

Venn Diagrams

Pupil Sheet A (Level 6/7)

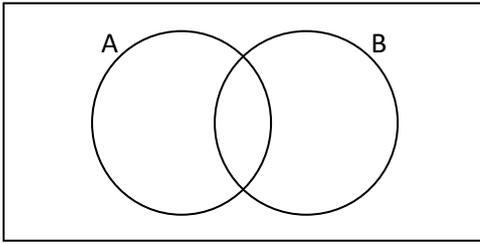
\cap - Intersection, this is where both **sets overlap**.

\cup - Union, this is where you **put the two sets together**.

Hint: For this activity use two different types of shades to help.

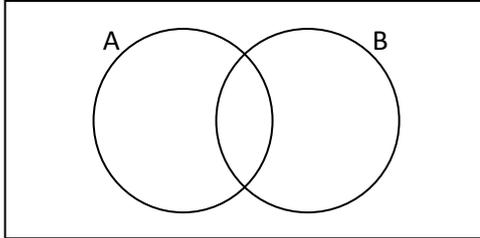
Shade in the region for:

$$A \cap B$$



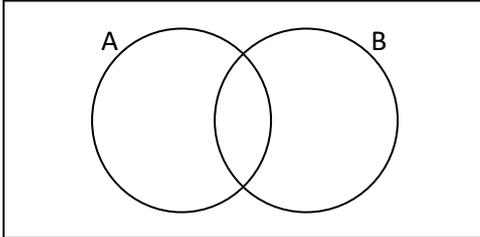
Shade in the region for:

$$A \cup B$$



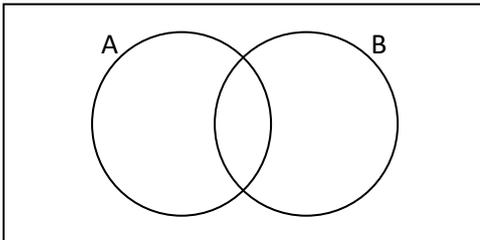
Shade in the region for:

$$A' \cap B'$$



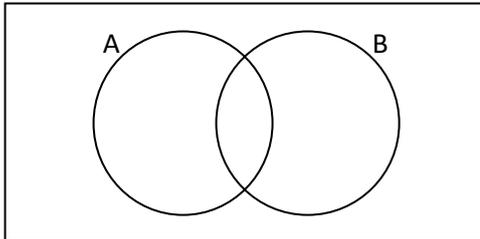
Shade in the region for:

$$A' \cap B$$



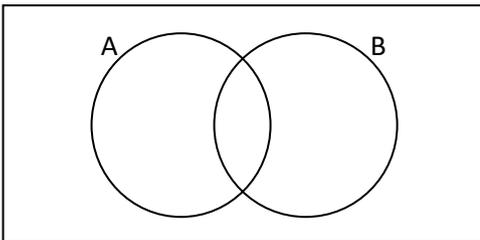
Shade in the region for:

$$A \cap B'$$



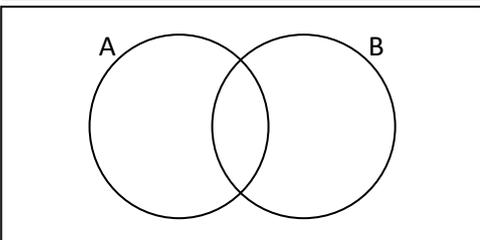
Shade in the region for:

$$A' \cup B$$



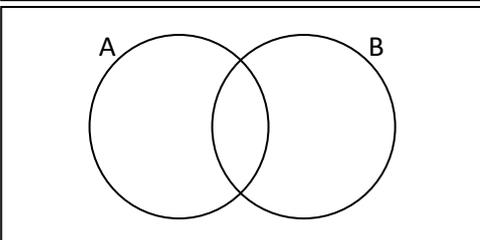
Shade in the region for:

$$A \cup B'$$



Shade in the region for:

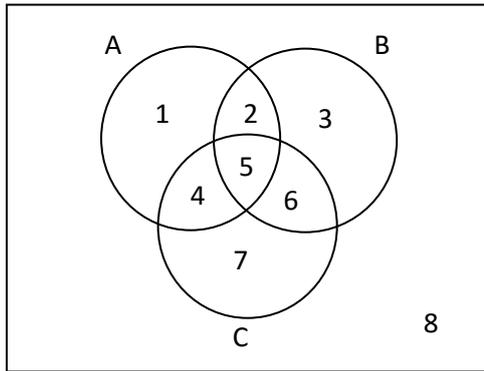
$$A' \cup B'$$



Extension: Rich Task (Level 8)

The image shows a Venn diagram for three sets A , B and C .

How would you describe each of the eight regions in the diagram using unions \cup and \cap or intersections \cap of A , B , C , A' , B' and C' .



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Extension 2: Rich Task (Level EP)

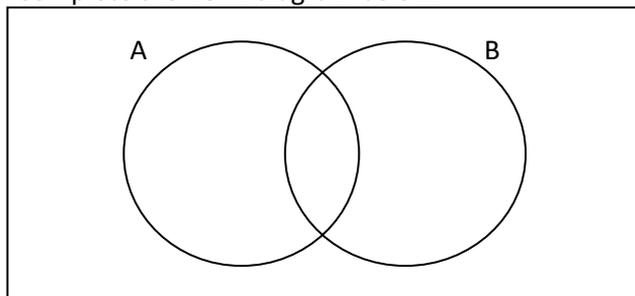


Create a Venn diagram for 4 sets A , B , C and D . Make sure that your diagram contains regions for all possible intersections and you might like to experiment to create a particularly pleasing diagram.

Probability with Venn Diagrams (Level 7)

Mrs Smith has a class of 30 pupils. In that class 18 pupils are boys, 8 pupils have blonde hair and of those 8 pupils 5 of them are girls. **A – {Boys}** and **B – {Blondes}**

1. Complete the Venn diagram below.



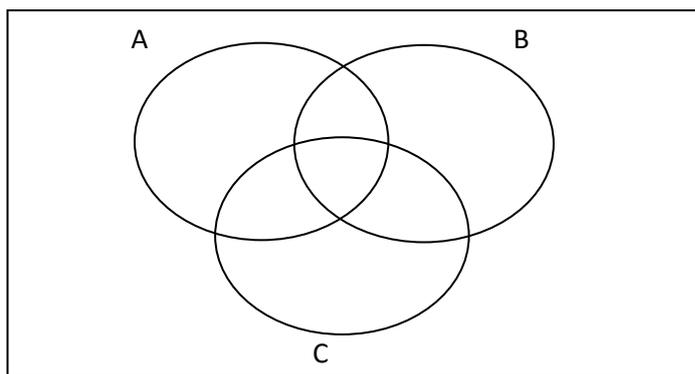
For this next section use the sheet from the start of the lesson to help you.

2. Work out $p(A)$
3. Work out $p(A \cap B)$
4. Work out $p(A \cup B)$
5. Work out $p(A' \cap B)$
6. Work out $p(A \cup B')$
7. Work out $p(A' \cup B')$

Extension: (Level 8)

Mr Smith has a class of 26 pupils. In that class he has 14 girls, 15 pupils have brown hair and of those 15 pupils 8 of them are girls. 6 girls wear glasses and of those 6, 2 of them have brown hair. 12 pupils in the class wear glasses and of those 12 pupils 6 have brown hair. **A – {Girls}**, **B – {Brown hair}** and **C – {Wears glasses}**

1. Complete the Venn diagram below



For this next section use the sheet from the start of the lesson to help you.

2. Work out $p(A \cap B \cap C)$
3. Work out $p(A \cup B \cup C)$
4. Work out $p(A \cap B \cap C')$
5. Work out $p(A' \cap B' \cap C)$

Algebra Extension (Level EP):

A survey of 156 visitors to the Caribbean found that:

118 persons visited Barbados

98 persons visited Antigua

110 persons visited Tobago

25 persons visited Barbados and Antigua.

35 persons visited Barbados and Tobago.

30 persons visited Tobago and Antigua.

x visitors visited all three countries.

Every visitor visited at least one of the three islands.

1. Draw a carefully labelled Venn diagram to represent the information above.
2. Write an algebraic expression in x to represent the number of travellers who visited Barbados only.
3. Write an equation in x to show the total number of visitors in the survey.
4. Calculate the number of travellers who visited all three countries.

