

Function Machines

Advanced — ANSWER KEY

Two-step rules. Multiply, then add.

Think: The rule does TWO things. Find the times part first, then the plus/minus part.

1. Guess my rule. Fill the blanks, then write the rule.

Machine A

IN ($\triangle$)	$\rightarrow$	OUT ($\square$)
4	$\rightarrow$	14
2	$\rightarrow$	8
9	$\rightarrow$	29
1	$\rightarrow$	5
6	$\rightarrow$	20
8	$\rightarrow$	26

Rule: $\square = \triangle \times 3 + 2$

Machine B

IN ($\triangle$)	$\rightarrow$	OUT ($\square$)
4	$\rightarrow$	11
9	$\rightarrow$	21
2	$\rightarrow$	7
8	$\rightarrow$	19
3	$\rightarrow$	9
5	$\rightarrow$	13

Rule: $\square = \triangle \times 2 + 3$

Machine C

IN ($\triangle$)	$\rightarrow$	OUT ($\square$)
3	$\rightarrow$	7
4	$\rightarrow$	9
8	$\rightarrow$	17
7	$\rightarrow$	15
2	$\rightarrow$	5
6	$\rightarrow$	13

Rule: $\square = \triangle \times 2 + 1$

Machine D

IN ($\triangle$)	$\rightarrow$	OUT ($\square$)
2	$\rightarrow$	11
0	$\rightarrow$	5
3	$\rightarrow$	14
7	$\rightarrow$	26
9	$\rightarrow$	32
6	$\rightarrow$	23

Rule: $\square = \triangle \times 3 + 5$

2. Two machines in a row.

The first machine is $\square = \triangle + 3$. The second is $\square = \triangle \times 2$.

a) Put in 4. After the FIRST machine you get ____, then the SECOND gives **7, then 14**

b) Put in 10. What comes out at the end? **26**

c) What single rule does the pair of machines make? $\square = (\triangle + 3) \times 2$