1. C(12,4) \* C(8,4) \* C(4,4) = 34650

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1. 3\*2\*1 =6

{abc}

/ | \

a. b. c

/\. /\. /\

b c. a c. a b

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1. C(12,2) =66

P(A) = (4/12)\*(3/11) = 0.1091

1. P(B) = (8/12) \* (7/11) = 0.4242
2. P(at least one item is defective) = 1 - P(B)

= 1-0.4242=0.5758

1. (i) P(none defective) = P(first is non-defective) \* P(second is non-defective given that first was non-defective) \* P(third is non-defective given that first two were non-defective)

P(first is non-defective) = 10/15

P(second is non-defective given that first was non-defective) = 9/14

P(third is non-defective given that first two were non-defective) = 8/13

Therefore,

P(none defective) = (10/15) \* (9/14) \* (8/13) ≈ 0.3275

(ii) P(exactly one defective) = P(first is defective and second two are non-defective)

+ P(second is defective and other two are non-defective)

+ P(third is defective and other two are non-defective)

P(first is defective and second two are non-defective) = (5/15) \* (10/14) \* (9/13)

P(second is defective and other two are non-defective) = (10/15) \* (5/14) \* (9/13)

P(third is defective and other two are non-defective) = (10/15) \* (9/14) \* (5/13)

Therefore,

P(exactly one defective) = (5/15) \* (10/14) \* (9/13) + (10/15) \* (5/14) \* (9/13) + (10/15) \* (9/14) \* (5/13) ≈ 0.5294

1. P(at least one defective) = 1 - P(none defective) ≈ 1 - 0.3275 = 0.6725
2. P(boy or from Mansoura) = P(boy) + P(from Mansoura) - P(boy and from Mansoura)

the total number of people from Mansoura is 5 + 10 = 15.

P(from Mansoura) = 30/30 = 1

P(boy and from Mansoura) = 5/30 = 1/6

P(boy or from Mansoura) = 1/3 + 1 - 1/6 = 5/6 (i) P(Ac ) =1-(3/8) =(5/8)

1. (6)
2. P(BC) = 1-(1/2) =(1/2)
3. P(A union B) = P(A) + P(B) - P(A intersection B).

P(A union B) = 3/8 + 1/2 - 1/2 = 7/8. Therefore, P(AC intersection BC) = 1 - P(AunionB) = 1 - 7/8 = 1/8.

1. we can write P(AC union BC) as 1 - P(A union B) = 1 - (P(A) + P(B) - P(A intersection B)) = 1 - (3/8 + 1/2 - 1/2) = 5/8.
2. P(A intersection BC) = P(A) - P(A intersection B) = 3/8 - 1/2 = -1/8. However, since probabilities cannot be negative, we conclude that P(A intersection BC )= 0.
3. P(B intersection AC) = P(B) - P(A intersection B) = 1/2 - 1/2 = 0.

(7)=0

(8) The sum of all probabilities in a probability distribution is always equal to 1. That is:

Σ P(x) = 1

So we can rewrite the given equation as:

1 = k^2 - 8

Adding 8 to both sides, we get:

k^2 = 9

Taking the square root of both sides, we get:

k = ±3

Since k must be a positive number in this case (since it represents a probability), the value of k is:

k = 3

(9) A′ ∩ B′ = 1 - (A + B)

A′ ∩ B′ = 1 - (0.35 + 0.45) = 1 - 0.8 = 0.2

Therefore, P(A′ ∩ B′) is 0.2.