Question - 6

(a) ~~P(A)~~ $P(L) = 0.12$.

$P(C) = 0.28$.

$P(L \cap C) = 0.09$.

$$P(C/L) = \frac{P(L \cap C)}{P(L)}$$

$$= \frac{0.09}{0.12}$$

$$= 0.75$$

~~(b)~~

(a) $$P(L|C) = \frac{P(L \cap C)}{P(C)}$$

$$= \frac{0.09}{0.28}$$

$$= 0.32$$

(b) $$P(C|L) = \frac{P(L \cap C)}{P(L)}$$

$$= \frac{0.09}{0.12} = 0.75$$

(c) $1 - P(L \cap C)$

$= 1 - 0.09$

$= 0.91$

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Quest 1 The probability that the ~~given~~ paint purchased is Latex = 0.75

→ ~~Given~~ Purchase of latex paint + roller = 60%

→ ~~Paint~~ P(S) = 1 − 0.75 = 0.25.

→ P Semigloss paint + Roller = 30%.

→ ~~Probability that~~ Given that ~~paint~~ buyer purchases. roller + can of paint.

Roller + can of paint

B

P(B) = Probability of roller + latex + probability of roller + semigloss.

= (0.6)(0.75) + (0.3)(0.25)

= 0.45 + 0.075

= 0.525

P(B) = 0.525

Now probability that the paint will be latex

$$P(L|B) = P(L \cap B)|P(B) = \frac{0.75(0.6)}{0.525} = \frac{0.45}{0.525} = 0.85$$

Question 8

(a) Verify its a valid density function.

$$f(x) = \int_{-\infty}^{\infty} f(x)\,dx = 1.$$

$$= \int_{23.75}^{26.25} x\,dx$$

$$= \int_{23.75}^{26.25} \frac{2}{5}\,dx$$

$$= \frac{2}{5}\left[x\right]_{23.75}^{26.25}$$

$$= \frac{2}{5}\left(26.25 - 23.75\right)$$

$$= 1$$

(b) $F(x) = \int_{23.75}^{24} x\,dx$

$= \frac{2}{5}[24 - 23.75]$

$= \frac{2}{5}[0.25]$

$= 0.1$

(c) $f(x) = \int_{26}^{26.25} x\,dx$

$= \int_{26}^{26.25} \frac{2}{5}\,dx$

$= \frac{2}{5}[26.25 - 26]$

$= \frac{2}{5}[0.7 0.25]$

$= 0.1$