Conditions

Represent the set V of vowels of the English alphabet, the set F of integral factors of 15 and the set M of non-negative multiples of 3 by the property method as well as the listing method. Also represent them in a single Venn diagram. What universal set did you choose?
Further, give two distinct ways of representing the empty set using some or all three of these sets

Solution

Let's write down what do these sets are:

$V = \{a, e, i, o, u, y\}$

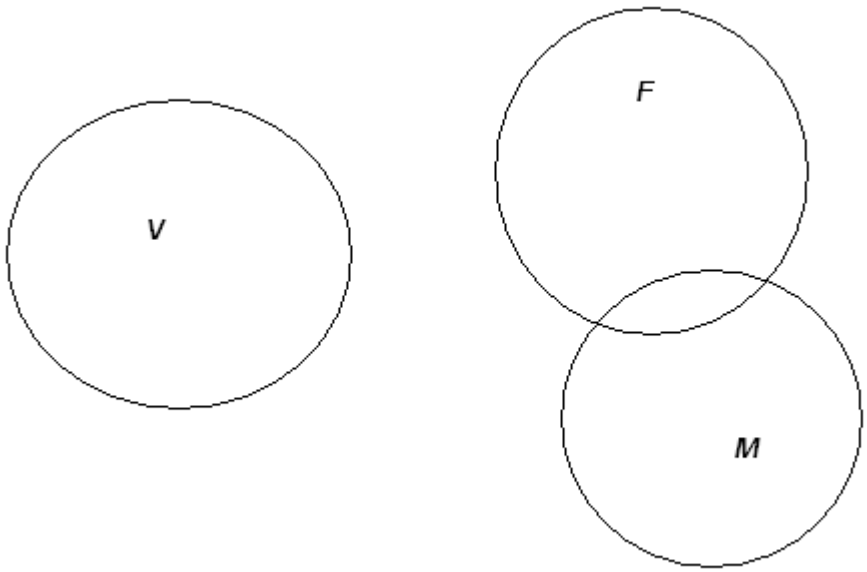
$F = \{1,3,5,15\}$

$M = \{3,6,9,12, \dots\}$

The universal set is:

$U = V \cup F \cup M = \{a, e, i, o, u, y, 1,5,3,6,9,12,15, \dots\}$

Let's draw a single Venn diagram:



As we can see, F and M are both integer sets, and they have 2 elements belong to both sets – 3 and 15. V set is non-integer set, the elements of this set are letters.

That's why V has no common points with F or M.

So, we can determine the null set by the following two ways:

$$\emptyset = V \cap F$$

or

$$\emptyset = V \cap M$$