

## GCSE QUESTIONS

### Q1. NON-CALCULATOR

Here is a two-stage number machine.



(a) Work out the output when the input is 20

.....  
(1)

Here is a different two-stage number machine.



When the input is 10, the output is 12

(b) Complete the number machine.

.....  
(1)  
(Total for question = 2 marks)

### Q2. NON-CALCULATOR

Here is a number machine.



(a) What is the **output** when the input is 4?

.....  
(1)

(b) What is the **input** when the output is 11?

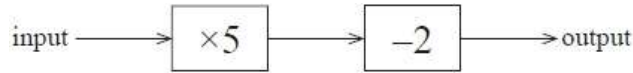
.....  
(2)

(c) Show that there is an input for the machine for which the output is the same as the input.

.....  
(2)  
(Total for question = 5 marks)

**Q3. CALCULATOR ALLOWED**

Here is a number machine.



(a) Work out the **output** when the input is 8

.....  
(1)

(b) Work out the **input** when the output is 28

.....  
(2)

(Total for question = 3 marks)

**Q4. CALCULATOR ALLOWED**

Here is a number machine.



(a) Find the output when the input is 6

.....  
(1)

(b) Find the output when the input is  $-4$

.....  
(1)

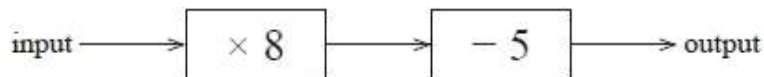
(c) Find the input when the output is 79

.....  
(2)

(Total for question = 4 marks)

**Q5. CALCULATOR ALLOWED**

Here is a number machine.



(a) Work out the output when the input is 6

.....  
(1)

Here is a different number machine.



When the input is 17, the output is 10

(b) Complete the number machine.

.....  
(1)  
(Total for question = 2 marks)

**Q6. CALCULATOR ALLOWED**

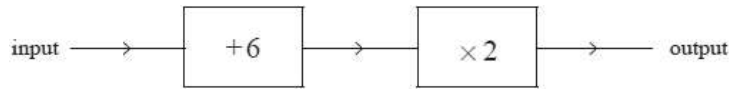
Daisy thinks of a whole number.  
She multiplies the number by 3. Daisy's answer is 34

(a) Explain how you know Daisy's answer is wrong.

.....  
.....

(1)

Here is a number machine.



Abbie says that when the output is 36 the input is 60

Here is her working.

$$36 - 6 = 30$$

$$30 \times 2 = 60$$

Abbie is wrong.

(b) Explain what she has done wrong.

.....  
.....

(2)

(Total for question = 3 marks)

**Q7. CALCULATOR ALLOWED**

Here is a number machine.



(a) Work out the **output** when the input is 4

.....  
(1)

(b) Work out the **input** when the output is 11

.....  
(2)

(c) Show that there is a value of the input for which the input and the output have the same value.

(2)

(Total for question = 5 marks)