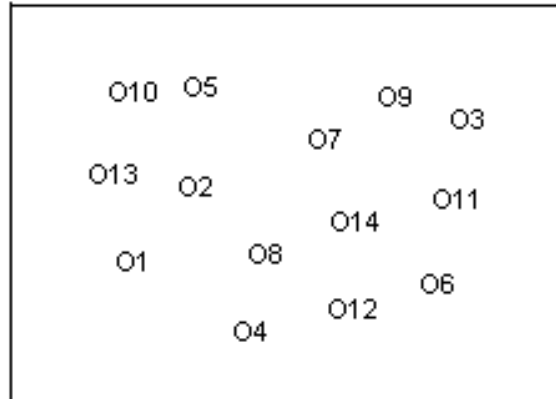


Answers

The Venn diagram represents a sample space with fourteen basic outcomes. Consider the experiment as one of selecting an outcome from the sample space.



Event A = {Female} = {O₁₀, O₅, O₁₃, O₂, O₁, O₄, O₈}

Event B = {Left handed} = {O₄, O₈, O₁₂, O₁₄}

- A. What are the basic outcomes that make up Event $\bar{A}$ {non-female}?
- B. Identify the basic outcomes that make up the union of events: $A \cup B$.
- C. Identify the basic outcomes that make up the intersection of the two events: $A \cap B$.
- D. Use the equally likely approach to calculate the probability of the union: $P(A \cup B)$. Interpret. (Use the equally likely approach for all subsequent probabilities).
- E. Calculate the probability of A intersect B: $P(A \cap B)$. Interpret.
- F. Calculate and interpret the following probabilities:
 - a. $P(A)$
 - b. $P(B)$
- G. Explain why $P(A \cup B)$ cannot be calculated as the sum of the individual probabilities, $P(A)$ and $P(B)$.
- H. Confirm that the probability of the union can be calculated as $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.
- I. Calculate the probability of selecting a non-female (event $\bar{A}$).
- J. Calculate $P(A \cap \bar{A})$. Explain why it is the null set.
- K. Calculate $P(A \cup \bar{A})$. What allows you to simply sum the probabilities $P(A)$ and $P(\bar{A})$ to find the answer?