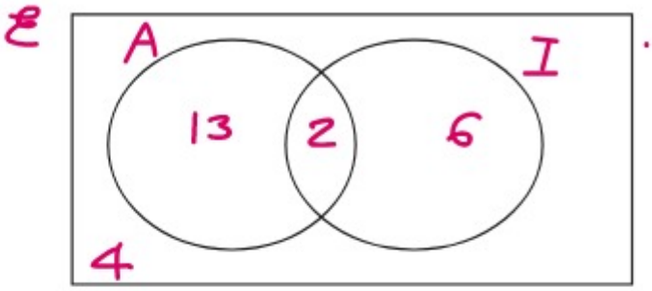
Question 1

In a class of 25 students, it is found that 15 students have an Android phone, 8 students have an iphone, and 2 students own one of both.

Let $A = the\ set\ of\ students\ who\ own\ an\ Android\ phone$

Let $I = the\ set\ of\ students\ who\ own\ an\ Iphone$

a. Create a Venn diagram to illustrate this information.



b. How many students own neither an iphone nor an Android phone in this class?

4

c. If a student is selected at random from this class, calculate the following probabilities:

i. $\Pr(A \cap I)$ (I) $\Pr(A \cap I) = \frac{2}{25}$

ii. $\Pr(A' \cap I)$ (II) $\Pr(A' \cap I) = \frac{6}{25}$

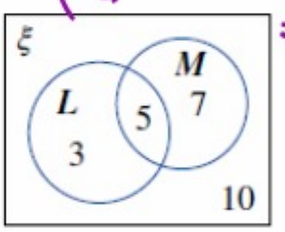
iii. $\Pr(A \cap I')$ (III) $\Pr(A \cap I') = \frac{13}{25}$

iv. $\Pr(A' \cap I')$ (IV) $\Pr(A' \cap I') = \frac{4}{25}$

Question 2

Using the information given in the Venn diagram, if one outcome is chosen at random, find:

$n(\varepsilon) = 3+5+7+10 = 25$

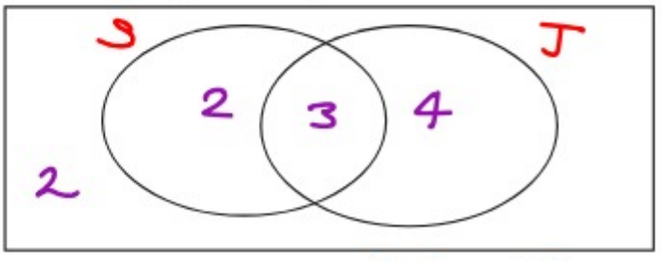


a. $P(L)$ $\frac{8}{25}$ **b.** $P(L')$ $\frac{17}{25}$ **c.** $P(L \cap M)$ $\frac{5}{25} = \frac{1}{5}$ **d.** $P(L \cap M')$. $\frac{3}{25}$

Question 3

In a squad of 11 athletes, 5 are sprinters and 7 are jumpers. There are 3 who do both jumping and sprinting.

a. Create a Venn Diagram to represent this information. Let S = {sprinters} and J = {jumpers}



b. Calculate: $\Pr(J' \cap S')$ $\Pr(J' \cap S') = \frac{2}{11}$

c. Calculate: $\Pr(J \cap S')$ $\Pr(J \cap S') = \frac{4}{11}$

d. Describe an athlete who is in the set: $J' \cap S$.

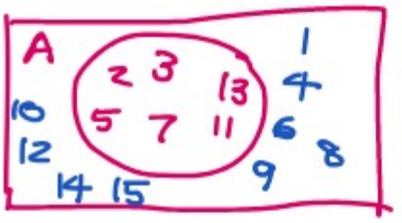
$J' \cap S$: athletes who sprint and don't jump

Question 4

Let $\varepsilon = \{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15\}$

Let $A = \{prime\ numbers\}$

a. Illustrate the set A on a Venn Diagram.



b. Write down the set A'.

$A' = \{1, 4, 6, 8, 9, 10, 12, 14, 15\}$

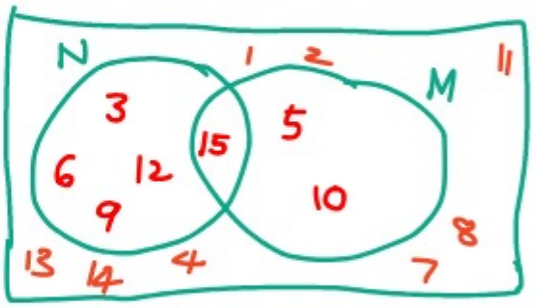
Question 5

Let $\varepsilon = \{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15\}$

Let $N = \{multiples\ of\ 3\}$

Let $M = \{multiples\ of\ 5\}$

a. Illustrate the sets M and N on a Venn Diagram.



b. List the elements of the set: $M \cap N'$ and describe the type of numbers in this set.

$M \cap N' = \{5, 10\}$

c. Calculate: i. $\Pr(M \cap N)$ $\Pr(M \cap N) = \frac{1}{15}$

ii. $\Pr(M' \cap N')$ $\Pr(M' \cap N') = \frac{8}{15}$