CS 406 Discrete Mathematics 2

Exercises - Probability 2

1 . You flip a nickel (5 cents coin) and roll a six-sided die.

Points are assigned as follows. The nickel showing heads is worth 1 point and the nickel showing tails is worth 5 points. The points for the die correspond simply to the number on its upper surface. Each outcome is equally likely and we define the following events.

A: The sum of points is greater than 7. B: The sum of points is even.

(a) Define the sample space in set notation.

(b) Write down A and $p(A)$.

(c) Write down B and $p(B)$.

(d) Write down $A \cap B$ and $p(A \cap B)$.

(e) Write down $A \cup B$ and $p(A \cup B)$.

(f) Write down $p(A)$ in terms of $p(\bar{A})$.

(g) How are $p(A)$, $p(B)$, $p(A \cap B)$, and $p(A \cup B)$ related (equation)?

(h) Are A and B mutually exclusive?

(i) Write down $p(A|B)$.

(j) Are A and B independent?

(k) Write down $p(B|A)$.

(l) Write down $p(A \cap B)$ in terms of $p(A)$ and $p(B)$.