<u>Assignment #1</u>

1.1. Consider 3 processors P1, P2 and P3 with clock rates and CPI given below, are running the same program:

	clock rate	CPI
P1	**2 GHz**	**1.5**
P2	**1.5 GHz**	**1.0**
P3	**3 GHz**	**2.5**

Which processor will have the best performance?

1.2. For the previous processors P1, P2, and P3 If the processors each execute a program in 10 seconds, find the number of cycles and the number of instructions.

1.3. Given below are the number of instructions of a program:

arithmetic	store	load	branch
500	50	100	50

Assuming the instructions take 1, 5, 5 and 2 cycles, what is the execution time in a 2 GHz processor?

1.4. Compilers have a profound impact on the performance of an application on a given processor. For the following two compilers A and B:

	compiler A		compiler B	
	no instructions	**exec. Time**	**no. instructions**	**exec. Time**
a	1.0×10^9	**1 s**	1.2×10^9	**1.4 s**
b	1.4×10^9	**0.8 s**	1.2×10^9	**0.7 s**

Find the average CPI for programs a and b, on different compilers, given that the processor has a cycle time of 1 ns.