A

2.4

46. We can find that $P(A|B)$ instead of the probability of the individual being more than 6 ft tall, knowing that the individual is a professional basketball player. And $P(B|A)$ is the probubility of busketball players in the adult males more than 6 ft. $P(A|B)$ will be larger because most of the basketball player is 6 ft or taller. It is a large number rather than $P(B|A)$.

50.

a. $P(M \cap L_s \cap Pr) = 0.05$

b. $P(M \cap Pr) = P(M \cap Pr \cap L_s) + P(M \cap Pr \cap S_s) = 0.05 + 0.07 = 0.12$

c. $P(S_s) = 0.56$, $P(L_s) = 1 - P(S_s) = 0.44$

d. $P(M) = P(M \cap L_s) + P(M \cap S_s) = 0.49$, $P(Pr|M) = \frac{P(M \cap Pr)}{P(M)} = \frac{0.12}{0.49} = \frac{12}{49}$

e. $P(M|S_s) = \frac{P(M \cap S_s)}{P(S_s)} = \frac{0.27}{0.56} = \frac{27}{56}$

f. $P(S_s|M) = \frac{P(M \cap S_s)}{P(M)} = \frac{0.27}{0.49} = \frac{27}{49}$, $P(L_s|M) = \frac{P(M \cap L_s)}{P(M)} = \frac{0.22}{0.49} = \frac{22}{47}$

教师评语
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58.

Since $P(A|C)+P(B|C)-P(A\cap B|C)$

$$= \frac{P(A\cap C)}{P(C)} + \frac{P(B\cap C)}{P(C)} - \frac{P((A\cap B)\cap C)}{P(C)}$$

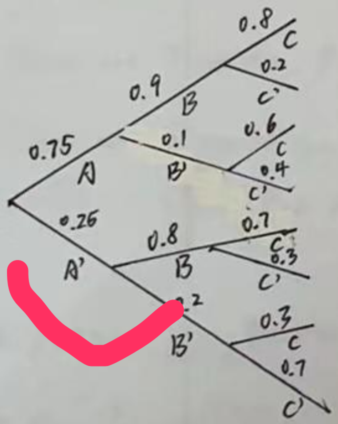
$$= \frac{P(A\cap C)+P(B\cap C)-P((A\cap B)\cap C)}{P(C)}$$

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

$= P(A\cup B|C)$ There for, $P(A\cup B|C)=P(A|C)+P(B|C)-P(A\cap B|C)$

63.

a.



b. $P(A\cap B\cap C)=P(A)\cdot P(B|A)\cdot P(C|A\cap B)$

$=0.75\times0.9\times0.8$

$=0.54$

c. $P(B\cap C)=P(A\cap B\cap C)+P(A'\cap B\cap C)$

$=0.54+0.25\times0.8\times0.7$

$=0.68$

d. $P(C)=P(A\cap B\cap C)+P(A\cap B'\cap C)+P(A'\cap B\cap C)+P(A'\cap B'\cap C)$

$=0.54+0.75\times0.1\times0.6+0.25\times0.8\times0.7+0.25\times0.2\times0.3$

$=0.54+0.045+0.14+0.015$

$=0.74$

e. $P(A|B\cap C)=\frac{P(A\cap B\cap C)}{P(B\cap C)}=\frac{0.54}{0.68}=\frac{27}{34}$

2.5

71.

a. $P(B'\cap A')=P(A')\cdot P(B')=0.28$ for A, B are independent.

b. $P(\text{at least one is successful})=P(A\cap B)+P(A\cap B')+P(A'\cap B)=1-P(A'\cap B')=0.72$

c. $P(A\cap B'|\text{at least one is successful})=\frac{P(A\cap B')}{P(\text{at least one is successful})}=\frac{0.4\times(1-0.7)}{0.72}=\frac{1}{6}$

B+

72.

In exercises 13.

$P(A_1 \cap A_2) = 0.11 \neq P(A_1) \cdot P(A_2) = 0.055$. A_1 and A_2 are not independent

$P(A_1 \cap A_3) = 0.05 \neq P(A_1) \cdot P(A_3) = 0.0616$. A_1 and A_3 are not independent

$P(A_2 \cap A_3) = 0.07 = P(A_2) \cdot P(A_3) = 0.07$ A_2 and A_3 are independent

80.

Since $P(\text{system work}) = 1 - P(\text{system doesn't work})$

$$= 1-(1-0.9)\times(1-0.9)\times(1-0.9\times0.9)$$

$$= 1-0.1\times0.1\times0.19$$

$$= 0.9981$$

84. Suppose the event of ith car pass is A_i, $P(A_i)=0.7$ while A_i' means fail.

a. $P(A_1 \cap A_2 \cap A_3) = P(A_1) \times P(A_2) \times P(A_3) = 0.343$

b. $P(\text{at least one of three carr fails}) = 1 - P(A_1 \cap A_2 \cap A_3) = 0.637$

c. $P(\text{exactly one of the next three inspected passes})$

$= P(A_1 \cap A_2' \cap A_3') + P(A_1' \cap A_2 \cap A_3') + P(A_1' \cap A_2' \cap A_3)$

$= [0.7 \times (1-0.7) \times (1-0.7)] \times 3$

$= 0.189$

d. $P(\text{at most one of the next three vehicles inspected passes})$

$= P(\text{exactly one of the next three inspected passes}) + P(A_1' \cap A_2' \cap A_3')$

$= 0.189 + (1-0.7)^3$

$= 0.216$

e. $P = \dfrac{P(A_1 \cap A_2 \cap A_3)}{P(\text{at least one of the next three vehicles inspected passes})}$

$= \dfrac{0.343}{0.637}$

$= 0.5385$

3.1

4.
$X = \{1, 2, 3, 4\}$. For example, $X=1$ for 100000, $X=4$ for 528300. and $X=2$ for 400010.

5. No. Through a coin until a head, would get an infinite result set, but each time it is only two result.

8.
$Y=3: SSS$ $Y=4: FSSS$ $Y=5: FFSSS, SFSSS$

$Y=6: FFFSSS, FSFSSS, SFFSSS, SSFSSS$

$Y=7: FFFFSSS, SFFFSSS, FSFFSSS, FFSFSSS, SSFFSSS, SFSFSSS,$ FSSFSSS

10.
a. $T = \{0,1,2,3,4,5,6,7,8,9,10\}$

b. $X = \{-6,-5,-4,-3,-2,-1,0,1,2,3,4\}$

c. $U = \{0,1,2,3,4,5,6\}$

d. $Z = \{0,1,2\}$

3.2

12.
a. Since it has 50 seats. $P(y \le 50) = 0.05+0.1+0.12+0.14+0.25+0.17 = 0.83$

b. $P(y > 50) = 0.06+0.05+0.03+0.02+0.01 = 0.17$

c. While you can take the plane, $P(y \le 49) = 0.05+0.1+0.12+0.14+0.25 = 0.66$
while you are third person. $P(y \le 47) = 0.05+0.1+0.12 = 0.27$

23.
a. $P(X=2) = F(3) - F(2) = 0.39 - 0.19 = 0.2$

b. $P(X>3) = 1 - P(X \le 3) = 1 - F(3) = 0.61$

c. $P(2 \le X \le 5) = F(5) - F(1) = 0.78$

d. $P(2 < X < 5) = F(4) - F(2) = 0.48$

25.

$P(0) = P(Y=0) = p$

$P(1) = P(Y=1) = (1-p)p$

$P(2) = P(Y=2) = (1-p)^2 p$

therefor, $P(n) = P(Y=n) = (1-p)^n \cdot p$