Machine A runs at 2.2 GHz and completes a certain program in 10s. Machine B runs at 3.3 GHz and completes the same program in 7s. How many more clock cycles does B need relative to A for this program?
• What is the clock rate for a machine running a job that has a CPI of 1.4, 1400 instructions, and finishes in 600ns?
A certain computer uses 3 instruction classes: A, B, and C. The CPI for C = 4. To determine the CPI of classes A and B, two code sequences were run, 1 and 2. Code sequence 1 has an IC of 1 for class A, 2 for class B, and 3 for class C, and runs in 16 clock cycles. Code sequence 2 has an IC of 2 for A, 1 for B, and 2 for C, and runs in 13 clock cycles. What are the CPIs for A and B?
Computer A runs at 3 GHz with a CPI of 4. Computer B runs at 3.5 GHz with a CPI of 5 (note tradeoff again). A particular job needs 1M clock cycles for computer A, and 0.9M for computer B. Compute the MIPS for each machine. Which one completes the job faster?
A floating point process has 3000 subtractions, 5000 multiplications, and 3500 divisions, and completes in 52 ns. What is its normalized FLOPS rating based on the table below?

<table>
<thead>
<tr>
<th>Real FP Ops</th>
<th>Normalized FP Ops</th>
</tr>
</thead>
<tbody>
<tr>
<td>add, sub</td>
<td>1</td>
</tr>
<tr>
<td>mult, compare</td>
<td>1</td>
</tr>
<tr>
<td>divide, sqrt</td>
<td>4</td>
</tr>
<tr>
<td>exp, sin, etc.</td>
<td>8</td>
</tr>
</tbody>
</table>
Consider 2 programs (1 & 2), 2 machines (A & B) as shown below. Computer the arithmetic means (AM) and geometric means (GM). What do these signify?

<table>
<thead>
<tr>
<th></th>
<th>norm. to A</th>
<th>norm. to B</th>
</tr>
</thead>
<tbody>
<tr>
<td>time on A</td>
<td>time on B</td>
<td></td>
</tr>
<tr>
<td>prog 1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>prog 2</td>
<td>1000</td>
<td>100</td>
</tr>
</tbody>
</table>

AM

GM