Quiz #1 (practice)

Problem 1. Which of the following is a de Morgan’s Law?

a) \( A \cap (B \cup C) = (A \cup B) \cap (A \cap C) \).

b) \( A \cup B = \overline{A} \cup \overline{B} \).

c) \( A \cup B = \overline{A} \cap \overline{B} \).

d) \( A \cap \overline{A} = \emptyset \).

Problem 2. Which one is a definition of an event?

a) Event is any element of a sample space.

b) Event is a one-element subset of a sample space.

c) Event is any subset of a sample space.

d) None of the above.

Problem 3. Of 25 people in a room, 15 can read and 18 can write and 5 are illiterate (can neither read nor write). How many people can both read and write?

Problem 4. Which of the following statements are NOT axioms of probability? More than one answer may be applicable, and wrong answers cancel correct ones.

a) \( P(\emptyset) = 0 \).

b) \( P(A \cup B) = P(A) + P(B) \).

c) For any \( A \subseteq S \) we have \( P(A) \geq 0 \).

d) \( P(S) = 1 \).

Problem 5. A bag contains 10 marbles of different colors. How many possible color combinations can we theoretically obtain by picking 3 marbles at random?

a) \( 3! \)

b) \( 4! \)

c) \( 5! \)

d) \( 6! \)

Problem 6. A combination lock has 40 positions marked by numbers 0–39. It is known that the lock combination consists of 3 distinct numbers, which must be entered in one particular order. What is the probability that upon entering 3 randomly selected distinct numbers from 1 up to 20, the lock will open?