problem 1.

1) 1. 0.11 2. 0.27 (= 0.11 + 0.16) 3. $\frac{0.11}{0.27}$ 4. $\frac{0.11}{0.32}$

2) dependent (① since $0.11 \neq 0.27 \times 0.32$, which means $P(\text{High B and High C}) \neq P(\text{High B}) \times P(\text{High C})$ this should be hold if they are indep. b/c multiplication rule)

Problem 2.

- Independence

event A & B are indep.

$\Leftrightarrow P(A|B) = P(A)$

or

$P(B|A) = P(B)$.

② Also by definition of indep.

$P(\text{High B} \mid \text{High C}) = P(\text{High B})$ should hold. But,

$\frac{0.16}{0.32} \neq 0.27$ So they are dependent

event A : Ball is a white ball.

A^c : " black ".

B : # of the Ball is 1.

B^c : " is 2.

① Formal solution.

$P(A|B) = P(\text{Ball is white} \mid \text{Ball is 1})$

$= \frac{1}{2}$

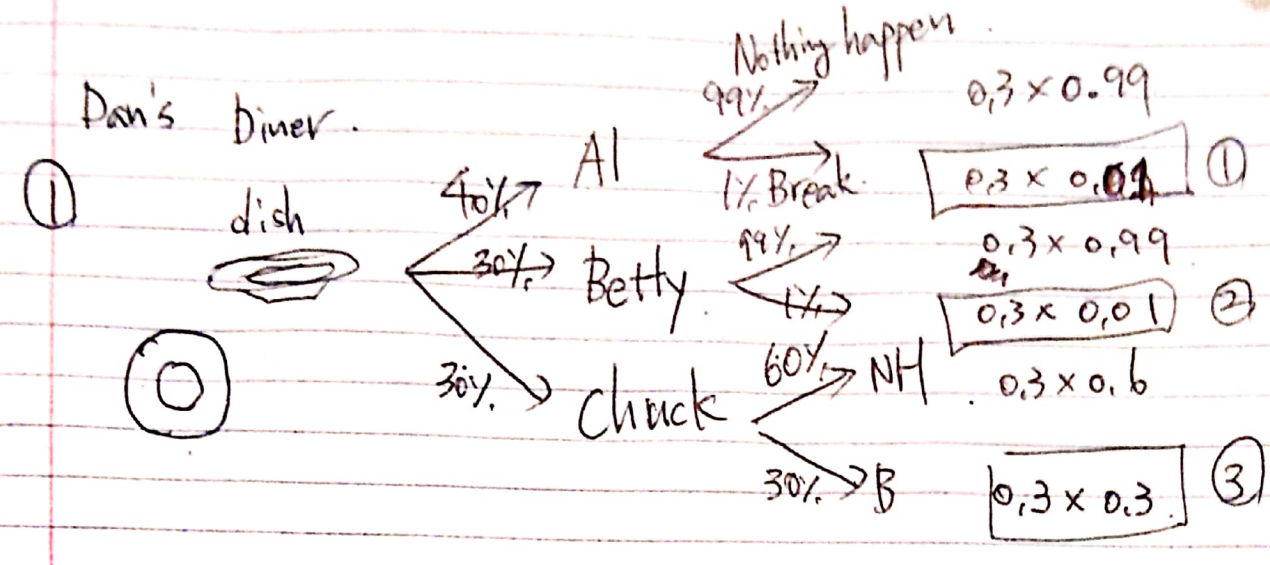
$P(A) = P(\text{Ball is a white ball})$

$= \frac{3}{6} = \frac{1}{2}$

② Intuitively, Proportion of 1 & 2 per each color is the same. So the color factor does not affect to the prob. of getting the specific number.

Problem 3.

Dan's Diner.



$P(\text{Chuck} \,\&\, \text{Break})$

$= P(\text{Chuck})\, P(\text{Break} \mid \text{Chuck})$

$= 0,3 \times 0,3 = 0,09$ → 9%

this means given

② $P(\text{Chuck} \mid \text{Break}) = ?$

$$= \frac{P(\text{Chuck and Break})}{P(\text{Break})}$$

$$= \frac{③\ 0,09}{③\ (0,3 \times 0,3) + ②\ (0,3 \times 0,01) + ①\ (0,3 \times 0,01)}$$

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