3.

Representations of data

VENN DIAGRAM

KEY POINTS:

- INTERSECTION
- UNION
- COMPLEMENT
- MUTUALLY EXCLUSIVE EVENTS
- INDEPENDENT EVENTS

** YOU WILL SEE THIS AGAIN IN C. 5

DEFINITION:

- **Intersection of A and B =** The event of A and B
- **Union of A and B =** The event A or B
- **Complement of A =** The event not A
- **Mutually exclusive events** = when events have no outcomes in common, the curves do not intersect,
  P(A or B) = P(A) + P(B)
- **Independent events** = when one event has on effect on another,
  P(A and B) = P(A) x P(B)

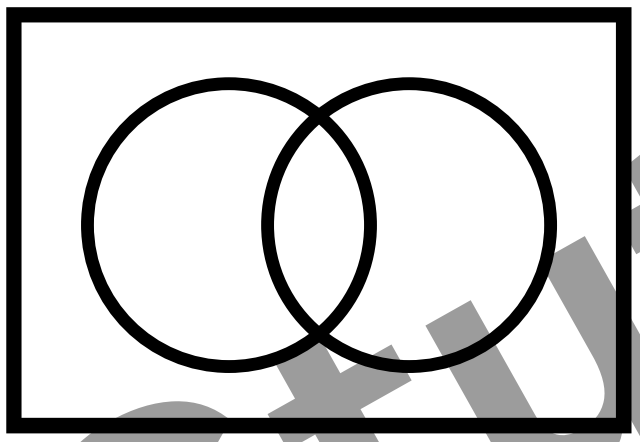
3.

Representations of data

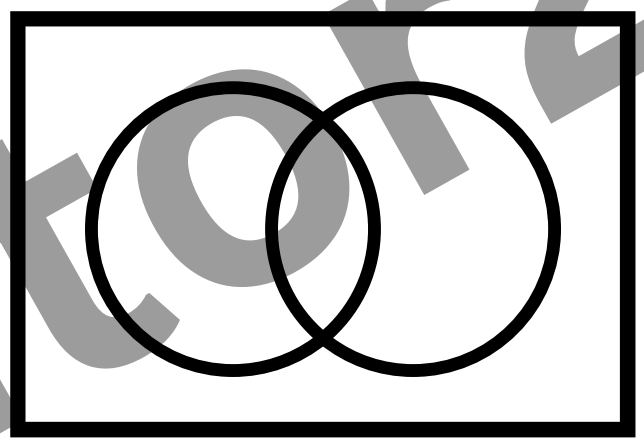
VENN DIAGRAM

DEFINITION:

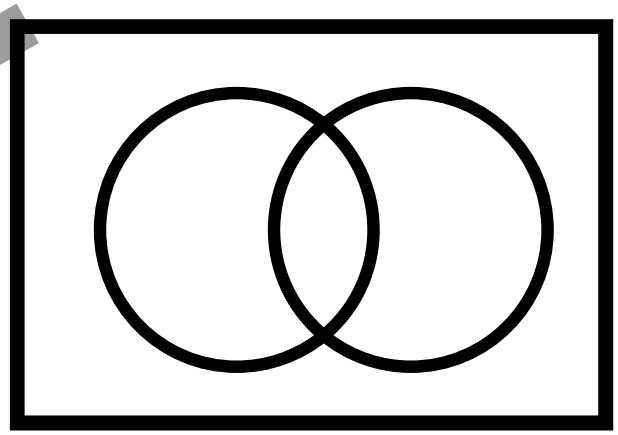
Intersection



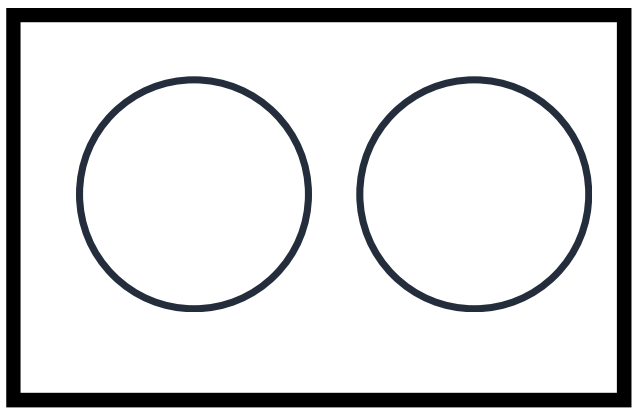
Union



Complement



Mutually exclusive



3. Representations of data

EXAMPLE QUESTION:

A person's blood group is determined by whether or not it contains any of 3 substances A, B and C

A doctor surveyed 300 patients' blood and produced the table below

Blood Contains	No. of Patients
only *C*	100
A and *C* but not *B*	100
only *A*	30
B and *C* but not *A*	25
only *B*	12
A, *B* and *C*	10
A and *B* but not *C*	3

(a) Draw a Venn diagram to represent this information

(b) Find the probability that a randomly chosen patient's blood contains substance C.

Harry is one of the patients. Given that his blood contains substance A,

(c) find the probability that his blood contains all 3 substances.

Patients whose blood contains none of these substances are called universal blood donors.

(d) Find the probability that a randomly chosen patient is a universal blood donor.

3. Representations of data

EXAMPLE QUESTION:

CHALLENGING QUESTION

There are 240 student at Maylands County High School. The foreign language department offers French, German, and Spanish.

- 8 students take all three languages.
- 58 students study French.
- There are twice as many students who study both French and Spanish (but not German) as who study both French and German (but not Spanish), and 4 times as many as who study all 3.
- 159 students study Spanish.
- Unfortunately, 29students do not study any foreign language.
- The group of students who study both French and Spanish (but not German) is exactly the same size as the group made up of students who study both German and Spanish.

3. Representations of data

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