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Quiz 3Question 1

$$P(\text{First}) = 0.75$$

$$P(\text{Second}) = 0.8$$

$$P(\text{Second} | \text{First}) = 0.85$$

1.5

$$P(\text{First and Second}) = P(\text{Second} | \text{First}) \times P(\text{First})$$

$$= 0.85 \times 0.75$$

$$= 0.6375$$

~~P(Second)~~

$$P(\text{First} | \text{Second}) = \frac{P(\text{Second and first})}{P(\text{Second})}$$

$$= \frac{0.6375}{0.8}$$

$$= 0.7969$$

$$= 0.7969 \#$$

2.5

Question 2

$$P(1) = \frac{80}{240} = \frac{1}{3}$$

$$P(2) = \frac{40}{240} = \frac{1}{6}$$

$$P(3) = \frac{120}{240} = 0.5$$

①

a)  $P(D) = 0.02 + 0.05 + 0.03$   
 $= 0.1$

b)  $P(1|D)$

$$P(D) = P(D|1)P(1) + P(D|2)P(2) + P(D|3)P(3)$$

$$= (0.02 \times \frac{1}{3}) + (0.05 \times \frac{1}{6}) + (0.03 \times 0.5)$$

$$= \frac{1}{150} + \frac{1}{120} + 0.015$$

$$= 0.03$$

③

b)  $P(1|D) = \frac{P(D|1)P(1)}{P(D)}$

$$= \frac{0.02 \times \frac{1}{3}}{0.03}$$

$$= \frac{2}{9}$$

$$= 0.2222$$

②