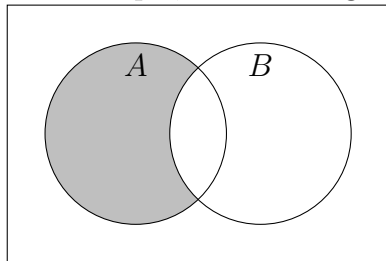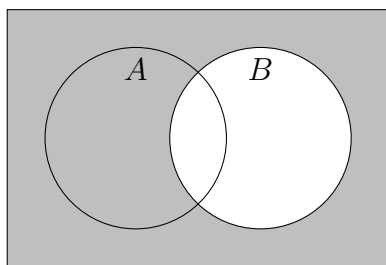1. For each Venn diagram, write an expression representing the shaded area.
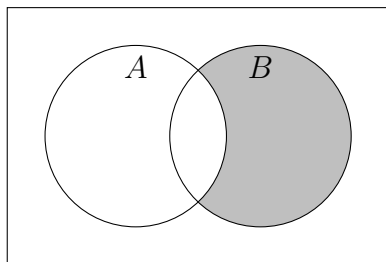
   (a) For example, for this diagram

   Expression: $A \cap B'$

   (b)   Expression:

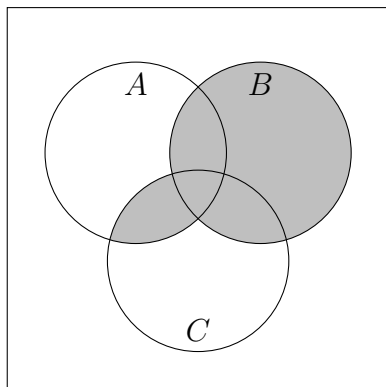   (c)   Expression:

   (d)   Expression:

2. Given:
$U = \{\text{the letters in the alphabet}\}$
$A = \{a, b, c, d, e, f, g, h, i, j\}$ $\qquad$ $B = \{h, i, j, k, l, m, n, o, p, q\}$

   (a) What is $A \cap B$?

   (b) What is $(A \cup B)'$?

3. A survey question has three possible responses, A, B, and C. Among 100 surveys, the frequency of the answers collected were as follows: $n(A) = 10$, $n(B) = 35$, and $n(C) = 55$.

   (a) If a survey is selected at random, what this the probability the response was B or C?

   (b) What is the probability a survey selected at random was an answer other than B or C?

4. The events A and B are independent with $P(A) = 0.3$ and $P(B) = 0.2$.

   (a) What is $P(A \cap B)$?

   (b) What is $P(A \cup B)$?

5. The events A and B are mutually exclusive with $P(A) = 0.4$ and $P(B) = 0.3$.

   (a) What is $P(A \cap B)$?

   (b) What is $P(A' \cup B)$?