

Take-Home Exam 2

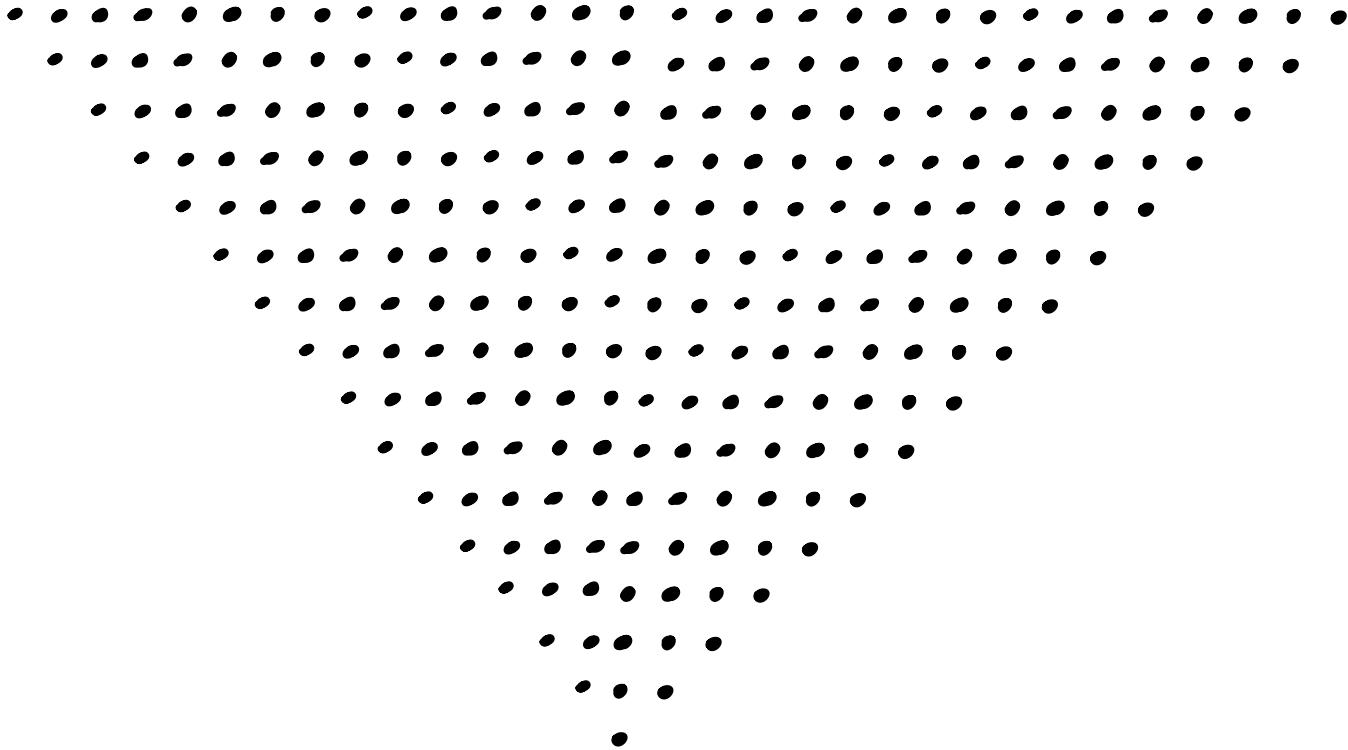
~~Part 1) $n=16$ $m=12$ TC~~

$$+ \sum_{i=0}^{14} x_i y_i 2^{i+11} + \sum_{j=0}^{10} z_j y_j 2^{j+15} + (2^{15} + 2^{15}) (2^{15+11})$$

Convert MAs to
FA with $c_{in} \geq 1$

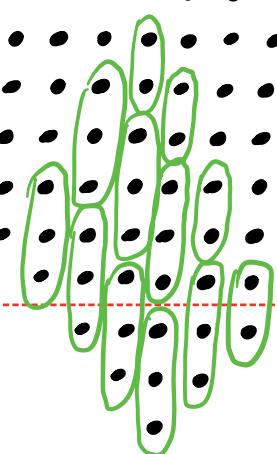
Prob 2)





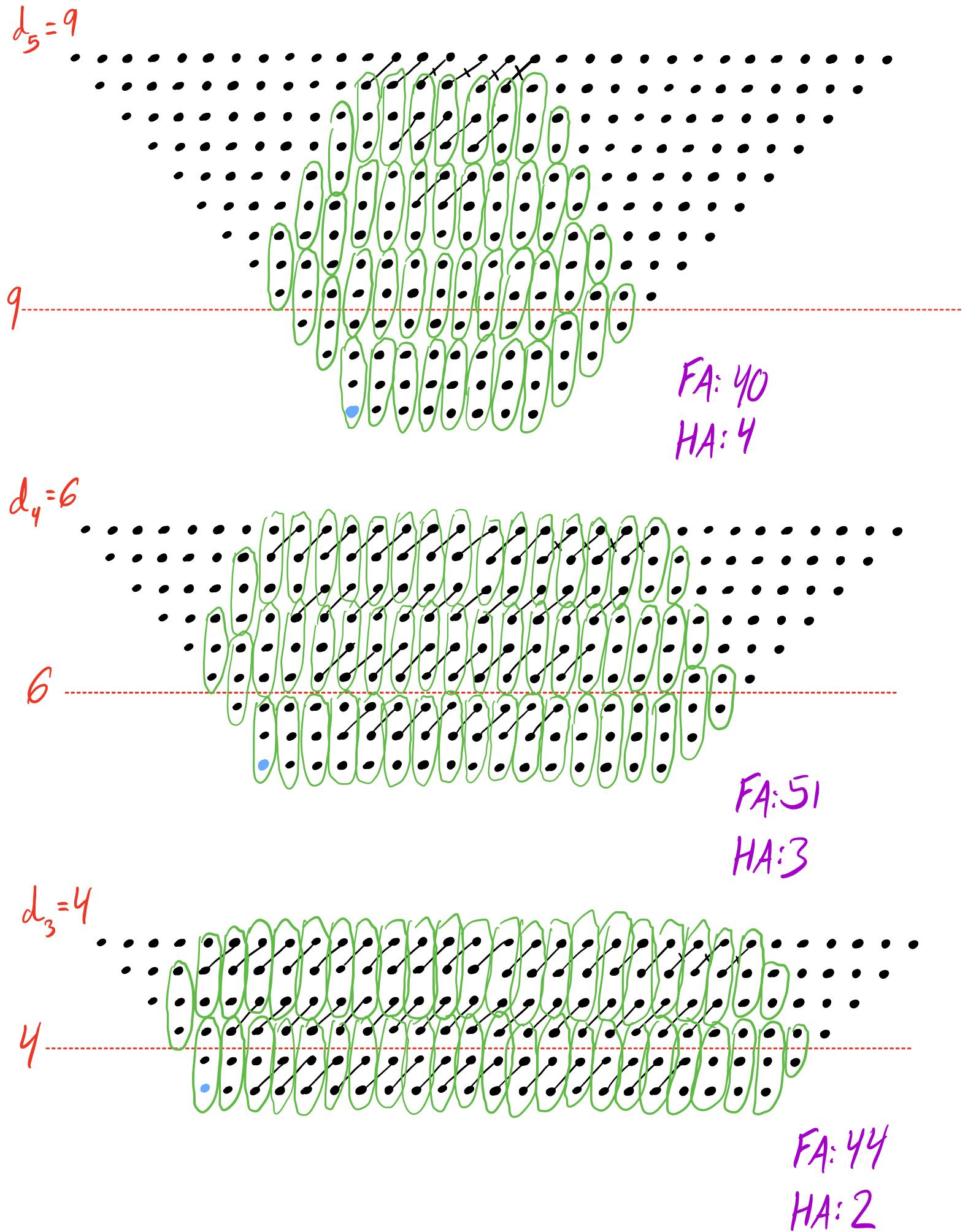
$$d_6 = 13$$

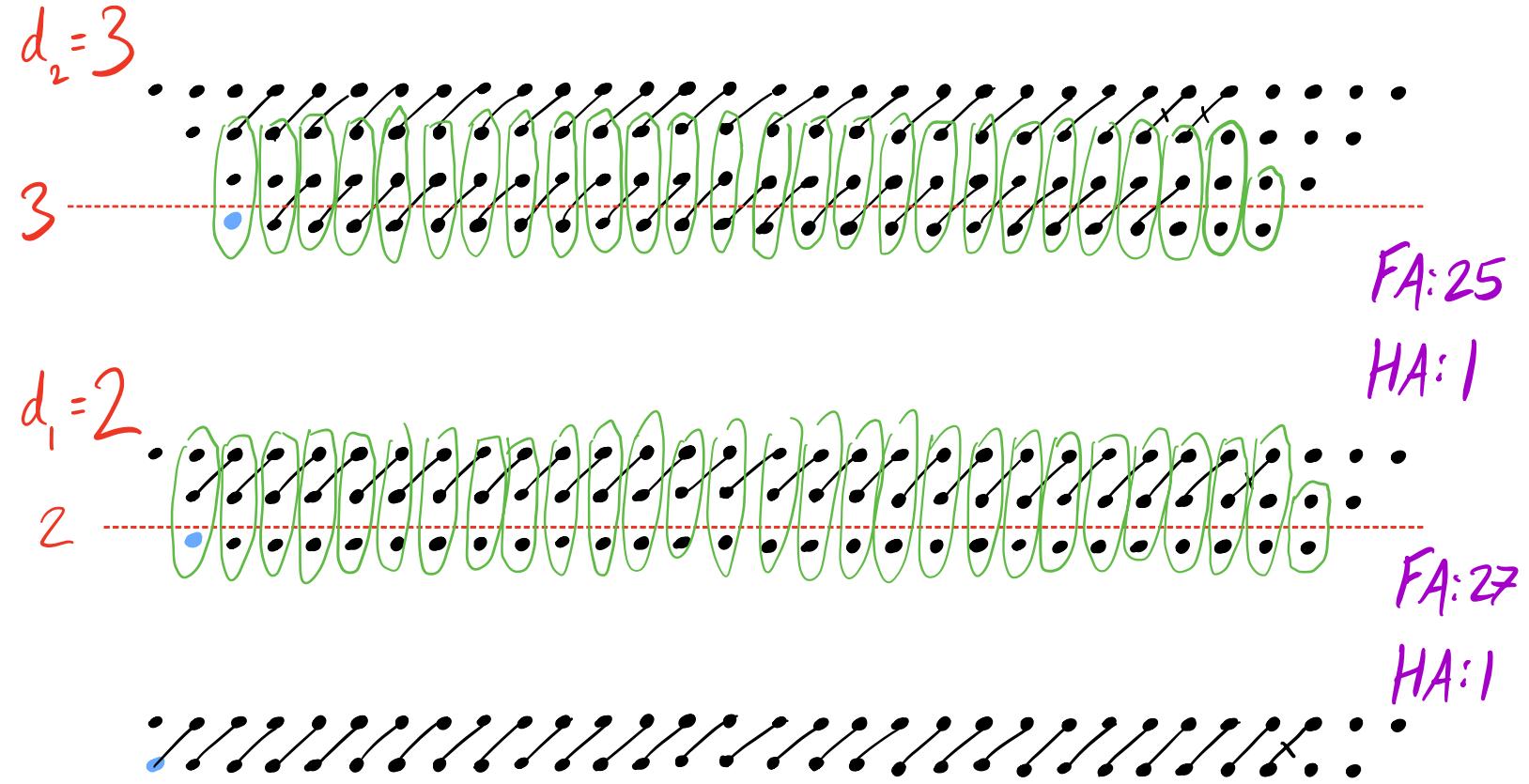
13



FA: 8

HA: 4





30-bit RCA

	Area	Delay
HA	4	3
FA	9	6
RCA	$9n$	$2n+4$

$$\sum(FA) = 8 + 40 + 51 + 44 + 25 + 27 = 195$$

$$\sum(HA) = 4 + 4 + 3 + 2 + 1 + 1 = 15$$

$$n_{RCA} = 30$$

Reorganization: 1 gate, 1 Δ

$$\text{Area} = 15(4) + 195(9) + 9(30) + 1 \rightarrow \boxed{\text{Area} = 2086 \text{ gates}}$$

Delay: Reorg + (6 layers) • (FA) + RCA

$$= 1 + 6(6) + 2(30) + 4 \rightarrow \boxed{\text{Delay} = 101 \Delta}$$