

SETS

1. (i) A and B are two sets of numbers such that $n(A) = 17, n(B) = 10$ and $n(A \cup B) = 25$.

Use a venn diagram to find the probability that a number picked at random from $n(A \cup B)$ is a member of $n(A \cap B)$.

- (ii) Given that $n(\mathcal{E}) = 27, n(A) = 13, n(B) = 16$ and $n(A \cap B) = 3$, represent the information on the venn diagram and determine:

i) $n(A \cup B)$ ii) $n(A' \cap B)$

2. In a certain school there are 87 students in S.4. Of those 43 play hockey, 42 play football and 47 play volleyball. 15 play hockey and volleyball, 17 play volleyball and football and 21 play hockey and football. Each student plays at least one of the three games while x students play all the three games.

(i) Represent this information in a venn diagram showing clearly the number of students in each region.

(ii) Write down an equation in x and hence find x .

- (i) If a student is chosen at random from the class. What is the probability that he plays exactly two games.
(ii) Find the number of students who play at least two of these games

3. A group of 36 boys were asked which games they played from Football (F), Volleyball

(V) and Tennis (T). It was discovered that 12 play F; of which 2 play F and T only. An

equal number of boys play V and T. Six play F and V while 5 play all the games. Those

who play V and T only are one less than those who play F only and half those who did

not play any of the three games.

(a) Represent the information on a Venn diagram.

(b) How many boys play Volleyball only?

(c) How many boys play Tennis?

(d) What is the probability that a boy chosen at random plays at least two games?

4. Out of 100 students in the Science class at Kamese Secondary School, 60 take Mathematics, 45 take Physics and 40 take Chemistry. Out of the 60 students taking Mathematics (M), 16 take neither Physics (P) nor Chemistry (C). Of the 45 taking (P), 8 take neither (M) nor (C), and of those taking C , 5 take neither M nor P . 7 students take both M & C but not P . Find the number of students who take:

- i) M and P
ii) P and C but not M .
iii) all the three subjects.

iv) none of the three subjects.

5. On a wedding ceremony 71 guests were asked which flavours of Mirinda (M), Novida (N) and Fanta (F) they each prefer. It was found out that an equal number of guests preferred M and N. 10 guests preferred M and F, 11 guests prefer F and N while 6 preferred M and N only. 26 preferred F and 5 preferred M only. The number of guests who preferred F only doubles those who preferred N only. (a) Represent the above information on a venn diagram

(b) Find the number of guests who;(i) Preferred N only

(ii) Preferred all the flavours

(iii) did not like any of the three

(c) If a guest is chosen at random from the group, find the probability that he/she preferred atmost two drinks.

6. In Naalya S.S there are 85 students who offer either technical drawing (T) or one or more of the subjects physics (P), Chemistry (C) and Biology (B). The number of students who offer T is 3 times the number of those who offer all the three subjects.

Given that $n(B) = 30$, $n(P) = 36$, $n(C) = 33$ and the number of students who offer Biology and Chemistry only is 4, Physics and Biology is 16 while Physics and Chemistry is 9.

(a) Represent the above information on a venn diagram.

(b) Find the number of students who offer;

(i) All the 4 subjects

(ii) Technical drawing

(c) If a student is chosen at random, find the probability that the student offers only one subject.