**The Fetch-Execute Cycle**

Sort the following phrases into the correct sequence for the fetch-execute cycle:

* The instruction held in the Current Instruction Register is decoded
* The instruction is copied to the Current Instruction Register
* The instruction stored at that address is copied to the Memory Buffer Register
* The instruction is executed
* At the same time, the contents of the Program Counter are incremented by 1, ready for the next instruction
* The address of the next instruction is held in the Program Counter
* The address is copied from the Program Counter to the Memory Address Register

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| **Fetch phase** | |
| The address of the next instruction is held in the Program Counter. | |
| The address is copied from the Program Counter to the Memory Address Register. | |
| At the same time, the contents of the Program Counter are incremented by 1, ready for the next instruction. | The instruction stored at that address is copied to the Memory Buffer Register. |
| The instruction held in the Current Instruction Register is decoded. | |
| **Execute phase** | |
| The instruction is executed. | |
| The instruction stored at that address is copied to the Memory Buffer Register. | |

**Challenge: Examples of the Execute phase**

Sort the following phrases into the correct sequence for the execute phase of a LOAD operation, ADD operation and STORE operation:

* Contents of the Memory Buffer Register are added to the value held in the Accumulator
* Contents of the Memory Buffer Register are copied to the address held in the Memory Address Register
* The operand part of the instruction is copied to the Memory Address Register
* The contents of that memory address are copied to the Memory Buffer Register
* The operand part of the instruction is copied to the Memory Address Register
* The contents of the Accumulator are copied to the Memory Buffer Register
* The contents of that memory address are copied to the Memory Buffer Register
* Contents of the Memory Buffer Register are copied to the Accumulator
* The operand part of the instruction is copied to the Memory Address Register

For LOAD operation (e.g. LDA 106):

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| The operand part of the instruction is copied to the Memory Address Register |
| The contents of that memory address are copied to the Memory Buffer Register |
| Contents of the Memory Buffer Register are copied to the Accumulator |

For ADD CONTENTS OF MEMORY LOCATION operation (e.g. ADD 107):

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| The operand part of the instruction is copied to the Memory Address Register |
| The contents of that memory address are copied to the Memory Buffer Register |
| Contents of the Memory Buffer Register are added to the value held in the Accumulator |

For STORE operation (e.g. STO 108):

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| The operand part of the instruction is copied to the Memory Address Register |
| The contents of that memory address are copied to the Memory Buffer Register |
| Contents of the Memory Buffer Register are copied to the address held in the Memory Address Register |