



**MM1A1d**

Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.

**Copy and complete the sentence.**

- The input variable is called the   ?   variable.
- The output variable is called the   ?   variable.

**Tell whether the pairing is a function.**

3.

Input	Output
1	15
3	20
5	15
7	20

4.

Input	Output
5	5
6	5
7	5
8	5

5.

Input	Output
6	3
12	4
12	1
18	2

**Make a table for the function. Identify the range of the function.**

6.  $y = 4x - 2$

Domain: 1, 2, 3, 4

7.  $y = 0.1x + 3$

Domain: 10, 20, 30, 40

8.  $y = \frac{1}{2}x + 2$

Domain: 6, 7, 8, 9

**Write a rule for the function.**

9.

Input, $x$	1	2	3	4
Output, $y$	5	10	15	20

10.

Input, $x$	10	11	12	13
Output, $y$	3	4	5	6

11. **Shoe Sizes** The table shows men's shoe sizes in the United States and Australia. Write a rule for the Australian size as a function of the United States' size.

U.S. size	5	6	7	8	9	10
Australian size	3	4	5	6	7	8

12. **Balloon Bunches** You are making balloon bunches to attach to tables for a charity event. You plan on using 8 balloons in each bunch. Write a rule for the total number of balloons used as a function of the number of bunches created. Identify the independent and dependent variables. How many balloons will you use if you make 10 bunches?
13. **Baking** A baker has baked 10 loaves of bread so far today and plans on baking 3 loaves more each hour for the rest of his shift. Write a rule for the total number of loaves baked as a function of the number of hours left in the baker's shift. Identify the independent and dependent variables. How many loaves will the baker make if he has 4 hours left in his shift?



Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.

**Tell whether the pairing is a function.**

1.

Input	Output
0.2	1.5
0.4	1.25
0.6	1.5
0.8	1.25

2.

Input	Output
5.1	4.3
5.2	4.3
5.3	4.2
5.4	4.1

3.

Input	Output
25	14
30	13
30	12
35	11

4. **Error Analysis** Describe and correct the error related to the pairing represented by the table.

<b>Input, <math>x</math></b>	1	3	1	-3
<b>Output, <math>y</math></b>	-1	4	1	5

The pairing is a function.

The range is -1, 4, 1, and 5.



**Make a table for the function. Identify the range of the function.**

5.  $y = \frac{1}{3}x - 4$

Domain: 12, 15, 18, 21

6.  $y = \frac{1}{4}x + \frac{3}{4}$

Domain: 1, 3, 5, 7

7.  $y = \frac{0.1x + 2}{3}$

Domain: 10, 20, 30, 40

**Write a rule for the function.**

8.

<b>Input, <math>x</math></b>	0	1	2	3
<b>Output, <math>y</math></b>	3	5	7	9

9.

<b>Input, <math>x</math></b>	16	14	12	10
<b>Output, <math>y</math></b>	7	6	5	4

10. **Shoe Sizes** The table shows men's shoe sizes in the United States and Europe. Write a rule for the European size as a function of the United States' size. Then use your function to predict the European size of a U.S. size 11 shoe.

<b>U.S. size</b>	3.5	4	4.5	5	5.5	6
<b>European size</b>	35	35.5	36	36.5	37	37.5

11. **Sandwich Rings** A delicatessen worker has created 8 large sandwich rings in the first 2 hours of her shift. She plans on making sandwich rings at the same rate for the rest of her shift. Write a rule for the total number of sandwich rings made as a function of the number of hours left in the deli worker's shift. How many sandwich rings will the deli worker make if she has 6 hours left in her shift?