

Function Machine Lesson Plan

Run the Function Machine 1 app within your browser for this Sample Activity.

Target Strategies

- spot a pattern that links the input with the output
- interpret information presented as a table
- use the language of arithmetic expressions
- express a rule in algebraic terms

Using the Function Machine (display on an IWB or Apple TV)

Introduce Level 1 of the game to the class starting with the least difficulty, which is an *add* machine. The initial aim should be to familiarize the students with the way in which the game works which is:

1. create a table of value from which a guess can be made
2. use the buttons to form the rule that you think the machine is using
3. if your rule is not the same as the machine's rule, try again to ask to be shown the machine's rule

The machine also introduces the appropriate language that your students should acquire. We have avoided colloquialisms such as *plus* (which is a preposition rather than a verb) or *times* (to avoid phrases such as *timesed by*).

Involve the class in applying the rule that they think is being used by deleting some of the input values and using larger, 2-digit numbers such as 12 or 35 as the input and asking what they think the output will be. This process can be used at every level of the game and will give you the opportunity to ask the students to apply mental computation strategies to find answers to your questions.

Age-appropriate levels

Function Machine 1 is appropriate for students in Years 2 and 3, with the 4th difficulty level providing a challenge for the high achieving students. Function Machine 2 introduces decimal numbers and so would be most appropriate for Years 3 and 4 students. Your use of Function Machine 3 will depend on the stage at which you introduce the students to algebraic notation. It can be used in conjunction with our **Card Game** software as a way of showing students how algebra is used to generalize an arithmetic expression.

Reflection

Ask the students to comment on the following:

- Has playing the game helped you understand how a rule can be applied to numbers?
- What is one thing that you have found challenging or improved at by playing the Function Machine game?
- What difficulties did you face when your guess was not accepted by the machine?

Repeat the above lesson plan at each level of the Function Machine.