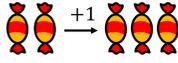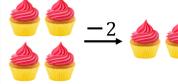# 🔻 The Visual Non-Glossary™

Using Rules in Input/Output Tables

Let's read to find out how input/output tables and graphs help us figure out the rules that connect numbers.

Pay Attention To:

- What an input/output table shows
- How a rule connects input and output
- What the numbers in the table represent
- How a rule can be different in each table
- What happens when the same rule is used with different input numbers

input/output table

ADDITION INPUT/OUTPUT TABLE	SUBTRACTION INPUT/OUTPUT TABLE	MULTIPLICATION INPUT/OUTPUT TABLE	DIVISION INPUT/OUTPUT TABLE

input	output		input	output		input (yd)	output (ft)		input (oz)	output (c)
2 $+1$	3		4 -2	2		1 $\times 3$	3		8 $\div 8$	1
4 $+1$	5		5 -2	3		2 $\times 3$	6		16 $\div 8$	2
6 $+1$	7		6 -2	4		3 $\times 3$	9		24 $\div 8$	3
8 $+1$	9		7 -2	5		4 $\times 3$	12		32 $\div 8$	4
10 $+1$	11		8 -2	6		5 $\times 3$	15		40 $\div 8$	5

rule = $+1$ rule = -2 rule = $\times 3$ rule = $\div 8$

    An **input/output table** helps us see how numbers change. Each row shows two numbers: one is the **input**, and the other is the **output**. A **rule** tells us how to change the **input** into the **output**.

    For example, if the rule is "add 3," then 1 becomes 4, and 2 becomes 5. These pairs can be written as (1,4) and (2,5).

    We can use **input/output tables** to find patterns in numbers. If we change the **rule**, the numbers change too. A bigger number makes the **output** grow faster. A smaller number makes it grow slower. These tables help us see and understand number patterns.
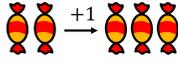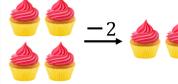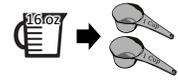
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input/output table

ADDITION INPUT/OUTPUT TABLE	SUBTRACTION INPUT/OUTPUT TABLE	MULTIPLICATION INPUT/OUTPUT TABLE	DIVISION INPUT/OUTPUT TABLE

ADDITION INPUT/OUTPUT TABLE

input	output
2 $\xrightarrow{+1}$	3
4 $\xrightarrow{+1}$	5
6 $\xrightarrow{+1}$	7
8 $\xrightarrow{+1}$	9
10 $\xrightarrow{+1}$	11

rule = + 1

SUBTRACTION INPUT/OUTPUT TABLE

input	output
4 $\xrightarrow{-2}$	2
5 $\xrightarrow{-2}$	3
6 $\xrightarrow{-2}$	4
7 $\xrightarrow{-2}$	5
8 $\xrightarrow{-2}$	6

rule = − 2

MULTIPLICATION INPUT/OUTPUT TABLE

input (yd)	output (ft)
1 $\xrightarrow{\times 3}$	3
2 $\xrightarrow{\times 3}$	6
3 $\xrightarrow{\times 3}$	9
4 $\xrightarrow{\times 3}$	12
5 $\xrightarrow{\times 3}$	15

rule = × 3

DIVISION INPUT/OUTPUT TABLE

input (oz)	output (c)
8 $\xrightarrow{\div 8}$	1
16 $\xrightarrow{\div 8}$	2
24 $\xrightarrow{\div 8}$	3
32 $\xrightarrow{\div 8}$	4
40 $\xrightarrow{\div 8}$	5

rule = ÷ 8

An **input/output table** is a tool that helps show how numbers change using a **rule**. Each row in the table shows a pair of numbers. The first number is the **input**, and the second is the **output**. A **rule** explains how the **input** changes to become the **output**.

For example, a **rule** might say "multiply by 2." If the input is 3, the output would be 6. If the input is 4, the **output** would be 8. These pairs (3,6), (4,8) can help us find patterns.

Input/output tables help us practice using rules and number patterns. If we change the **rule**, the pattern changes. A rule like "add 5" grows more slowly than "multiply by 3." These patterns help us understand how math works.
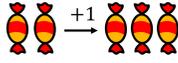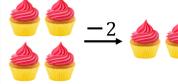
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input/output table

ADDITION INPUT/OUTPUT TABLE	SUBTRACTION INPUT/OUTPUT TABLE	MULTIPLICATION INPUT/OUTPUT TABLE	DIVISION INPUT/OUTPUT TABLE

input	output
2	$+1$	3
4	$+1$	5
6	$+1$	7
8	$+1$	9
10	$+1$	11

rule $= +1$

input	output
4	-2	2
5	-2	3
6	-2	4
7	-2	5
8	-2	6

rule $= -2$

input (yd)	output (ft)
1	$\times 3$	3
2	$\times 3$	6
3	$\times 3$	9
4	$\times 3$	12
5	$\times 3$	15

rule $= \times 3$

input (oz)	output (c)
8	$\div 8$	1
16	$\div 8$	2
24	$\div 8$	3
32	$\div 8$	4
40	$\div 8$	5

rule $= \div 8$

1 yard

An **input/output table** organizes pairs of numbers that follow a specific **rule**. The input is the starting number, and the rule explains how to find the **output**. These tables are used to identify patterns, test number relationships, and make predictions.

For example, with the rule "multiply by 2," the input 5 gives an **output** of 10. A set of these (2,4), (3,6), (5,10) shows how numbers grow based on the rule.

Changing the **rule** changes the pattern. Adding 2 creates a slower increase, while multiplying by 4 creates a steeper one. Exploring **input/output tables** helps us understand the behavior of numbers and how different **rules** produce different results.

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