Name: ……………………………………………….. ( ) Class: ……… Date: ………………….

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| **3.2** | **Algorithm Design** | **Flowcharts** |

1. A flowchart is a visual presentation of an algorithm using symbols to show the flow of a sequence of steps. There are four standard symbols used in flowcharts. Complete the table below to show the symbols and provide a brief description of each.

|  |  |  |
| --- | --- | --- |
| **Name** | **Symbol** | **Brief Description** |
| Terminator |  |  |
| Data |  |  |
| Decision |  |  |
| Process |  |  |

2. Flowcharts and flow lines must obey a set of rules to avoid ending up being overly complicated. Indicate whether the rules below are true or false.

(a) A flowchart must start with exactly one terminator symbol. [ True / False ]

(b) Each flowchart symbol (except the terminator and decision symbols) must have exactly one entry point but can have more than one exit points. [ True / False ]

(c) Flow lines can cross one another. [ True / False ]

3. Each flowchart segment below depicts one of three constructs. Match each segment to the construct depicted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | Iteration  Construct |
|  |  |  |  | Sequence  Construct |
|  |  |  |  | Selection  Construct |

4. Study the flowchart below carefully:

START

STOP

count = 1  
total = 0  
x = 0

INPUT number

Is number > 0?

total = total + number

x = x + 1

count = count + 1

Is count <= 5?

average = total/x

OUTPUT average

Yes

No

No

Yes

1. Complete the trace table for the following data set: 16, -2, 0, 7, 1

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| --- | --- | --- | --- | --- | --- |
| **count** | **number** | **total** | **x** | **average** | **OUTPUT** |
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1. State the purpose of the flowchart.

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5. The flowchart below reads five integers and returns the sum of even integers. Complete the trace table for the following data set: 16, 7, -3, 2, 1



|  |  |  |  |
| --- | --- | --- | --- |
| **count** | **number** | **sum** | **OUTPUT** |
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6. Amend the flowchart in question 4 to read five integers and return the sum of ODD integers.

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