

Function Machines

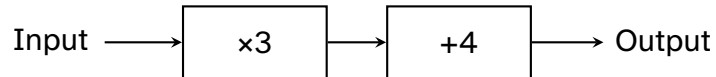
For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **30**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Here is a number machine.



(a) Work out the output when the input is 5

[1 mark]

Answer _____

(b) Work out the output when the input is -2

[1 mark]

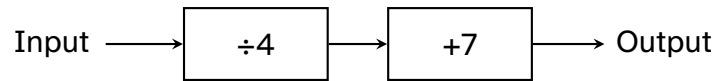
Answer _____

(c) Work out the input when the output is 31

[2 marks]

Answer _____

2 Here is a number machine.



(a) Work out the output when the input is 16

[1 mark]

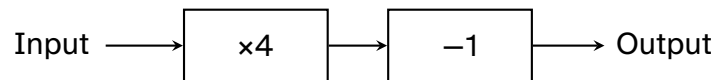
Answer _____

(b) Work out the input when the output is 3

[2 marks]

Answer _____

3 Here is a number machine.

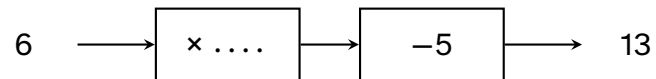


Complete the table for this number machine.

Input	1	2	3	
Output	3			23

[2 marks]

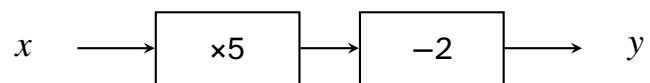
4



Complete the number machine.

[1 mark]

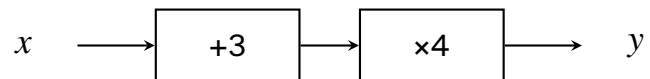
5 (a) Write down the output y in terms of x .



[1 mark]

$y =$ _____

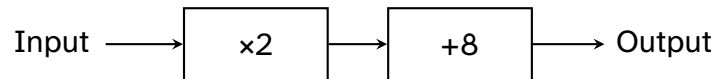
(b) Write down the output y in terms of x .



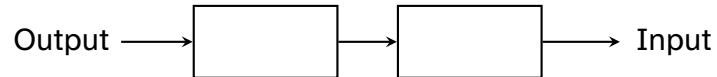
[1 mark]

$y =$ _____

6 Here is a number machine.



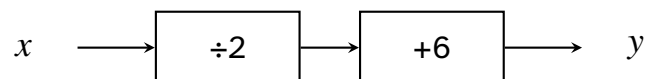
Here is the inverse machine.



Complete the **inverse** machine, which takes the output back to the input.

[2 marks]

7 Here is a number machine.

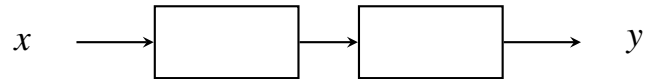


Kofi says that the formula for this machine is $y = \frac{x+6}{2}$

Explain why Kofi is wrong.

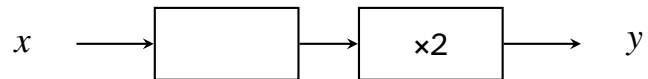
[1 mark]

- 8 (a) Complete this number machine so that $y = 5x - 3$



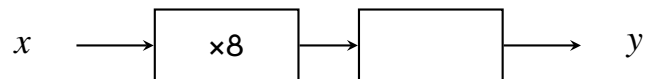
[1 mark]

- (b) Complete this number machine so that $y = 2x + 14$



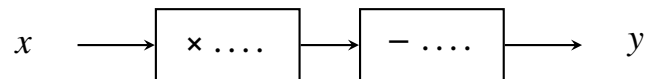
[1 mark]

- (c) Complete this number machine so that $y = x$



[1 mark]

- 9 Here is a number machine.

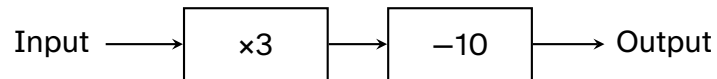


When $x = 4$, $y = 10$
and when $x = 9$, $y = 30$

Complete the number machine.

[2 marks]

- 10 Here is a number machine.

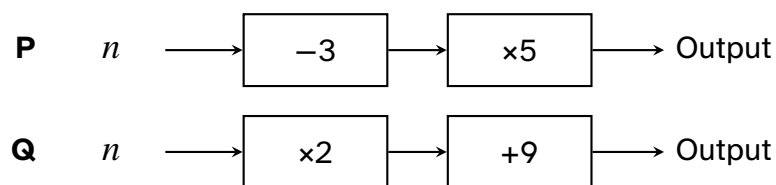


Work out the input that gives an output equal to the input.

[2 marks]

Answer _____

- 11 Here are two number machines, P and Q.

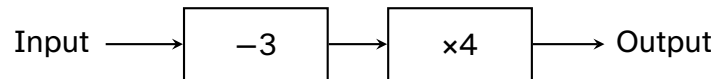


The same number, n , is put into both machines.
The two outputs are equal.
Work out the value of n .

[4 marks]

$n =$ _____

12 Here is a number machine.



Rhian puts a number into the machine.
The output is 10 more than double the number she put in.
Work out the number Rhian put in.

[4 marks]

Answer _____