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Name:

Date:

Function Machines

GCSE
Edexcel
Mathematics
Grade (9-1)

Mark

$\dfrac{}{33}$

Score (%)

Materials

For this paper you must have:

- Ruler
- Pencil, Rubber, Protractor and Compass
- Scientific calculator, which you are expected to use when appropriate
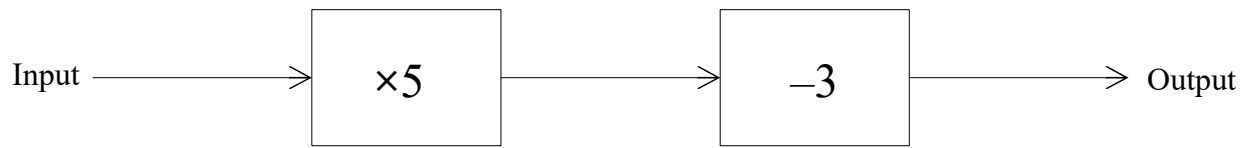
Instructions

- Answer all questions
- Answer questions in the space provided
- All working must be shown
- Do all rough work in this book. Cross out any rough work you don't want to be marked

Information

- The marks for the questions are shown in brackets

1   Here is a number machine.

Input ⟶ | ×5 | ⟶ | −3 | ⟶ Output

(a) What is the **output** when the **input** is 7?

…...........................
(1)

Here is a different number machine.
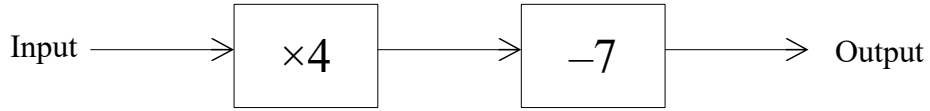
Input ⟶ | + 11 | ⟶ | ……… | ⟶ Output

When the input is 9 the output is 2.

(b) Complete the number machine.

(1)

(Total for question 1 is 2 marks)

2 Here is a number machine.

Input $\longrightarrow$ $\times 4$ $\longrightarrow$ -7 $\longrightarrow$ Output

(a) What is the **output** when the **input** is 6?

....
(1)

(b) What is the **input** when the **output** is 25?

....
(2)

(Total for question 2 is 3 marks)

3 Here is a number machine.

input $\longrightarrow$ $\div 4$ $\longrightarrow$ $+ 5$ $\longrightarrow$ output

(a) ind the **output** when the **input** is 12

....
(1)

(b) ind the **input** when the **output** is 13

....
(2)

(Total for question 3 is 3 marks)

4   Here is a number machine.

Input ────→ ×6 ────→ +2 ────→ Output
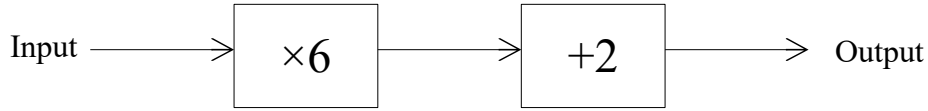
(a) What is the **output** when the **input** is 3?

….....................
(1)

(b) What is the **input** when the **output** is 44?

….........................
(2)

(Total for question 4 is 3 marks)

5   Here is a number machine.

input ────→ ÷ 9 ────→ − 5 ────→ output

(a) Find the **output** when the **input** is 81

….........................
(1)

(b) Find the **input** when the **output** is 0

….........................
(2)

(Total for question 5 is 3 marks)

6   Here is a number machine.

input ⟶ $\times\,4$ ⟶ $+\,7$ ⟶ output

(a) Find the output when the input is 5

....

(1)
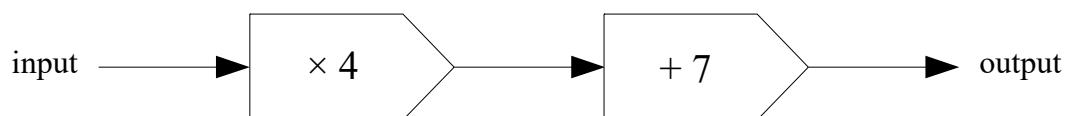
(b) Find the output when the input is –3

....

(1)

(c) Find the input when the output is 71

....

(2)

(Total for question 6 is 4 marks)

7 Here is a number machine.

input → ⟦ × 5 ⟧ → ⟦ + 9 ⟧ → output

(a) Find the output when the input is 5

.................................…

(1)
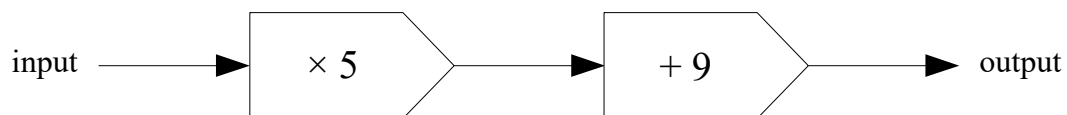
(b) Find the output when the input is –2

.................................…

(1)

(c) Find the input when the output is 64

.................................…

(2)

(Total for question 7 is 4 marks)

8 Here is a number machine.

Input ——→ | ×3 | ——→ | −6 | ——→ Output

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

…........................

(1)

(b) What is the **input** when the **output** is 15?

…........................

(1)

(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 8 is 4 marks)

9 A rule to change from temperate measured in degrees Celsius (°C) to degrees Fahrenheit (°F) is

Multiply the temperature in degrees Celsius by 1.8 then add 32

The temperature in London is 12°C.

(a) Work out the temperature, in London, in Fahrenheit (°F)

.......….....................…

(2)

The temperature in New York is 54°F

(b) Work out the temperature, in New York, in Celsius (°C)

.......….....................…

(2)

(Total for question 9 is 4 marks)

10 A rule to calculate a taxi fare is

£2.50 plus £2.20 per mile

(a) Work how much a 10 mile taxi journey would cost.

.......….....................…

(1)

A taxi journey costs £20.10

(b) Work out distance of the journey.

.......….....................…

(2)

(Total for question 10 is 3 marks)