statistics, Utah State University, Logan, UT 84322, and **Larry J Langley***, Department of Mathematics, University of the Pacific, Stockton, CA 95211. *Probe interval orders.*

We define a probe interval order via the complement of a probe interval graph, however not every probe interval graph is a cocomparability graph. If the nonprobe intervals are proper, then the representation gives rise to an ordering of the vertices on the complement. We show that any cocomparability probe interval graph has such a representation. Furthermore we show that ordered sets are probe interval orders if and only if the order contains a chain that includes exactly one pair of vertices in each $2 + 2$. We also address the question of which cocomparability graphs are probe, and provide infinite families of forbidden subgraphs. (Received September 25, 2005)