A graph consists of a set of points (called vertices) and a set of curves (called edges) connecting pairs of points.

Graph theory began in 1736 with Euler’s characterization of those graphs that admit an Eulerian circuit (a closed walk through a graph visiting each edge exactly once). The most well-known result of graph theory is perhaps the 4-color theorem which states that every planar graph is 4-colorable. (A planar graph is a graph that can be drawn in the plane without crossing edges. A graph is 4-colorable if the vertices can be colored using 4 colors such that vertices joined by an edge are colored differently.)

Many algorithms of theoretical computer science either deal directly with graphs or are well modeled by graphs. Graphs and their variants are a nearly universal theme in much of combinatorics and discrete math.