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Stephen Yablo* (yablo@mit.edu), Linguistics & Philosophy, 32-D808, MIT, 77 Massachusetts Ave, Cambridge, MA 02139. *Explanation and Existence*. Preliminary report.

Platonists hold that mathematical objects "really exist." Nominalists deny this. The standard argument for platonism, which emphasizes the indispensability of mathematics to physical science, has fallen on hard times lately. Why should calculus have to be true, to help with the representation of facts about the motion of bodies? Platonists have responded that math also plays an *explanatory* role - e.g. honeycomb has a hexagonal structure because that is the most efficient way to divide a surface into regions of equal area. Two questions, then. Can physical outcomes occur for mathematical reasons? If so, how does this bear on debates about the existence of mathematical objects? (Received July 13, 2011)