Problem 1.

A benchmark program is run on a 40 MHz processor. The object code consists of 100000 instructions, with the following instruction mix and clock cycle count:

|  |  |  |
| --- | --- | --- |
| Instruction type | Instruction count | Clock cycle count |
| Integer arithmetic | 45000 | 1 |
| Data transfer | 32000 | 2 |
| Floating point | 15000 | 2 |
| Control transfer | 8000 | 2 |

Determine the effective CPI, MIPS rate, and execution time for this program.