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From a doodle to a theorem: a case study in mathematical discovery

In this paper we present the genesis of a theorem in geometry, the Midpoint Path Theorem, from the original idea to the published version. It makes it possible to multiply the length of a line segment by $0 < r/s < 1$, a rational number, by constructing only midpoints and a straight line. This can be achieved with a compass and a straightedge. We explore the narrative behind the discovery, with first-hand insights by its author. Some general aspects of this case study of mathematical practice are discussed.