1.

	R - type ($\times 10^6$)	I - type ($\times 10^6$)	S - type ($\times 10^6$)
# of instruction	50	30	20
# of cycles	2	4	3
# of total cycles	100	120	60

- If we improve I-type instruction with 50%, then the # of total cycles for I-type instructions become 60.

after improvment ——→ $(100 + 60 + 60) \times 10^6 = 220 \times 10^6$

before improvment ——→ $(100 + 120 + 60) \times 10^6 = 280 \times 10^6$

- The performance of the program depends on the total # of cycle. Less cycle results better performance.

$\frac{280 \times 10^6}{220 \times 10^6} = 1.27$ ⇒ So improving I-type instruction with 50% result in 1.27 times improvment for total program.