

1. Questiona wafer  $\Rightarrow$  120 processor diesyield  $\Rightarrow$  80% cost  $\Rightarrow$  10,000 \$120  $\times$   $\frac{80}{100}$  = 96 processor dies can be solved

	<u>0/10</u> <u>Dies</u>	<u>0/20</u> <u>Cost</u>
Today	96	10,000 \$
1. year	86.4	8000 \$
2. year	77.76	6400 \$
3. year	68.884	5120 \$
4. year	62.8856	4,096 \$

$$\frac{\text{Cost}}{\text{dies}} = \boxed{65,0307372}$$

2. Question

a) Compiler A:

$$\text{Clock Cycles} = 10^6 (50 \times 2 + 10 \times 4 + 2 \times 3) = 146 \cdot 10^6$$

Compiler B:

$$\text{Clock Cycles} = 10^6 (160 + 20 + 3) = 183 \cdot 10^6$$

$$\frac{183 \cdot 10^6}{146 \cdot 10^6} = \underline{\underline{1.253..}}$$

So A is 1.253 times faster than B.



b. Cycle to execute:  $146 \times 10^6$

$$100\text{ms} = 0,1\text{ s}$$

$k = \text{CPU Clock Rate}$

$$\frac{146 \times 10^6}{k} = 0,1$$

$$\frac{146 \times 10^6}{0,1} = k$$

$$k = 146 \times 10^6 \times 10\text{ Hz}$$

$$k = 146 \times 10^7\text{ Hz} = \boxed{1,46\text{ GHz}}$$