

Stat 330

Homework 1

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January 17, 2020

1)

$$(a) \Omega = \{\text{T T T}, \text{T T H}, \text{T H T}, \text{T H H}, \\ \text{H T T}, \text{H T H}, \text{H H T}, \text{H H H}\}$$

$$(b) A = \{\text{T T H}, \text{T H T}, \text{H T T}\} \\ B = \{\text{T T H}, \text{T H T}, \text{H T T}, \text{T T T}\} \\ C = \{\text{T H H}, \text{H H H}\}$$

$$(c) \overline{A} = \{\text{T T T}, \text{T H H}, \text{H T H}, \text{H H T}, \text{H H H}\} \\ A \cup B = \{\text{T T H}, \text{T H T}, \text{H T T}, \text{T T T}\} \\ A \cap B = \{\text{T T H}, \text{T H T}, \text{H T T}\} \\ A \cap C = \{\}$$

2)

$$A = \{1, 3, 5\} \\ B = \{1, 5, 10\} \\ \overline{A} = \{2, 4, 6, 7, 8, 9, 10\} \\ \overline{B} = \{2, 3, 4, 6, 7, 8, 9\}$$

$$(b) A \cap B = \{1, 5\} \\ \overline{A \cap B} = \{2, 3, 4, 6, 7, 8, 9, 10\} \\ \overline{A \cup B} = \{2, 3, 4, 6, 7, 8, 10\}$$

$$(b) A \cup B = \{1, 3, 5, 10\} \\ \overline{A \cup B} = \{2, 4, 6, 7, 8, 9\} \\ \overline{A \cap B} = \{2, 4, 6, 7, 8, 9\}$$

3)

Total probability sums to 1.0, \therefore

$$1k + 2k + 3k + 4k + 5k + 6k = 21k = 1.0$$

$$k = 1.0 / 21 = 0.0476 \Rightarrow$$

$$[1] = 1 \cdot 0.0476 = 0.0476$$

$$[2] = 2 \cdot 0.0476 = 0.0952$$

$$[3] = 3 \cdot 0.0476 = 0.1429$$

$$[4] = 4 \cdot 0.0476 = 0.1905$$

$$[5] = 5 \cdot 0.0476 = 0.2381$$

$$[6] = 6 \cdot 0.0476 = 0.2857$$

4)
