4/3/19 AMS 131 Section Laura Baraccaldo

Quiz due Next Tuesday at Midnight

Quiz 1a is meaningless

Ch 1 Exercises pg. 15

8) $A_* = \{$ Blood types reacting with Anti-A $\}$

$B_* = \{$ Blood types reacting with Anti-B $\}$

$A_* = \{A, AB\}$ $B_* = \{B, AB\}$

$S = \{A, B, AB, O\}$ $P(S) = 1$

$A_*^c = S - A_* = \{B, O\}$ $B_*^c = S - B_* = \{A, O\}$

$\{A\} = A_* \cap B_*^c = A$ $\{B\} = B_* \cap A_*^c = B$

$\{AB\} = A_* \cap B_* = AB$ $\{O\} = A_*^c \cap B_*^c = O$

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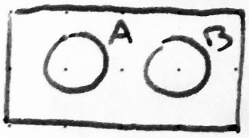
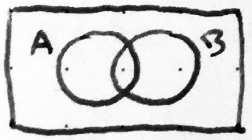
14a) $P(A) = 0.34$ $P(O) = 0.5$ $P(B) = 0.12$

$P(A^*) = P(A \text{ or } AB)$



$P(A \text{ or } B) = P(A) + P(B)$
Addition rule for mutually exclusive sets



$P(A \text{ or } B) = P(A) + P(B) - P(A \cap B)$
General addition rule for OR

$P(A \text{ or } AB) = P(A) + P(AB) \rightarrow$ A and AB are mutually exc

$P(AB) = 1 - 0.34 - 0.5 - 0.12 = 0.04$

$P(A) + P(AB) = 0.34 + 0.04 = 0.38$

$P(B_*) = P(B \text{ or } AB) = P(B) + P(AB)$

$= 0.12 + 0.04 = 0.16$

b) $P(AB) = 0.04$

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1) Fair: all #s are equally likely and independent

$P(\text{"sum of the \#s facing up will be odd"}) = P(*)$

	odd	even
odd	even	odd
even	odd	even

$P(*) = \frac{2}{4} = \frac{1}{2}$

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

← 1st die

↑ 2nd die

36 possible outcomes

18 possible outcomes to have an odd sum

$P(*) = \frac{18}{36} = \frac{1}{2}$

2) $P(\text{"sum is even"}) = 1 - P(\text{sum is odd}) = 1 - \frac{1}{2} = \frac{1}{2}$

3) $P(\text{"diff btwn two \#s is less than 3}$)

x_1: # of 1st die x_2: # of 2nd die

$P(|x_1 - x_2| < 3)$

	1	2	3	4	5	6
1	0	1	2	3	4	5
2	1	0	1	2	3	4
3	2	1	0	1	2	3
4	3	2	1	0	1	2
5	4	3	2	1	0	1
6	5	4	3	2	1	0

$36 - 2(6) = 36 - 12$

$P(C) = 1 - \frac{12}{36} = \frac{2}{3}$

12 #s greater or equal to 3

6) P(all 3 faces are the same with 3 fair coins)

Total possibilities = $2 \times 2 \times 2 = 8$
(H or T, H or T, H or T)

$S = \{$ (HHH), HHT, HTH, HTT, (TTT), THH, THT, TTH $\}$

P("all three faces are the same") = P(TTT, HHH) = $\frac{2}{8} = \frac{1}{4}$

P("all are tails") = $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$ Multiplication Rule for independent events

P(all are heads) = $\frac{1}{8}$

P(all faces are the same) = P(all are tails or all are heads)

$= \frac{1}{8} + \frac{1}{8} = \frac{2}{8} = \frac{1}{4}$