Mark whether the following modifications will cause each of the categories to (**may**) **increase, (may) decrease**, or whether the modification will have **no effect**. **Explain your reasoning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Number of Instructions per Program** | **Number of Cycles per Instruction** | **Seconds / Cycle** |
| Combining two pipeline stages |  |  |  |
| Removing a multicycle instruction with simple instructions |  |  |  |
| Running a machine at higher clock frequency |  |  |  |
| Using a better compiler |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compulsory Misses | Conflict Misses | Capacity Misses |
| Double the associativity  (capacity and block size constant) |  |  |  |
| Halving the Block size  (associativity and  # sets constant) |  |  |  |
| Doubling the number of sets (capacity and block size constant) |  |  |  |