

Name

Class



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Function machines

(9 – 1) Topic booklet

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- 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.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

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.

Answer ALL questions

**Write your answers in the space provided.
You must write down all the stages in your working.**

7 Here is a number machine.



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

.....
(1)

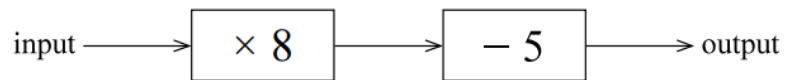
(b) Work out the **input** when the output is 11

.....
(2)

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

(2)

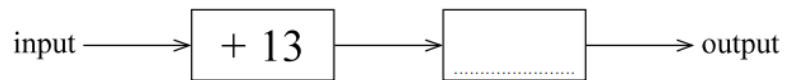
8 Here is a number machine.



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

.....
(1)

Here is a different number machine.

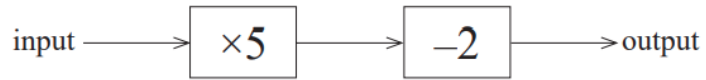


When the input is 17, the output is 10

(b) Complete the number machine.

(1)

10 Here is a number machine.



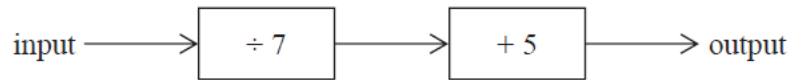
(a) Work out the **output** when the input is 8

.....
(1)

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

.....
(2)

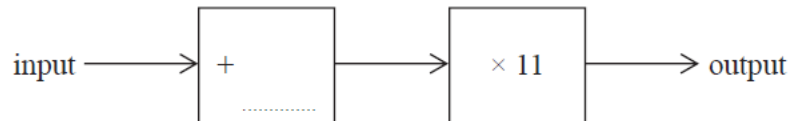
12 Here is a number machine.



(a) Work out the output when the input is 28

.....
(1)

Here is a different number machine.
The number machine is not complete.



When the input is 8, the output is 154

(b) Complete the number machine.

(2)

12 The diagram shows a number machine.



(a) Find the output when the input is 7

.....
(1)

(b) Find the input when the output is 41

.....
(2)