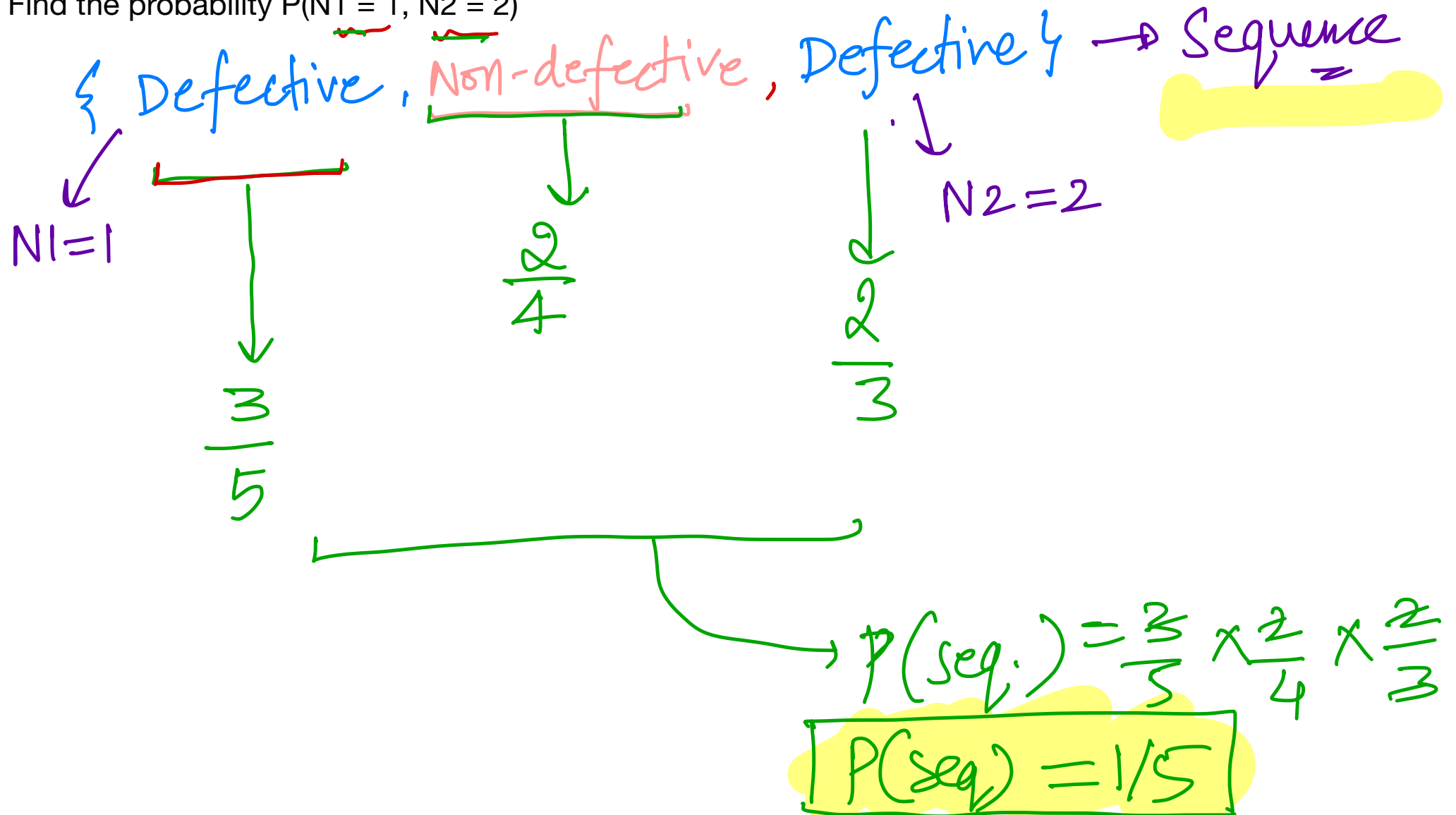


A set of five transistors are to be tested, one at a time in a random order, to see which of them are defective.

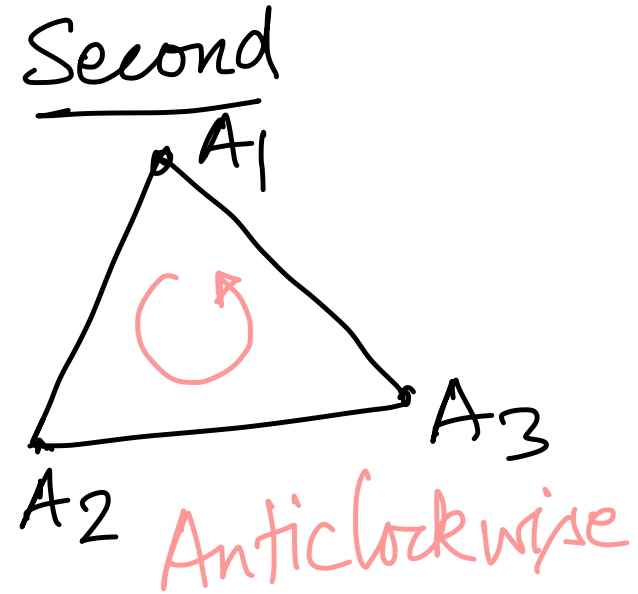
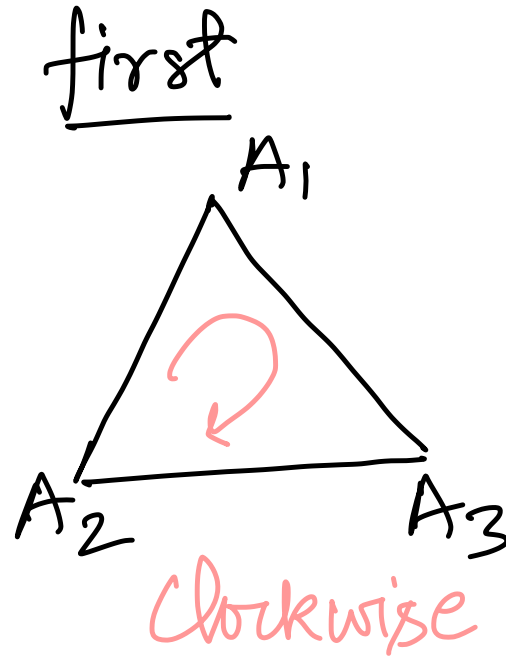
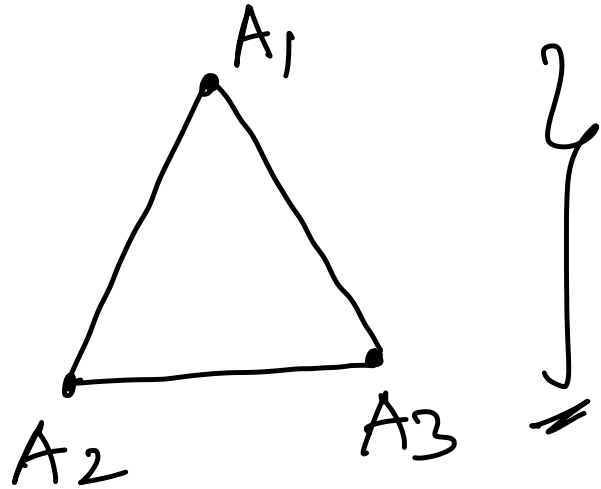
Suppose that three of the five transistors are defective, and let N_1 denote the number of tests made until the first defective is spotted, and let N_2 denote the number of additional tests until the second defective is spotted.

Find the probability $P(N_1 = 1, N_2 = 2)$



Three ants are sitting on the corners of a triangular path. Once at the corner, They have equal probabilities of going in any direction.

If all three ants start at the same time, what is the probability that there will be no collision among them.



Total Possibilities

- $A_1 \rightarrow 2$ choices
- $A_2 \rightarrow 2$ choices
- $A_3 \rightarrow 2$ choices

} Total 8 possibilities / ways.

No collision = 2 ways

$$P(\text{No collision}) = \frac{2}{8} = \frac{1}{4}$$

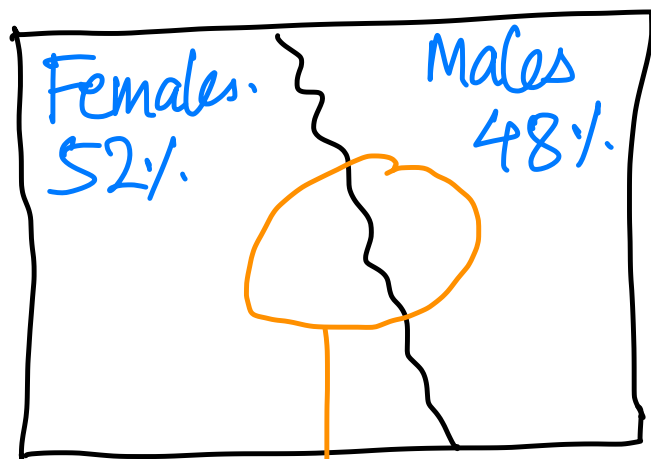
Fifty-two percent of the students at a certain college are females.

Five percent of the students in this college are majoring in computer science. Two percent of the students are women majoring in computer science.

If a student is selected at random, find the conditional probability that:

(a) This student is female, given that the student is majoring in computer science.

(b) This student is majoring in computer science, given that the student is female.



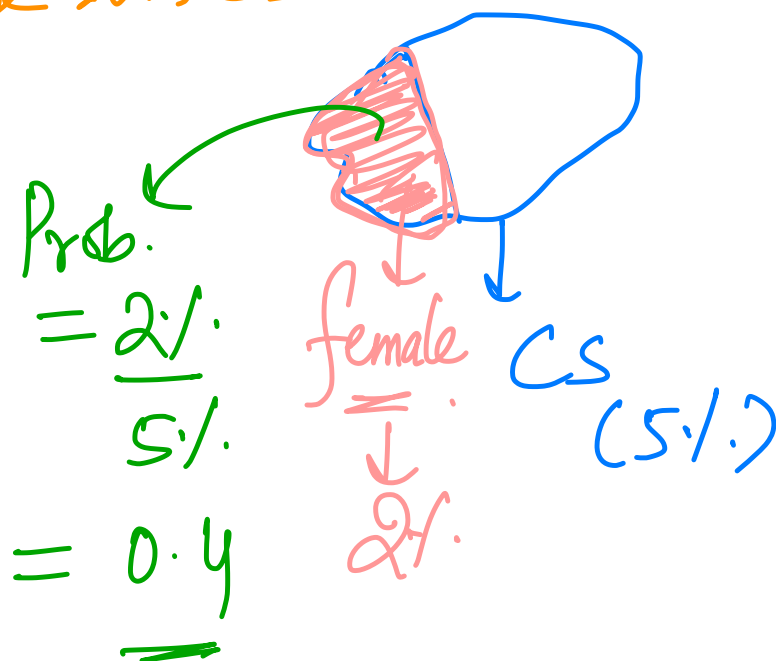
Computer Science (CS)

• 2% of Females are in CS

$$\textcircled{a} P(F | CS) = \frac{P(F \cap CS)}{P(CS)}$$

$$= \frac{2\%}{5\%}$$

$$= \underline{0.4}$$



$$\underline{b)} \quad P(CS|F) = \frac{P(CS \cap F)}{P(F)} = \frac{2\%}{52\%} = \left(\frac{1}{26} \right) \neq .$$



- Consider all families with 2 children and assume that boys and girls are equally likely.
Also Considering birth order matters,

a.) If a family is chosen at random & found to have a boy. What is the probability that the other one is also a boy?
condition

b.) If a child is chosen at random from these families & found to be a boy. What is the probability that the other child in that family is also a boy?

a) Sample space of families
 $= \{(b,b), (b,g), (g,b), (g,g)\}$
 $P(2^{nd} \text{ is boy} | \text{one is a boy}) = \frac{1}{3}$
 $= \frac{P(2^{nd} \text{ boy} \cap \text{first boy})}{P(\text{one is a boy})}$
 $= \frac{(1/4)}{(3/4)} = \frac{1}{3}$

