THE USE OF VENN DIAGRAMS

Name ________________________________

1. Let \( A = \{b, c, f, t, w\} \) and \( B = \{a, c, n, o, t, v\} \). Given the two sets and their elements, use the Venn diagram below and place each letter that belongs in set \( A \), the letters that belong to set \( B \), and in the overlapping region, place the letters that are in both \( A \) and \( B \).

![Venn Diagram](image)

With your Venn diagram complete, find the elements in each set (use proper notation):

(a) \( A \cup B = \) __________________________
(b) \( A \cap B = \) __________________________
(c) \( A' \cap B = \) __________________________

2. Let \( A = \text{Prime Numbers}, \ B = \text{Even Whole Numbers}, \) and \( C = \text{Multiples of 3} \). Given the three sets, use the Venn diagram below and place the numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10) in their proper region (set).

![Venn Diagram](image)

With your Venn diagram complete, find the elements in each set (use proper notation):

(a) \( A \cap C = \) __________________________
(b) \((A \cap B) \cup C = \) __________________________
(c) \((B \cup C)' \cap A = \) __________________________
(d) \( C' \cup (B \cup A) = \) __________________________
3. Given the attribute pieces below, place each piece in its proper region (set).

With your Venn diagram completed, draw the elements in each set (use proper notation):

(a) \( S' \cap T' = \) ________________

(b) \( (S' \cap L) \cup T = \) ________________

(c) \( (T \cap L)' \cap B = \) ________________
4. Take you time and really think about this one before you raise your hand. Of 75 cars that were inspected, 12 needed brake repair and 18 needed exhaust system repair. If the brakes or exhaust systems on 50 of the cars did not need repair, how many cars needed both brake and exhaust system repairs? Use the Venn diagram below to help answer the question.

Answer: There were ____________ cars that needed both brake and exhaust system repairs.