

1145-M5-1769      **Thomas J Clark\*** ([tom.clark@dordt.edu](mailto:tom.clark@dordt.edu)), 498 4th Ave. NE, Sioux Center, IA 51250. *The Number Machine*.

The number machine is a function that takes in two numbers, combines them in various ways (depending on its settings), and outputs a new value. This simple premise can lead to a variety of directions of inquiry from trying to guess the pattern based on testing various values, figuring out what properties the machine possesses, and determining how to make the machine output the largest possible value by starting with a fixed number of inputs. Exploration of the number machine can be done by hand, but often naturally leads to investigation via calculators and even spreadsheets. We will also discuss ways in which the session topic can be modified for all audiences from elementary age children to teachers. Changing the settings on the number machine allows the whole session to reboot for another iteration of discovery, conjecture, and understanding. (Received September 24, 2018)