

Function Machines

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You must **not** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

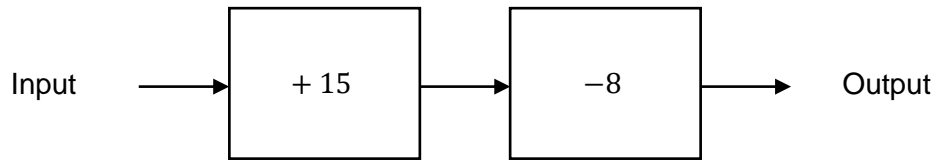
- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

1 Below is a function machine.

(Level 3)



1(a) What is the output if the input is 5?

[2 marks]

Answer _____

1(b) What is the input if the output is 29?

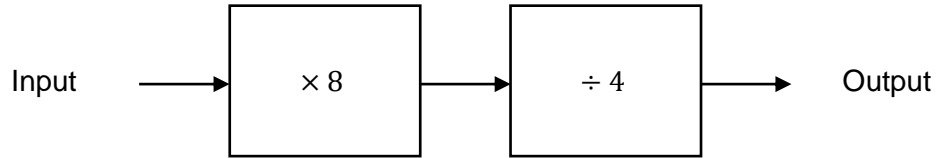
[2 marks]

Answer _____

Turn over for next question

2 Considering the new function machine below.

(Level 3)



2(a) What is the output if the input is 9?

[2 marks]

Answer _____

2(b) What is the input if the output is 14?

[2 marks]

Answer _____



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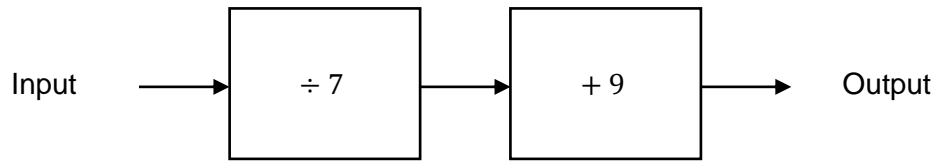
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3 Below is a function machine.

(Level 3)



3(a) What is the output if the input is 56?

[2 marks]

Answer _____

3(b) What is the input if the output is 10?

[2 marks]

Answer _____



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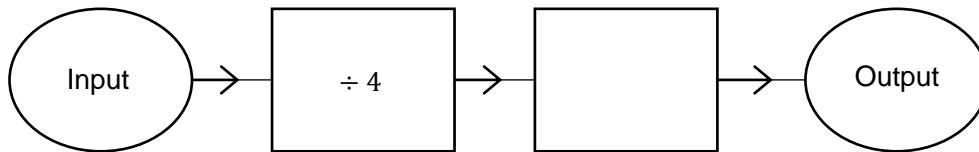
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4 Below are some empty function machines. (Level 4)

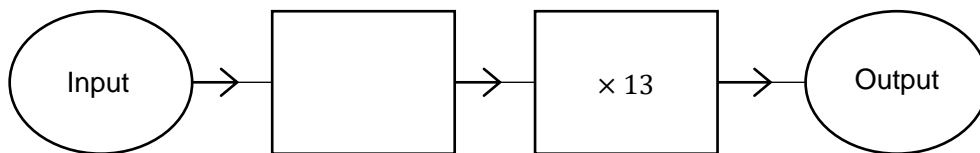
- 4(a) The number 48 is input into the machine.
The output is 18.
Fill in the missing operation.

[2 marks]



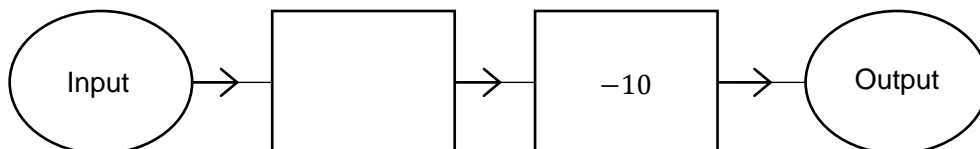
- 4(b) The number 18 is input into the machine.
The output is 26.
Fill in the missing operation.

[2 marks]



- 4(c) The number 3 is input into the machine.
The output is 80.
Fill in the missing operation.

[2 marks]



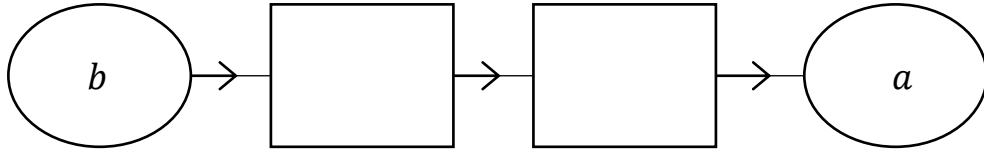
Turn over for next question

Turn over ►

5(a) Complete the number machine so that $a = 2b - 6$

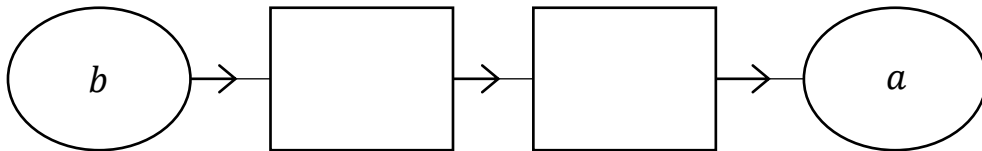
(Level 6)

[2 marks]

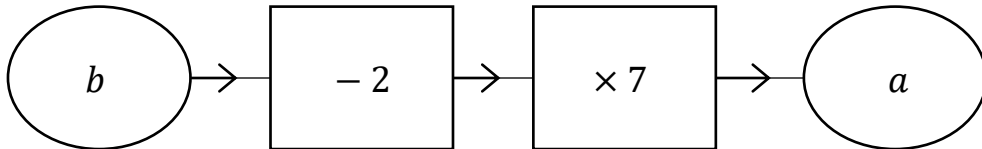


5(b) Complete the number machine so that $a = \frac{2 + b}{3}$

[2 marks]



5(c) Look at the function machine shown below.



Write down the output a , in terms of b .

[2 marks]

Answer _____

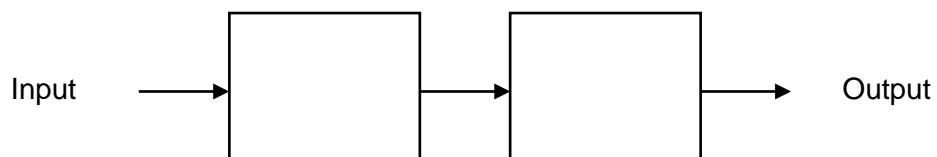
Turn over for next question

6(a) Below are some empty function machines. (Level 5)

Give an example of two operations that with an input of 5 would give an output of 12.

You must use two different operation signs.

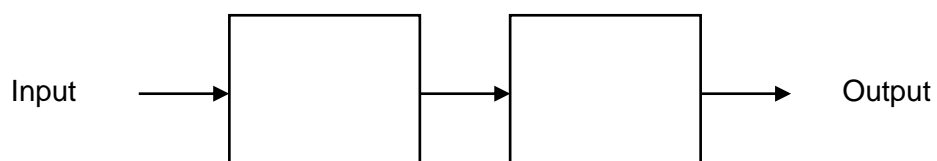
[2 marks]



6(b) Give an example of two operations that with an input of 27 would give an output of 13.

You must use two different operation signs.

[2 marks]



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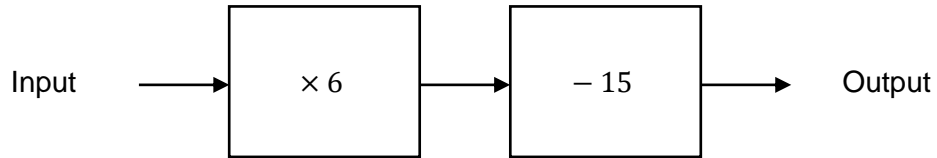
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7

Below is a function machine.

(Level 5)



7(a)

The number x is put through the machine.The result is $3x$.What is x ?

[3 marks]

Answer _____

7(b)

The number x is put through the same machine.The result is $5x$.What is x ?

[3 marks]

Answer _____

End of questions