

SL 1 PROBABILITY REVIEW #2

NAME _____ HP: _____

ONE: NON CALCULATOR FOUNDATIONAL

The letters of the word PROBABILITY are written on 11 cards as shown below.

P R O B A B I L I T Y

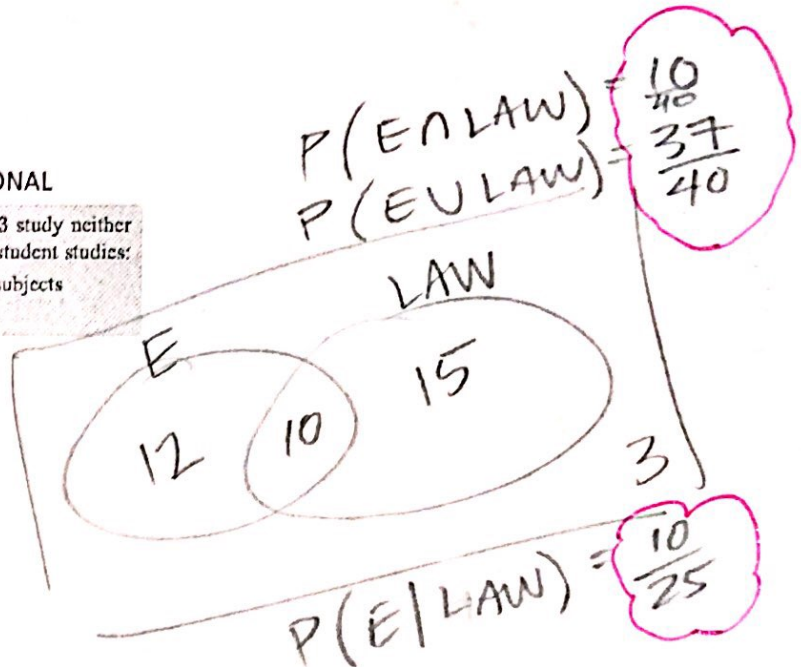
Two cards are drawn at random without replacement.
 Let A be the event the first card drawn is the letter A.
 Let B be the event the second card drawn is the letter B.

- (a) Find $P(A)$. $\frac{1}{11}$
- (b) Find $P(B|A)$. $\frac{2}{10}$
- (c) Find $P(A \cap B)$. $\frac{1}{11} \cdot \frac{2}{10} = \frac{2}{110}$

TWO: NON CALCULATOR FOUNDATIONAL

In a group of 40 students, 22 study Economics, 25 study Law, and 3 study neither of these subjects. Determine the probability that a randomly chosen student studies:

- a both Economics and Law
- b at least one of these subjects
- c Economics given that he or she studies Law.



THREE: NON CALCULATOR MODERATE

The probability that a particular salesman will leave his sunglasses behind in any store is $\frac{1}{5}$. Suppose the salesman visits two stores in succession and leaves his sunglasses behind in one of them. What is the probability that the salesman left his sunglasses in the first store?

Draw a tree that shows this:

- $p(1st\ store) = \frac{1}{5}$
- $p(2nd\ store) = \frac{1}{5} \cdot \frac{4}{5}$
- $P(no\ stores) = \frac{4}{5} \cdot \frac{4}{5}$

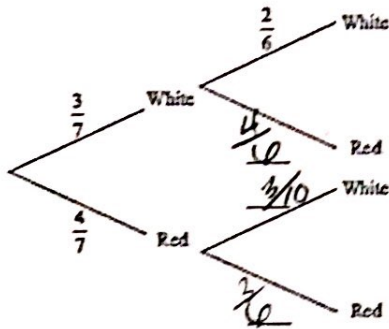
FOUR:

NON CALCULATOR

FOUNDATIONAL (a), MODERATE (b)-(c)

Bag A contains three white balls and four red balls. Two balls are chosen at random without replacement.

(a) (i) complete the following tree diagram.



(ii) Find the probability that two white balls are chosen.

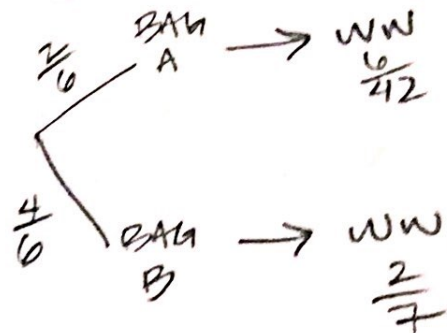
$$P(WW) = \frac{3}{7} \cdot \frac{2}{6} = \frac{6}{42}$$

Bag B contains four white balls and three red balls. When two balls are chosen at random without replacement from bag B, the probability that they are both white is $\frac{2}{7}$.

A standard die is rolled. If 1 or 2 is obtained, two balls are chosen without replacement from bag A, otherwise they are chosen from bag B.

(b) Find the probability that the two balls are white.

(c) Given that both balls are white, find the probability that they were chosen from bag A.



$$P(A | WW) = \frac{\frac{1}{21}}{\frac{5}{21}} = \frac{1}{5} = 20\%$$

$$P(AWW) = \frac{2}{6} \cdot \frac{6}{42} = \frac{1}{21}$$

$$P(BWW) = \frac{4}{6} \cdot \frac{2}{7} = \frac{4}{21}$$

$$\frac{5}{21}$$

FIVE:

WITH CALCULATOR

FOUNDATIONAL (a), MODERATE (b)

A company uses two machines, A and B, to make boxes. Machine A makes 60% of the boxes.

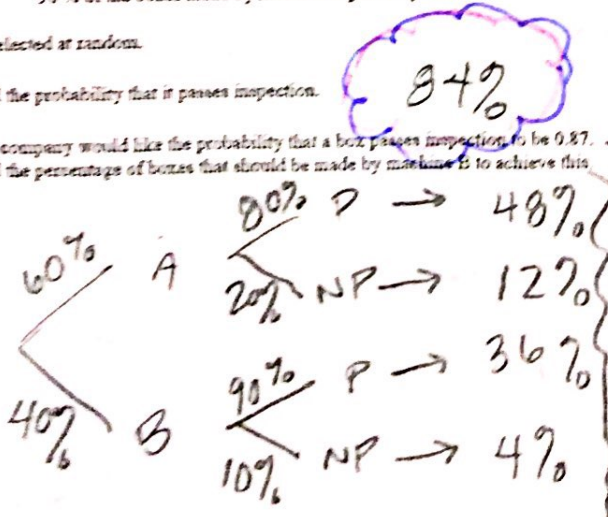
80% of the boxes made by machine A pass inspection.
90% of the boxes made by machine B pass inspection.

A box is selected at random.

(a) Find the probability that it passes inspection.

(b) The company would like the probability that a box passes inspection to be 0.87. Find the percentage of boxes that should be made by machine B to achieve this.

	A	B	
P	48%	36%	Σ 84%
NP	12%	4%	Σ 16%
	Σ 60%	Σ 40%	



$$P(A) \cdot 0.8 + P(B) \cdot 0.9 = 0.87$$

$$0.8 - 0.1P(B) + 0.9P(B) = 0.87$$

$$0.8 + 0.1P(B) = 0.87 \rightarrow P(B) = 70\%$$



<https://goo.gl/lqdi7o>