

Set Notation

A set is a well defined collection of objects.

The set of best ice-cream flavours would **NOT** be a set as it is not well defined.

The set of days of the week beginning with T = {Tuesday, Thursday}

The set of odd numbers between 2 and 10 = {3,5,7,9}

The set of prime numbers between 24 and 28 = {} or \emptyset

The 'null' set, \emptyset , has no elements

$$A \cap B$$

A **intersection** B – What is common to both

$$A \cup B$$

A **union** B – List all the elements in A and all the elements in B

$$A'$$

A **complement** – List everything outside of A

$$A \setminus B$$

A **difference** B – List the elements in A without any of B

$$\#A$$

The **cardinal number** of A – How many elements are in A

$$A \subset B$$

A is a **subset** of B – Everything in A is also in B.

$$\in$$

'is an **element of**'

These symbols can be combined.

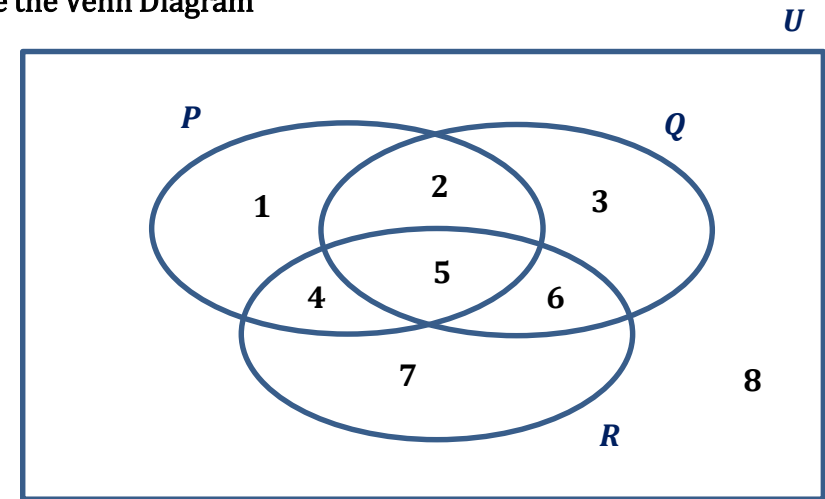
$(A \cap B)'$ Everything outside of A intersection B

$(A \cup B) \setminus C$ All of A and all of B but don't list any elements of C

$$U = \{1,2,3,4,5,6,7,8\}$$

$$P = \{1,2,4,5\} \quad Q = \{2,3,5,6\} \quad R = \{4,5,6,7\}$$

Complete the Venn Diagram



Questions

$$P \cup Q = \{1,2,3,4,5,6\}$$

$$P \cap Q = \{2,5\}$$

$$P' = \{3,6,7,8\}$$

$$Q \setminus R = \{2,3\}$$

$$(Q \cup R) \setminus P = \{3,6,7\}$$

$$\#R = 4$$

List 3 subsets of P with 3 elements

{1,2,4} or {1,2,5} or {2,4,5}

{1,2,4,5} is also a subset of itself.

The null set \emptyset is a subset of every set.

True or False?

$1 \in P$	True
$2 \in R$	False
$5 \notin Q$	False
$\{2,5\} \subset \{2,3,5,6\}$	True