

Consider a family with a mother, father, and two children. Define the following events.

- A_1 : the event that the mother has influenza
- A_2 : the event that the father has influenza
- A_3 : the event that the first child has influenza
- A_4 : the event that the second child has influenza
- B : the event that at least one child has influenza
- C : the event that at least one person in the family has influenza

1. What does $A_1 \cup A_2$ mean?
2. What does $A_1 \cap A_2$ mean?
3. Are A_3 and A_4 mutually exclusive?
4. What does $A_3 \cup B$ mean?
5. What does $A_3 \cap B$ mean?
6. What does $\overline{A_1}$ mean?
7. What does \overline{C} mean?
8. What does $A_1 \cup A_2 \cup A_3 \cup A_4$ mean?
9. What does $\overline{A_1 \cup A_2}$ mean?