CSE 331 - Computer Organization
Homework 1

1. Wafer contains 120 processor dies, but there is 80% yield initial.

So; $120 \times 0.8 = 96$ processor die.
↳ start value

⇒ Yield decreases 10% at each year;

- $96 - 96 \times 0.1 = 86.4 \cong 86$ ⇒ first year
- $86 - 86 \times 0.1 = 77.4 \cong 77$ ⇒ Second year
- $77 - 77 \times 0.1 = 69.3 \cong 69$ ⇒ Third year
- $69 - 69 \times 0.1 = 62.1 \cong 62$ ⇒ Fourth year

⇒ Cost decreases 20% at each year;

- $10.000 - 10000 \times 0.2 = 8000\$$
- $8.000 - 8000 \times 0.2 = 6400\$$
- $6400 - 6400 \times 0.2 = 5120\$$
- $5120 - 5120 \times 0.2 = 4096\$$

∝ So result is; $4096 / 62 = 66.06\$$

2. a.

Compiler A: $50 \times 2 + 10 \times 4 + 2 \times 3 = 146 \times 10^6$ required cycles

Compiler B: $50 \times 2 + 5 \times 4 + 1 \times 3 = 183 \times 10^6$ required cycles

∝ Compiler A more faster.

∝ $183 / 146 = 1.2534$ times faster

%25,34 more faster

b. 146×10^6 cyles to execute

100 ms = 0.1 second

$x = 0.1 \times 146 \times 10^6$

$x = 146 \times 10^7 = 1.46$ GHz

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