#3.33

a.

N=6 n=2

6! /2! (6-2)!

6 x 5 / 2 = 15

Drug 1 & Drug 2

Drug 1 & Drug 3

Drug 1 & Drug 4

Drug 1 & Drug 5

Drug 1 & Drug 6

Drug 2 & Drug 3

Drug 2 & Drug 4

Drug 2 & Drug 5

Drug 2 & Drug 6

Drug 3 & Drug 4

Drug 3 & Drug 5

Drug 3 & Drug 6

Drug 4 & Drug 5

Drug 4 & Drug 6

Drug 5 & Drug 6

b.

N=6 n=3

6! / 3! (6-3)! = 6!/3! 3! = 6 x 5 x 4 / 6 X 6 = 20

c.

N=6 n=4

6! / 4! (6-4)! = 15

d.

N=6 n=5

6! / 5! (6-5)! = 6

e.

There are only 57 drug combinations.

#3.44

Total = 6 \* 6 = 36

6/36

1,6

2,5

3,4

4,3

5,2

6,1

4 (1..6) + (1..6) 4 – (4 4) = 11

P(A) = 6/36

P(B) = 11/36

P(A ∩ B) = 2/36

P(A ∪ B) = 6 + 11 – 2 / 36 = 15/36

P(Ac) = 30/36

1. Sample points for A

1,6

2,5

3,4

4,3

5,2

6,1

Sample points for B

4,1

4,2

4,3

4,5

4,6

1,4

2,4

3,4

5,4

6,4

4,4

Sample points for A ∩ B

3,4

4,3

Sample points for A ∪ B

4,1

4,2

4,5

4,6

1,4

2,4

5,4

6,4

4,4

1,6

2,5

3,4

4,3

5,2

6,1

Sample points for Ac

1,1

1,2

1,3

1,4

1,5

2,1

2,2

2,3

2,4

2,6

3,1

3,2

3,3

3,5

3,6

4,1

4,2

4,4

4,5

5,6

5,1

5,3

5,4

5,5

5,6

6,2

6,3

6,4

6,5

6,6

P(A) = 6/36

P(B) = 11/36

P(A ∩ B) = 2/36

P(A ∪ B) = 6 + 11 – 2 / 36 = 15/36

P(Ac) = 30/36

1. P(A ∪ B) = P(A) + P(B) - P(A ∩ B) = 6 + 11 – 2 = 15/35 The answer match
2. No because P(A ∩ B) = 0 when A and B are mutually exclusive. For this case, P(A ∩ B) = 2/36.

#3.54

1. non-REM,non-REM

non-REM, REM

non-REM,Wake

Wake,non-REM

Wake, REM

Wake,Wake

REM,non-REM

REM, REM

REM,Wake

|  |  |  |  |
| --- | --- | --- | --- |
|  | Non-REM | REM | Wake |
| Non-REM | 0.638519468 | 0.003204615 | 0.034709982 |
| REM | 0.006929979 | 0.152399455 | 0.003505047 |
| Wake | 0.0318058 | 0.007170325 | 0.121755328 |

1. 346 + 7609 + 175 = 8130 / 49928 = 0.163
2. 1733 + 175 + 6079 = 7987 / 49928 =0.160
3. 160 / 7987 = 0.003

#3.59

1. P(A) = 1465 / 2143 = 0.684
2. P(B) = 265 / 2143 = 0.124
3. No
4. P(Ac) = 678 / 2143 = 0.316
5. P(A ∪ B) = 1465 + 265 – 194 = 1536 / 2143 = .717
6. P(A ∩ B) = 194 / 2143 = 0.091

# 3.61

1. P(all orders) = 0.19
2. P(kairomone) = .025 + .19 + .165 + .025 = 0.405
3. P(Mups A ∪ Mups B) = .275 + .21 + .11 = .595