

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Suppose that $A = \{1, 3, 5, 7, 9\}$, $B = \{1, 3, 7\}$, and $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. List the elements of the indicated set.

1) $A \cup B$

2) $A \cap B'$

3) $U \cup A'$

4) $A \cup A'$

Let $U = \{1, 3, 5, 7, 9, 11\}$, $A = \{1, 5, 9, 11\}$, $B = \{3, 5, 7\}$, and $C = \{1, 3, 11\}$. List the elements of the indicated set.

5) $A \cap B$

6) $U \cap B$

7) $A \cap (B \cup C)'$

8) $A' \cup B \cup C$

Let $U = \{\text{all people}\}$, $A = \{\text{all American citizens}\}$, $B = \{\text{people who do not live in their country of citizenship}\}$, $C = \{\text{German citizens}\}$, and $D = \{\text{all people living in the United States}\}$. Describe the indicated set using set-theoretic notation.

9) $\{\text{German citizens living in the United States}\}$

10) $\{\text{American citizens living abroad}\}$

11) $\{\text{Those people who are non-American or do not live in their country of citizenship}\}$

12) $\{\text{Those people with dual American-German citizenship}\}$

Let $U = \{\text{all voters}\}$, $A = \{\text{those who voted in the last election}\}$, $B = \{\text{those who voted Democrat in the last election}\}$, and $C = \{\text{voters under 30 years of age}\}$. Describe the indicated set.

13) $A \cap C$

14) $B \cap C'$

15) $A' \cup C$

Simplify the expression.

16) $U \cap S \cap S'$

17) $U \cup \emptyset$

Solve the problem.

18) List all the subsets of $\{+, -, \times, \div\}$.

19) List all the subsets of $\{1, 2, 3, 4\}$ which do not include 3.