



Function Machine Game

- activity developed with John Springall, Strathfield Girls H.S. for his Yr 7 & 8 classes

In introducing the notion of functions or algebraic rules, I have often drawn a picture of a “function machine” on the board, complete with input and output trays. In this activity John & I made a small change to the table settings to allow students to effectively use the table display on the TI-83 as an electronic “function machine”.

Whole class demonstration game

A simple linear function (say, $Y = 2x + 1$) was entered into the function editor of the demonstration calculator. This rule was hidden from students, but the TABLE display was shown to them (with independent variable set to “Ask”). Students were then invited to nominate numbers to input into the function machine (X value) and observe what output number (Y_1 value) was returned.

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TABLE SETUP
TblStart=1
ΔTbl=1
Indent: Auto
Depend: Ask
```

X	Y1
5	11
3	7
6	13

X=

It only took a few numbers before students correctly determined the hidden rule. We then showed them where the rule was entered and also how to set the TABLE to “Ask”. Another useful command is “ClrTable”, which we took from the CATALOG menu and kept on the homescreen as a command to be used between games. There are other ways to do this, but this procedure was simple enough for the students to use.

We gave students one calculator between two and invited them to play the game in pairs. We didn’t specify what type of function was to be entered, but most of them made up more linear functions following on from our example. In a very short time, we found many students had discovered that entering an $X = 0$ value for the input was useful in giving them the + ? number at the end of the function. Although students had not specifically studied linear functions and their graphs, many found that they could view the graph and the lesson developed into some discussion of the point on the graph where $X = 0$.

Some students also experimented putting an X^2 in their function and discovered that this produced a very different type of graph.