

2.6

Function Machine

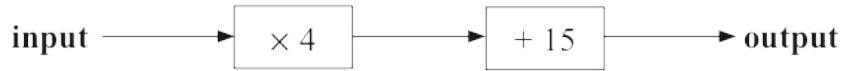
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4 Here is a number machine.



(a) Find the output when the input is 6

.....
(1)

(b) Find the output when the input is -8

.....
(1)

(c) Find the input when the output is 103

.....
(1)

The input is x .

(d) Write down an expression, in terms of x , for the output.

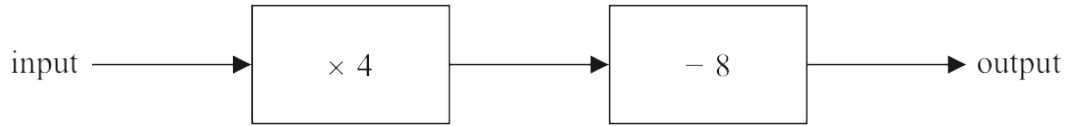
.....
(1)

The output is y .

(e) Write down an expression, in terms of y , for the input.

.....
(2)

6 Here is a number machine.



(a) Work out the output when the input is 18

.....
(1)

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

.....
(2)

Here is a different number machine.

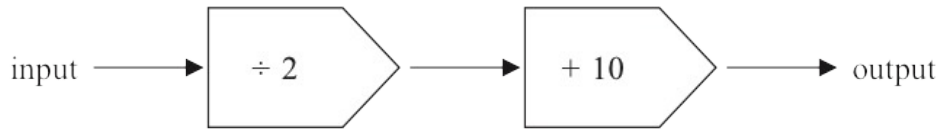


For this number machine, when the input is 8 the output is 50

(c) Work out the value of x .

$x =$
(2)

7 Here is a number machine.



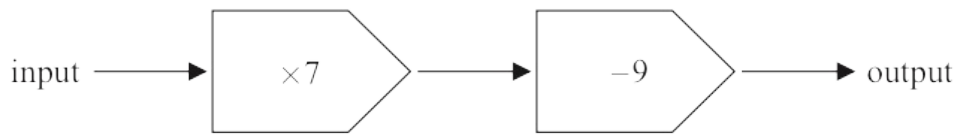
(a) Work out the output when the input is 8

(1)

(b) Work out the input when the output is 120

(2)

10 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 82

.....
(2)

The input is y .

(c) Find an expression, in terms of y , for the output.

.....
(2)

7 (a) Complete the number machine by writing the correct output on the dotted line.



(1)

(b) Complete the number machine by writing the correct input on the dotted line.



(2)

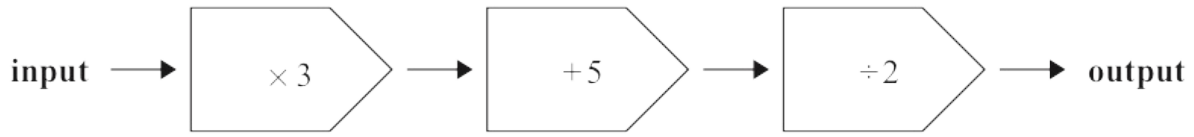
Here is an incomplete number machine.



(c) Complete the number machine.

(1)

5 Here is a number machine.



(a) Work out the output when the input is 7

.....
(1)

(b) Work out the input when the output is 160

.....
(2)

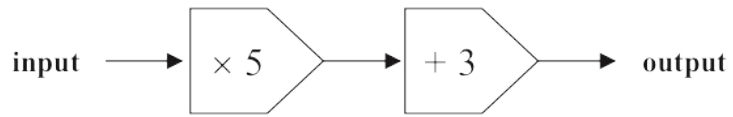
When the input is n , the output is P .

(c) Find a formula for P in terms of n .

.....
(2)

2

Here is a number machine.



(b) Work out the input when the output is 108

.....
(2)

- 17 Molly uses this number machine to work out the amount of tax that she has to pay on the money she earns.

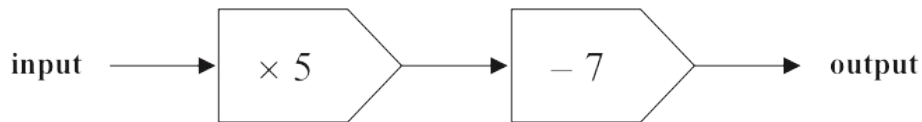


When Molly works n hours the amount of tax she has to pay is $£T$

Find a formula for T in terms of n

(Total for Question 17 is 3 marks)

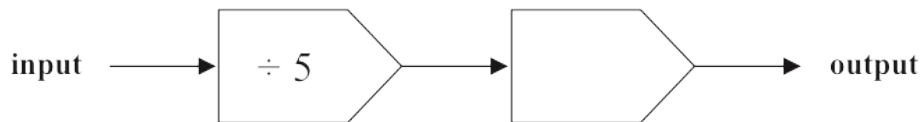
8 Here is a number machine.



(a) Work out the output when the input is 9

.....
(1)

Here is a different number machine.



When the input is 30 the output is 18

(b) Find a suitable way to complete the number machine.

(1)

The following rule is used to work out the total cost, in euros, of hiring a cement mixer.

$$\text{Total cost} = 8 \text{ euros per day plus } 5 \text{ euros}$$

James hires a cement mixer for 3 days.

(c) Work out the cost to James of hiring the cement mixer.

..... euros
(1)

The cost to Sophia of hiring a cement mixer is 61 euros.

(d) For how many days does Sophia hire the cement mixer?

..... days
(2)

12 Aarav uses this rule to estimate the time, in minutes, that a bus journey takes.

$$\boxed{\text{Time}} = \boxed{2.5 \times \text{length of journey in kilometres}} + \boxed{1.5 \times \text{number of bus stops}}$$

Aarav's bus journey to work has a length of 12 kilometres.
There are 5 bus stops on the route.

(a) Use Aarav's rule to work out an estimate for the time this bus journey takes.

..... minutes
(2)

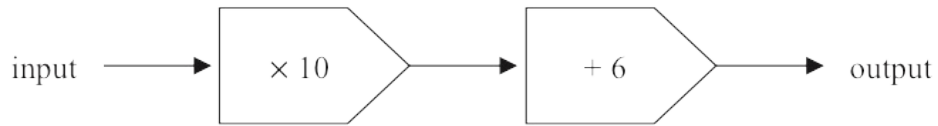
A different bus journey takes 55 minutes.
There are 8 bus stops on the route.

(b) Use Aarav's rule to work out an estimate for the distance of this bus journey.

..... km
(3)

(Total for Question 12 is 5 marks)

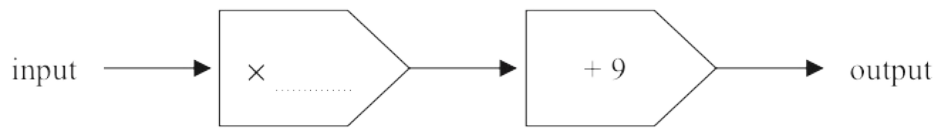
9 Here is a number machine.



(a) Work out the output when the input is 14

.....
(1)

Here is a different number machine.



When the input is 11 the output is 64

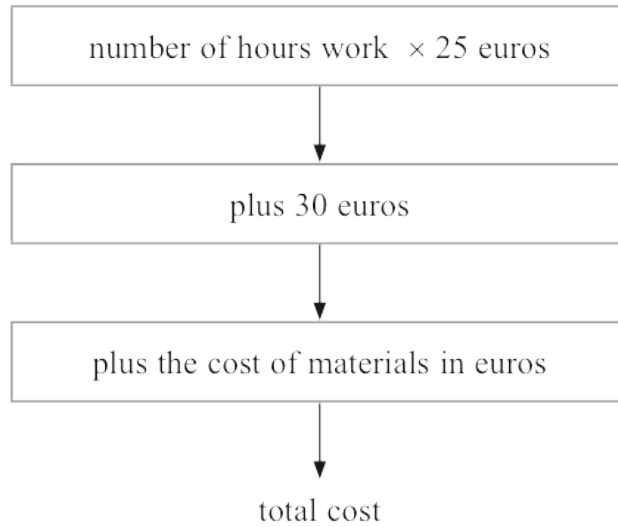
(b) Write a number on the dotted line to complete the number machine.

(2)

(Total for Question 9 is 3 marks)

8 Georgia is a plumber.

She uses this rule to work out the total cost, in euros, of her customers' bills.



Georgia does some plumbing work for Tallulah.

She works for 3 hours.

The cost of the materials she uses is 42 euros.

(a) Work out the total cost of Tallulah's bill.

..... euros
(2)

Georgia also does some plumbing work for Sam.

The cost of the materials she uses is 65 euros.

The total cost of Sam's bill is 220 euros.

(b) Work out the number of hours that Georgia works for Sam.

..... hours
(3)

10 Here is a number machine.



When the input is 7 the output is 60

(a) Work out the value of y

$$y = \dots\dots\dots$$

(2)

Here is a different number machine.



The input is x

(b) Write down an expression, in terms of x , for the output.

$$\dots\dots\dots$$

(2)