Input-Output Machine

Explore Creating a Table of Input-Output Values

You can see results for the input and output of a particular rule.

- You can set a rule by clicking on the machine  to change the operation and number for the rule.
- Make sure that the mode displays Explore in the upper-left corner.
- You can drag each input number tile, such as 1, down to the machine and it will give an output that is shown in the table.

Practice Using the Input-Output Machine

1. Find 6 input and output values using the rule +9 and then the rule –4. Then, graph the values.
2. Click on the machine to change the rule.
   - Use the ▼ to change the operation to +.
   - Use the ❮ and ❯ to change the rule value to 9.
   - Click "OK" to save the rule.
3. Add a second machine to the workspace.
   - Click the Add Machine button in the bottom shell.
4. The rule dialog for the second machine opens.
   - Use the ▼ to change the operation to –.
   - Use the ❮ and ❯ to change the rule value to 4.
   - Click "OK" to save the rule.

5. Make sure the "Show Table" box above the Input-Output table is checked.
6. Drag the number tile 1 down to the ⤵ so that it passes through both machines.
   The output should be 6, since **1** + 9 – 4 = **6**.

The input and output values will appear in the first row of the table.

7 Drag tiles numbered 2, 3, 4, and 5 down to the so that they pass through both machines.

The input and output should appear in the table on the right. The last input tile that goes through the machine, 5, is the last one to appear in the table.

8 Click the New Tile button. Enter "10" on the keypad and click "OK".

- Drag the number tile 10 down to the so that it passes through both machines.

  This will give you the sixth input/output value for the rules, which appears as the last row in the table.

9 You can see a graph that represents the values in the table with values by clicking the Show Graph button.

- Clicking on a point on the graph will show its ordered pair as (x, y) with x being the input and y being the output.

Additional Features

- Use the buttons to the bottom right of the graph to view the data in different ways.

- You can print the table of input and output values by clicking .

Input-Output Machine

Predict the Output

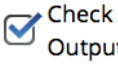
You can enter values for the "Output" column and check to see if you predicted the correct output values to match the input values and the rule. Click  to see the drop-down menu and select **Predict the Output**.

- You can set a rule by clicking on a machine  to change the operation and number for the rule.
- You can enter a value in the "Output" column of the table by clicking on the blank box  . A keypad will pop up in which you can enter a number for the predicted outcome.

Practice Using the Input-Output Machine

1. Find the output values when the input values are 0, 2, 4, 6, 8, 10, and 12 with a rule  .Click on the machine to change the rule.
   - Use the  to change the operation to ÷.
   - Use the  and to change the rule value to 2.
   - Click "OK" to save the rule.

2. Make sure the "Show Table" box is checked and the "Check Output" box is NOT checked.
3. Click on the first blank box under the "Output" column to enter a value for the output. Click "Enter" to save the number you enter.

   The correct output should be "0".
4. Click on the remaining blank boxes to enter the output values for each given input value.
   - All the number tiles above the machine should no longer be transparent.
5. Check to see if your output values are correct by checking  .
   - All Output values that are correct will have a ✔ next to it.
   - All Output values that are not correct will have a ✘ next to it.

6 You can see a graph that represents the table with Output values that you entered by clicking the Show Graph button in the bottom shell.

- Clicking a point on the chart will show its ordered pair as (x, y) with x being the input and y being the output.