Name: _____

GCSE (1 – 9)

Function Machines

Instructions

• Use **black** ink or ball-point pen.
• Answer all Questions.
• Answer the Questions in the spaces provided
– *there may be more space than you need.*
• Diagrams are **NOT** accurately drawn, unless otherwise indicated.
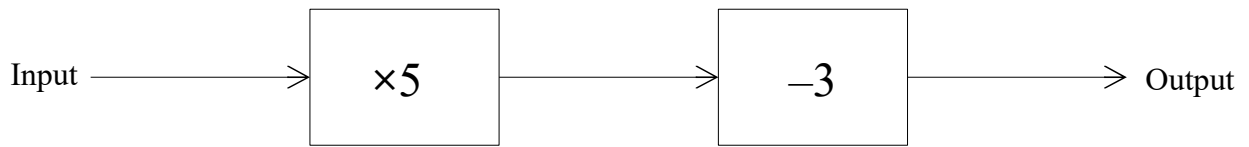• You must **show all your working out.**

Information

• The marks for each Question are shown in brackets
– *use this as a guide as to how much time to spend on each Question.*

Advice

• Read each Question carefully before you start to answer it.
• Keep an eye on the time.
• Try to answer every Question.
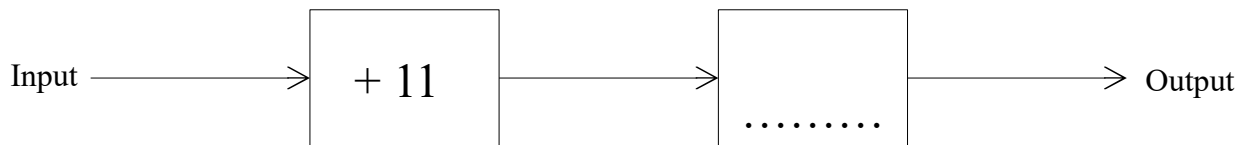• Check your answers if you have time at the end

1 Here is a number machine.

Input $\longrightarrow$ $\boxed{\times 5}$ $\longrightarrow$ $\boxed{-3}$ $\longrightarrow$ Output

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

....
(1)

Here is a different number machine.

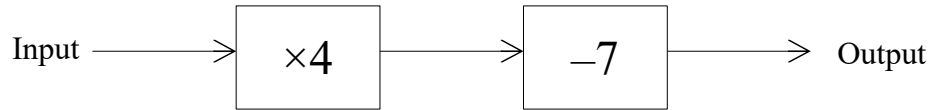Input $\longrightarrow$ $\boxed{+ 11}$ $\longrightarrow$ $\boxed{\ldots\ldots\ldots}$ $\longrightarrow$ Output

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 $\longrightarrow$ $\boxed{\times 4}$ $\longrightarrow$ $\boxed{-7}$ $\longrightarrow$ 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 $\longrightarrow$ $\boxed{\div 4}$ $\longrightarrow$ $\boxed{+ 5}$ $\longrightarrow$ output
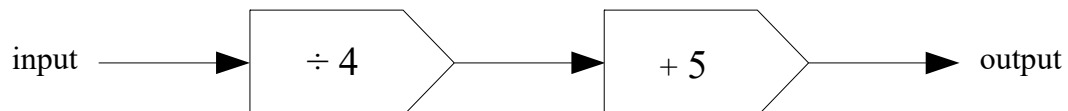
(a) Find the **output** when the **input** is 12

.......…....................…
(1)

(b) Find 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
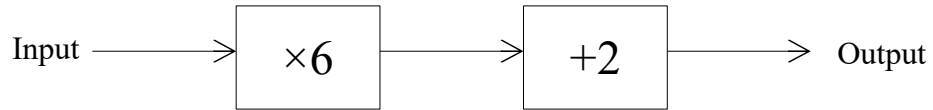
(a) What is the **output** when the **input** is 3?

…..........................

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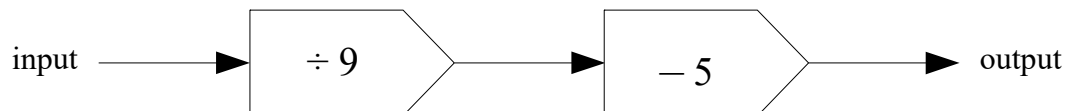
(a) Find the **output** when the **input** is 81

........…...................…

(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 ⟶ ×4 ⟶ +7 ⟶ output

(a) Find the output when the input is 5

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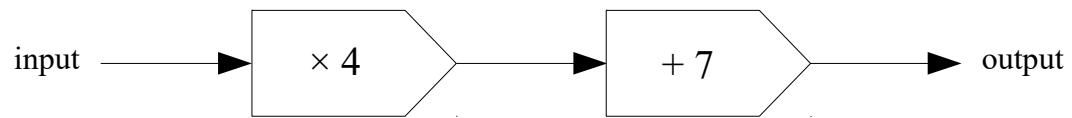
(b) Find the output when the input is –3

....
(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 $\longrightarrow$ ╱ × 5 ╲ $\longrightarrow$ ╱ + 9 ╲ $\longrightarrow$ output

(a) Find the output when the input is 5

....

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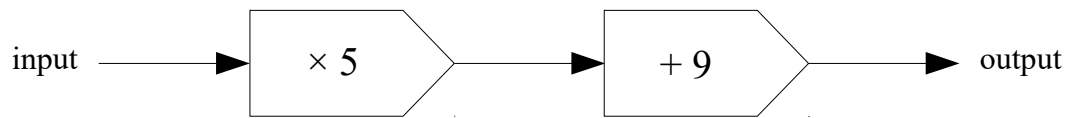
(b) Find the output when the input is –2

....

(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 $\longrightarrow$ $\boxed{\times 3}$ $\longrightarrow$ $\boxed{-6}$ $\longrightarrow$ Output
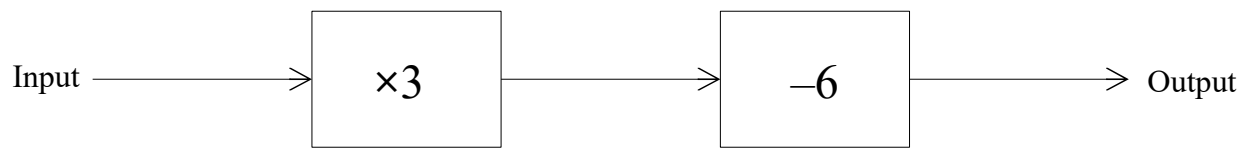
(a) What is the **output** when the **input** is 4?

…..........................
(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)