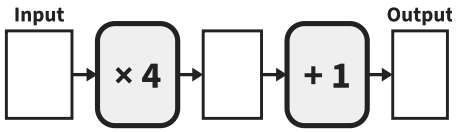
Function Machines

ANSWERS

1

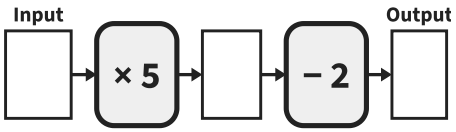
Complete the table.



Input	after × 4	Output
2	8	9
5	20	21
9	36	37

2

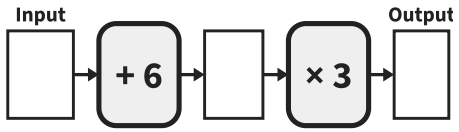
Complete the table.



Input	after × 5	Output
3	15	13
6	30	28
10	50	48

3

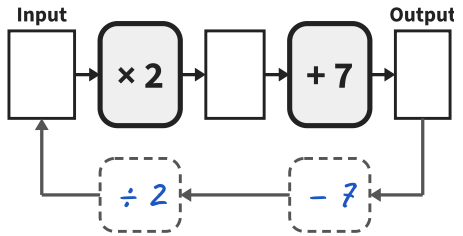
Complete the table.



Input	after + 6	Output
1	7	21
4	10	30
8	14	42

4 *Notice the change!*

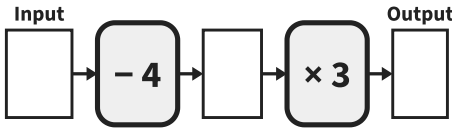
Work backwards to find each input.



Input	after × 2	Output
4	8	15
10	20	27
17	34	41

5

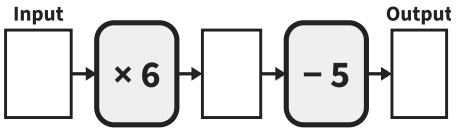
Complete the table.



Input	after − 4	Output
5	1	3
9	5	15
16	12	36

6 *Notice the change!*

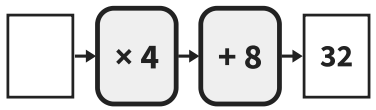
Complete the table.



Input	after × 6	Output
2	12	7
7	42	37
x	$6x$	$6x - 5$

7

The output of this machine is 32.
Kai works backwards: 32 ÷ 4 = 8, then 8 − 8 = 0. Explain his mistake.
Find the input.



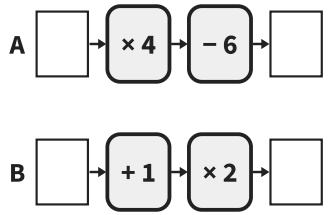
Undo + 8 first, then × 4

32 − 8 = 24, 24 ÷ 4 = 6

Input 6

8

The same number goes into machine A and machine B. Both give the same output. Find the number.



A: $4x - 6$, B: $2(x + 1) = 2x + 2$

$4x - 6 = 2x + 2$, so $2x = 8$

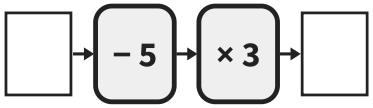
Number 4

Function Machines *further practice*

ANSWERS

9

Find the output when the input is 4, and when the input is x.

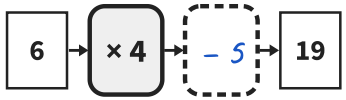


$4 - 5 = -1$, $-1 \times 3 = -3$

Outputs -3 and $3(x - 5)$

10

Find the missing step.

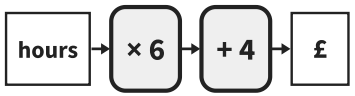


$6 \times 4 = 24$, and $24 - 5 = 19$

Missing step -5

11

A climbing wall charges £6 for each hour, plus £4 to hire shoes. Mo pays £28 with shoe hire. How many hours did Mo climb for?

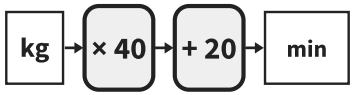


$28 - 4 = 24$, $24 \div 6 = 4$

Hours 4

12

A chicken roasts for 40 minutes for each kg, then 20 minutes more. a) How long for a 1.5 kg chicken? b) A chicken takes 2 hours. How heavy is it?



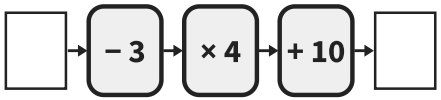
a) $1.5 \times 40 + 20 = 80$ minutes

b) $120 - 20 = 100$, $100 \div 40 = 2.5$

Answers 80 minutes, 2.5 kg

13

Ellie thinks of a number. She subtracts 3, multiplies by 4, then adds 10.
Her answer is 50. What was her number?



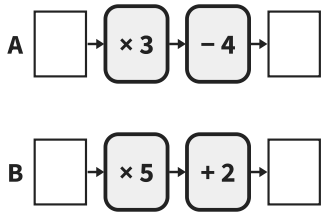
$50 - 10 = 40$, $40 \div 4 = 10$

$10 + 3 = 13$

Number 13

14

The same number goes into both machines and gives the same output.
Find the number and the output.



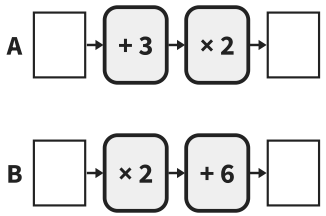
$3x - 4 = 5x + 2$

$-6 = 2x$, so $x = -3$

Number, output -3, -13

15

Show that these machines give the same output for every input.



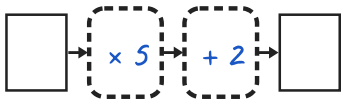
A: $2(x + 3) = 2x + 6$

B: $2x + 6$

So always the same

16

A machine multiplies, then adds.
It turns 3 into 17, and 5 into 27.
Find the two steps.
Explain how you know.



2 more in gives 10 more out, so × 5

$3 \times 5 = 15$, $15 + 2 = 17$

Steps × 5, + 2