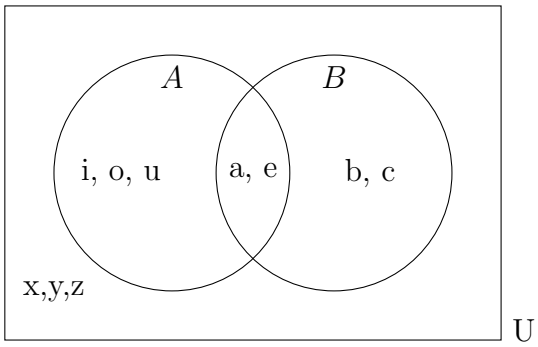
1. The universal set U and two sets A and B are represented by the Venn diagram below.



   (a) List the elements of set A

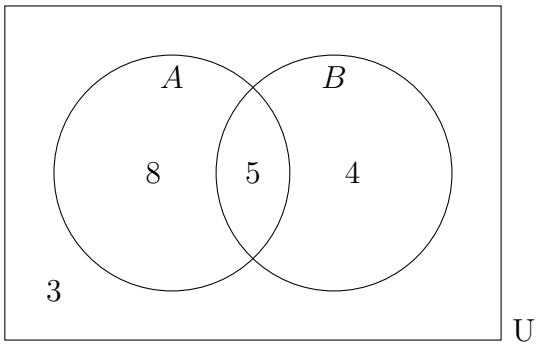
   (b) List the members of B

   (c) List $A \cap B$

   (d) List $A' \cap B$

   (e) List items in neither set A nor set B, $(A \cup B)'$

2. Among twenty students at a school, the number taking Algebra and Botany are represented by the Venn diagram below.



   (a) How many take Algebra, $n(A)$?

   (b) How many take Botany, $n(B)$?

   (c) How many take both $n(A \cap B)$?

   (d) How many take Algebra but not Botany $n(A \cap B')$?

3. Are A and B independent, given $\mathrm{P}(A) = 0.8$, $\mathrm{P}(B) = 0.5$, and $\mathrm{P}(A \cap B) = 0.4$?

   Justify your answer with an equality or inequality.

4. Given the two lines $k : y = -\frac{3}{4}x - 1$ and $l : x - y = -6$, graphed below. $\triangle ABC$ is shown with $\overline{AC}$ on line l and $\overline{BC}$ on line k.

   (a) Is $k \perp l$? Justify your answer.

   (b) Find the length AC.

   (c) Find the length BC.