Q2. There are three major manufacturing companies that make a product: Manufacturers A, B, and C. Manufacture A has a 50% market share, and Manufacture B has a 30% market share. 5% of A's products are defective, 6% of B's products are defective, and 8% of C's products are defective.

a) What is the probability that a randomly selected product is defective? P(Defective)?

b) What is the probability that a randomly selected product is defective and that it came from A? P(A and Defective)?

c) What is the probability that a defective product came from B? P(B/Defective)?

d) Are these events (being defective and coming from B) independent? Why?

Answer-

	Good	Defective
A	0.50-0.025=0.475	0.05(0.50)=0.025
B	0.30-0.018=0.282	0.06(0.30)=0.018
C	0.20-0.016=0.184	0.08(0.20)=0.016
Total		0.059=5.9%

A.
P(Defective)=0.059 or 5.9% (Calculated in table)

B.
P(A and Defective) = 0.025=2.5%(from the table)

C.
P(B/Defective) = 0.018/0.059=0.305=30.5%

D.
No.
If they were,
P(B|D) = 0.305 would have to be equal to the P(B)=0.30 but it doesn't
Hence, the given events are not independent