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Assignment: 2(b)

(1)

total number of colours $k = 5$

Number of marbels ~~n=4~~ Plance on each Pigonhole

$$n = 4$$

the least number of marbles to be chosen which will guarantee the there will be at least 4 marbles of same colour is

$$= k(n)+1$$

$$= 5(4)+1$$

$$= 21$$

(2) total number of Pigonhole grades possible from 0 to 100 $= k = 101$ and $n = 1$

to have at least two students receive same score on the final exam is

$$= kn + 1$$

$$= 101(1)+1$$

$$= 102$$

(3) No of Pigonhole = 5 = k

No of Pigon ~~hole~~ in each Pigonhole = n = 5

maximum numbeea of students ceaOced in discrete maths class to be sure that at least six wiss ceceive the grad is

$= k(n) + 1$

$= (5)5 + 1$

$= 26$

(4)

total elements in Sample space 'S' acell

$A = \{3, 5, 9\}$ and $B = \{3, 5, 7, 11\}$

(i) $P(A) = A/B$

$= 3/11$

(ii) P(odd oa Peime numbea)

= total uniq numbea of A and B / S

$= 5/11$

(iii)

$P(B') = 1 - P(B)$

$= 1 - (4/11)$

$= 7/11$

(5)

given,

In Apple county, 51% adults are male

Percentage of female $= 100 - 51\%$

$= 100 - 51\%$

$= 49\%$

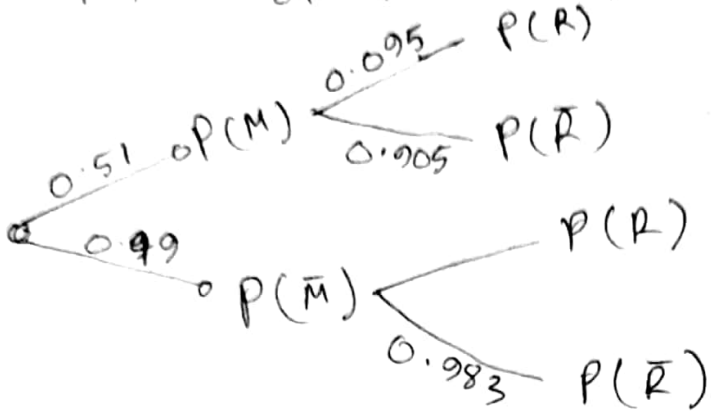
a) Probability of selected Person is female = Percentage of female

$P(\bar{M}) = 49\%$

$P(\bar{M}) = 0.49$

(b) 9.5 % of male from rural area

1.7 % of female from rural area



(i) Probability of getting same one who is from rural area given that person in male

$= P(R|M)$

Using conditional probability

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$P(R|M) = \frac{P(R \cap M)}{P(M)}$$

$P(M) = 0.51$, $P(R) = 0.095$

$$P(R \cap M) = P(M) \times P(R)$$

$$= 0.51 \times 0.095$$

$$= 0.0484$$

$$P(R|M) = \frac{0.0484}{0.51}$$

$$= 0.0949$$

(ii) Probability that selected subject is a male given that he come from rural area is $P(M/R)$

$$P(M/R) = \frac{P(M \cap R)}{P(R)}$$

$$P(M \cap R) = P(M) \times P(R)$$

$$= 0.51 \times 0.095$$

$$= 0.0484$$

$$P(R) = P(M \cap R) + P(\bar{M} \cap R)$$

$$= P(M) \times P(R) + P(\bar{M}) \times P(R)$$

$$= 0.51 \times 0.095 + 0.49 \times 0.017$$

$$= 0.0567$$

$$P(M/R) = \frac{0.0484}{0.0567}$$

$$= 0.8536$$

(iii) if Apple country has 100000 adult Populati

Number of female from urban area is =

total female - Number of female from rural area

total female = 49% of total population

$$= \frac{49}{100} \times 100,000$$

$$= 49000$$

Number of female from rural area = 1.7% of 490

$$= \frac{1.7}{100} \times 49000$$

$$= 833$$

Number of female from urban area

$$= 49000 - 833$$

$$= 48167$$

(6) Let, A = Event of person purchases Latex paint

B = Event of person purchase semigloss

$P(A) = 0.75$, $P(B) = 0.25$

R = customer purchased Roller

P = customer purchased Paint tray

P(R/A) = Probability that person purchased Roller when he already buy the latex Paint.

$P(R/A) = 0.60$

P(P/A) = Probility that person purchased Paint tray when he alerady purchased the Latex Paint.

$P(P/A) = 0.25$

Similarly,

$P(R/B) = 0.3$, $P(P/B) = 0.05$

(I) Probability that person does not purchased roller after he purchased a semigloss Paint means he had purchased paint tray

$P(P|B) = 0.5$

(II) $P(P|A)$ = Probability that a person does not purchased roller after he purchased a latex paint.

means he buyed paint tray of the Latex paint

$= 0.25$

(III) By Bayes theorum

$$P(A|R) = \frac{P(R|A)\,P(A)}{P(R|A)\,P(A) + P(R|B)\,P(B)}$$

$$= \frac{(0.60)(0.75)}{(0.60)(0.75) + (0.3)(0.25)}$$

$$= \frac{0.45}{0.45 + 0.075}$$

$$= \frac{0.45}{0.525}$$

$$= 0.857$$