Flowcharts and Pseudocode 2

1. Write the definition of **algorithm**.

*An **unambiguous sequence** of steps for solving a problem*

2. List the three characteristics of a good algorithm – in a word, then explain the meaning.

a)	***accurate***	*the outcome is correct*
b)	***consistent***	*with the same inputs, the outcome will be the same each time*
c)	***efficient***	*It solves the problem using minimal resources (time, energy, etc.)*

3. The logical flow in a flowchart is represented by arrows. Draw and label the five blocks essential for the Pearson Edexcel International GCSE Computer Science exam.

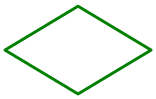
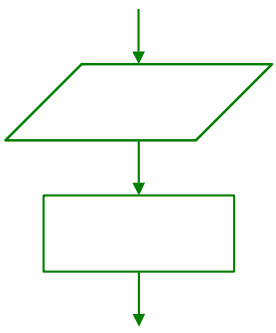
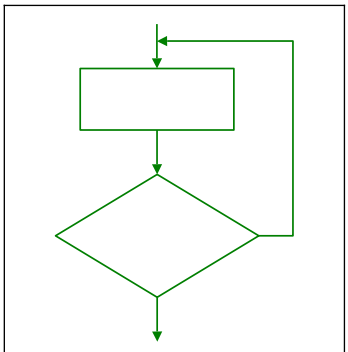
	Diagram	Name
a)		*start / end*
b)		*process*
c)		*decision*

	Diagram	Name
d)		*subprocess*
e)		*Input / output*

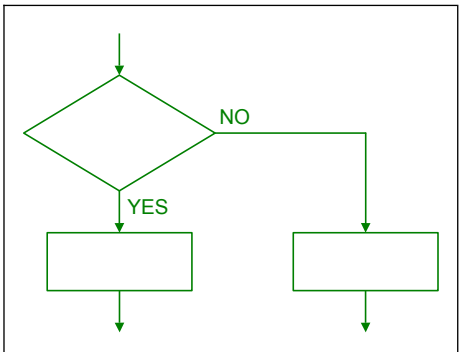
4. Draw and label the flowchart representation of the three programming *constructs* you were taught in this course.

a) 

sequence

b) 

iteration

c) 

selection

5. Write the vocabulary word meaning: an expression that evaluates to either true or false.

condition

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6. Write the correct vocabulary word next to the box that best describes it. If you spell the word incorrectly, you will need to write the word ten times before you receive credit.

abstraction	***algorithm***	***constant***	***construct***	***decompose***	***flowchart***	***pseudocode***	***variable***

a)	***flowchart***	a diagrammatic representation of an algorithm
b)	***constant***	a memory location that stores an unchangeable value
c)	***decompose***	breaking down a complex problem into smaller, more manageable parts
d)	***pseudocode***	a structured, code-like, high-level description of an algorithm
e)	***variable***	a memory location to store a value that may change while the program is running
f)	***algorithm***	a precise method for solving a problem
g)	***construct***	a smaller part used as a building block
h)	***abstraction***	hiding complexity by focusing on the essential features of a problem

7. Given an array, `names`, that contains values, such as:

```
SET names TO [ 'Eason','Ethan', 'Sarah', 'Ruby' ]
```

a) Write Pearson pseudocode using a count-controlled `FOR` loop to print the names to the display. The code must be able to handle different lengths of arrays.

```
FOR count FROM 0 TO LENGTH(names) DO
    SEND names[count] TO DISPLAY
END FOR
```

b) Write code that produces exactly the same results, but uses a `FOR EACH` loop.

```
FOR EACH name FROM names DO
    SEND name TO DISPLAY
END FOR
```

c) Explain why the count-controlled repeat loop is not ideal for this task.
(REPEAT <number> TIMES…)

There is no index counter, so we would need to add extra code to keep track of the index, making the code less concise.