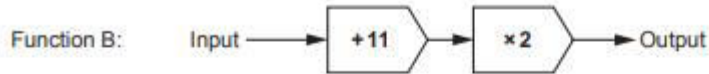
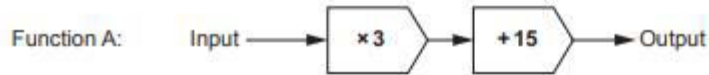


# FUNCTION MACHINES

OCR GCSE – Monday 9 November 2020 – Paper 6 (Calculator) Higher Tier

1.

11 Here are two functions.



- (a) (i) Jo chooses a number,  $x$ .  
She inputs  $x$  into each function.  
The two outputs are equal.

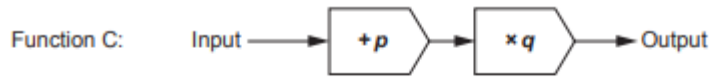
Work out the value of  $x$ .

(a)(i)  $x = \dots\dots\dots$  [4]

- (ii) Explain why there is no other input that gives two outputs that are equal.

.....  
..... [1]

(b) Here is function C.



Kai chooses values for  $p$  and  $q$  so that if he inputs **any** number into both function A and function C, he will **always** get two outputs that are equal.

Find the value of  $p$  and the value of  $q$ .

(b)  $p = \dots\dots\dots$

$q = \dots\dots\dots$  [3]

OCR GCSE – Tuesday 5 November 2019 – Paper 4 (Calculator) Higher Tier

2.

9 Here is function A.



(a) A number,  $k$ , is input into function A.  
The output is also  $k$ .

Find the value of  $k$ .

(a)  $k = \dots\dots\dots$  [3]

(b) The output of function A is  $y$ .

Write an algebraic expression, in terms of  $y$ , for the input of function A.

(b)  $\dots\dots\dots$  [2]

(c) The diagram shows a composite function with an input,  $n$ , and an output of 96.

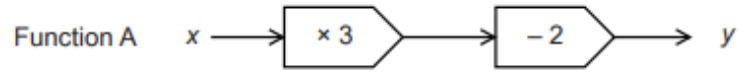


Find the value of  $n$ .

(c)  $n = \dots\dots\dots$  [2]

3.

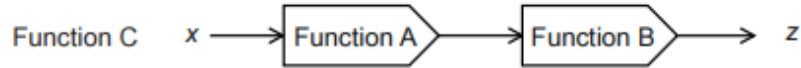
12 Here are two functions.



(a) Find an algebraic expression for the output of the **inverse** of function A when the input is  $x$ .

(a) ..... [2]

(b) Here is a composite function C.



Find the value  $x$  when  $z = 4x$ .

(b)  $x =$  ..... [5]

OCR GCSE – Tuesday 6 November 2018 – Paper 4 (Calculator) Higher Tier

4.

11 Here are two functions.



Composite function C is shown below.



(a) The output from function C is 54.

Work out the input.

(a) ..... [2]

(b) The input to function C is  $x$ .

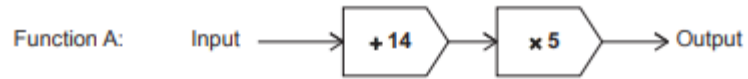
Find an expression, in terms of  $x$ , for the output from function C.

(b) ..... [2]

OCR GSCE – Tuesday 12 June 2018 – Paper 6 (Calculator) Higher Tier

5.

17 Here is a function.



(a) The **output** of function A is  $x$ .

Write an algebraic expression, in terms of  $x$ , for the input of function A.

(a) ..... [2]

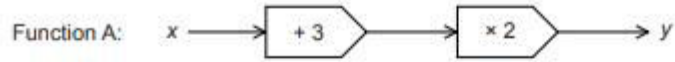
(b) A number,  $k$ , is put into function A.  
The output is also  $k$ .

Find the value of  $k$ .

(b)  $k =$  ..... [3]

6.

14 Here is a function.



(a) Complete the table of values for **function A**.

|     |     |
|-----|-----|
| $x$ | $y$ |
| -5  |     |
|     | 11  |

[2]

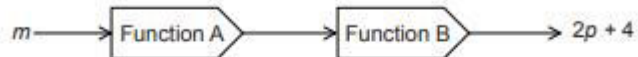
Here is another function.



(b) Find the inverse function of **function B**.

[2]

(c) Here is a composite function.



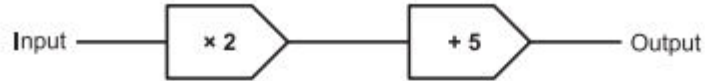
Find an expression for  $m$  in terms of  $p$ .  
Give your answer in its simplest form.

(c)  $m = \dots\dots\dots$  [4]

OCR GCSE – Sample Papers – Paper 4 (Calculator) Higher Tier

7.

8 (a) A function is represented by the following function machine.



- (i) A number is input into the machine.  
The output is used as a new input.  
The second output is 11.

Work out the number that was the **first input**.

(a)(i) ..... [2]

- (ii) A number is input into the machine.  
The output given is the same number.

Work out the number.

(ii) ..... [3]

(b) Another function machine is shown below.



- If the Input is 3, the Output is 5.  
If the Input is 7, the Output is 25.

Use this information to fill in the two boxes.

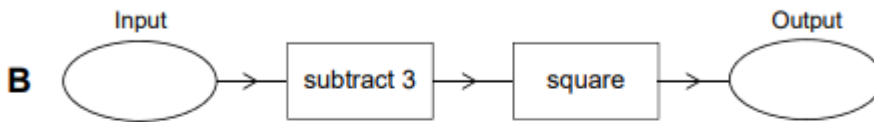
[3]



AQA GCSE – Sample Paper 3 (Calculator) Higher Tier

8.

19 Here are two function machines, **A** and **B**.



Both machines have the same input.

Work out the range of input values for which

the output of **A** is **less** than the output of **B**.

**[4 marks]**

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Answer \_\_\_\_\_