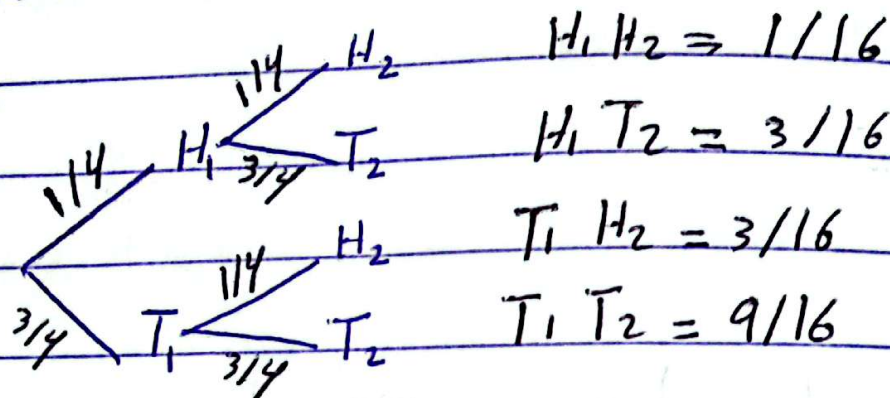




Question: 2.1.1

Solution:

(a)

$$P(H_1 | H_2) = \frac{P(H_1 \cap H_2)}{P(H_2)} = \frac{P(H_1 \cap H_2)}{P(H_1 H_2) + P(T_1 H_2)}$$

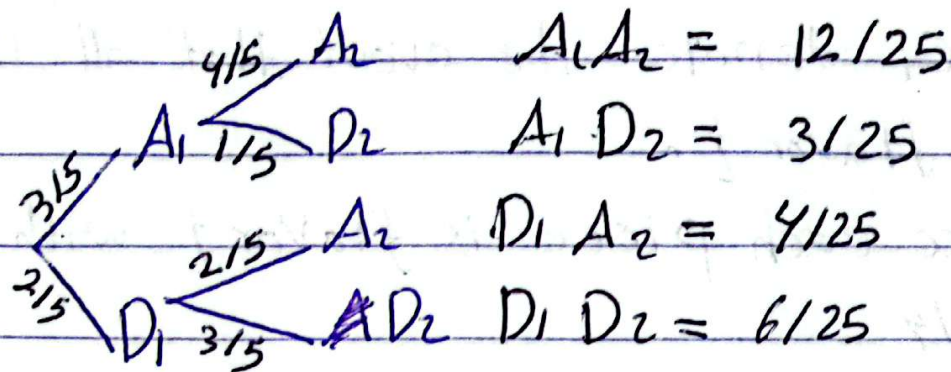
$$= \frac{1/16}{1/16 + 3/16} = \frac{1/16}{4/16} = \boxed{1/4}$$

(b)

from the tree, the answer is $\boxed{3/16}$



Question 2.1.10



Note: This tree form Question 2.1.8

(a) $p^n = (6/25)^n$

(b) في السؤال طالب على كم pair لا يمكن
 عشان أي على قيمة اليوم على الأقل صورة وشوة
 مقبولة بنسبة 0.99
 فاحنا قادرين نحل السؤال بطريقة أسهل واللي
 هي إنا نخلي قيمة اليوم اللي مش مقبولة
 تكون أقل من أو قصادي 0.01 ونقسمها لـ 0.99

$$\left(\frac{6}{25}\right)^n \leq 0.01 \rightarrow \ln(6/25)^n \geq \ln(0.01)$$

$$\rightarrow n \ln(6/25) \geq \ln(0.01) \rightarrow n \geq \frac{\ln(0.01)}{\ln(6/25)} = 3.23$$

So n is 4

Question 12.2.2

Solution:

(a)

has only berry or cherry

the probability of berry ~~and~~ or cherry
is equal 0.5 $[P=0.5]$

so the probability of berry ^{only} or cherry
is $P^{12}(\text{berry or cherry}) = \underline{\underline{(0.5)^{12}}} =$
 $\underline{\underline{0.000244140625}}$

(b) that's mean the pieces is berry or lemon
or orange and the probability of these
is $P = 1/4 + 1/4 + 1/4 = [3/4]$

and the probability of all 12 pieces are

"not pink" is ~~P^{12}~~ $P^{12} = (3/4)^{12} = \underline{\underline{0.0317}}$

© For $i=1, 2, 3, 4, 5, 6$

let C_i denote the event that all 12 pieces are flavor i .

Since each piece is flavor i with probability $= 1/4$

$$P[C_i] = (1/4)^{12}$$

Since C_i and C_j are mutually exclusive

$$P(F_1) = P[C_1 \cup C_2 \cup C_3 \cup C_4]$$

$$= \sum_{i=1}^4 P(C_i) = 4 P(C_i) = 4 \cdot \left(\frac{1}{4}\right)^{12}$$

$$= \left(\frac{1}{4}\right)^{11}$$

Question 2, 3, 1

solution:

(a)

since a probability of zero is 0.8
so the probability of one is 0.2

so the probability of (00111) is

$$P(00111) = (0.8)^2 \cdot (0.2)^3 = \boxed{0.00512}$$

(b)

$$P(\text{three ones}) = \binom{5}{3} \cdot (0.8)^2 \cdot (0.2)^3$$

$$= \frac{5!}{3!(5-3)!} \cdot (0.8)^2 \cdot (0.2)^3$$

$$= \boxed{0.0512}$$