

Name: _____

ASM Tuition Academy
FUNCTION MACHINES

Instructions:

- Use black ink or ball-point pen.
- Answer all the 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 you're 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 time.
- Try to answer every question.
- Check your answers if you have time at the end.

Q1. Here is a number machine.

$$\text{Input} \rightarrow \times 5 \rightarrow -2 \rightarrow \text{Output}$$

(a) What is the output when the input is 8?

(1)

Here is a different number machine.

$$\text{Input} \rightarrow +10 \rightarrow \text{Output}$$

When the input is 10 the output is 2.

(b) Complete the number machine.

(1)

(Total for question 1 is 2 marks)

Q2. Here is a number machine below.

$$\text{Input} \rightarrow \times 3 \rightarrow -7 \rightarrow \text{Output}$$

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

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

..... **(1)**

..... **(2)**

(Total for question 2 is 3 marks)

Q3. Here is a number machine.

$$\text{input} \rightarrow \div 3 \rightarrow +5 \rightarrow \text{output}$$

- (a) Find the output when the input is 15**
- (b) Find the input when the output is 12**

..... (1)

..... (2)

(Total for question 3 is 3 marks)

Q4. Here is a number machine.

$$\text{Input} \rightarrow \times 5 \rightarrow +2 \rightarrow \text{Output}$$

- (a) What is the output when the input is 4?**
- (b) What is the input when the output is 42?**

..... (1)

..... (2)

(Total for question 4 is 3 marks)

Q5. Here is a number machine.

$$\text{input} \rightarrow \div 8 \rightarrow -5 \rightarrow \text{output}$$

- (a) Find the output when the input is 64**
- (b) Find the input when the output is 0**

..... (1)

..... (2)

(Total for question 5 is 3 marks)

Q6. Here is a number machine.

input $\rightarrow \times 5 \rightarrow +7 \rightarrow$ output

- (a) Find the output when the input is 6**
- (b) Find the output when the input is -4**
- (c) Find the input when the output is 72**

..... (1)

..... (1)

..... (2)

(Total for question 6 is 4 marks)

Q7. Here is a number machine.

input $\rightarrow \times 5 \rightarrow +10 \rightarrow$ output

- (a) Find the output when the input is 5**
- (b) Find the output when the input is -3**
- (c) Find the input when the output is 65**

..... (1)

..... (1)

..... (2)

(Total for question 7 is 4 marks)

Q8. Here is a number machine.

Input $\rightarrow \times 4 \rightarrow -6 \rightarrow$ Output

- (a) What is the output when the input is 4?**
- (b) What is the input when the output is 22?**
- (c) Show that there is a value of the input for which the input and the output have the same value.**

..... (1)

..... (1)

..... (2)

(Total for question 8 is 4 marks)

Q9. A rule to change from temperate measured in degrees Celsius ($^{\circ}\text{C}$) to degrees Fahrenheit ($^{\circ}\text{F}$) is

Multiply the temperature in degrees Celsius by 1.8 then add 32

The temperature in Frankfurt is 13°C .

(a) Work out the temperature, in Frankfurt, in Fahrenheit ($^{\circ}\text{F}$)

(b) Work out the temperature, in New York, in Celsius ($^{\circ}\text{C}$)

..... (2)

..... (2)

(Total for question 9 is 4 marks)

Q10. A rule to calculate a taxi fare is

$\pounds 2.60$ plus $\pounds 2.30$ per mile

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

(b) Work out distance of the journey.

..... (1)

..... (2)

(Total for question 10 is 3 marks)