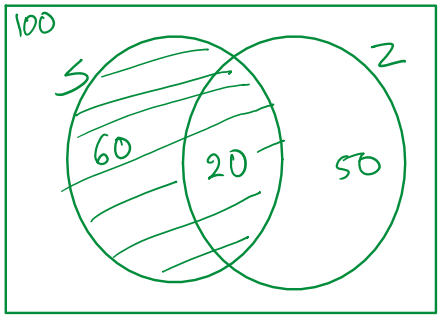
Conditional Probability

Friday, November 29, 2024 5:39 PM

It is known that 60% people use Swiggy, 50% use Zomato. 20% people use both. Among those who use Swiggy, what fraction also use Zomato?



Click on an option to submit your answer

A	0.2
B	0.5
C	20/50
D	20/60

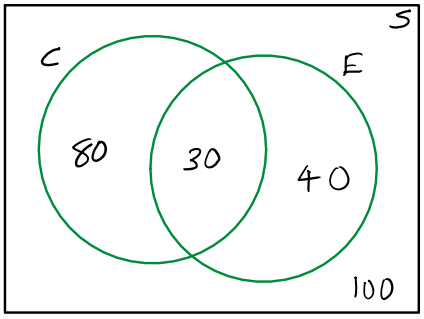
Find the probability that a person uses zomato **given that** he/she is already using swiggy

$ans = \frac{20}{60}$

$$P(Z|S) = \frac{20}{60}$$

$$P(Z|S) = \frac{P(Z \cap S)}{P(S)}$$

It is known that 80% people like cappuccino, 40% people like espresso, and 30% like both. Among the people who like cappuccino, what fraction of people like espresso?



Click on an option to submit your answer

A	0.3
B	30/80
C	30/40
D	0.8

$ans = \frac{30}{80}$

$P(E|C)$ = probability of E given C

$$\therefore P(E|C) = \frac{P(C \cap E)}{P(C)}$$

☆ converting events in English to their mathematical form

Which of these probabilities represent the following statement: Among the people who like cappuccino, what fraction of people like espresso?

Click on an option to submit your answer

A	P[Espresso | Cappuccino]
B	P[Espresso U Cappuccino]
C	P[Cappuccino | Cappuccino]
D	P[Cappuccino ∩ Cappuccino]

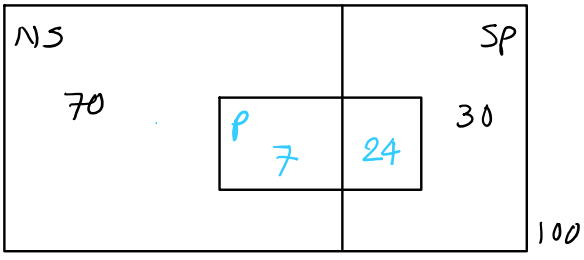
☆ A new way to solve - only for M.E. & Exhaustive events

It is known that 30% of emails are spam, and 70% are not spam. The word "purchase" occurs in 80% of spam emails. It also occurs in 10% of non-spam emails. Overall, in what percentage of emails would we see the word "purchase"?

Click on an option to submit your answer

A	45%
B	10%
C	31%
D	71%

As these are M.E. & Exhaustive events,

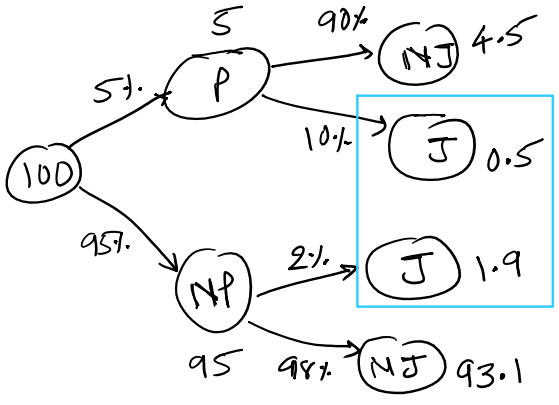


Tree Method | Tree Diagram

5% of all LinkedIn users are premium users. 10% of premium users are seeking new job opportunities. Only 2% of non-premium users are seeking job. Overall, what percentage of people are seeking new job opportunities?

Click on an option to submit your answer

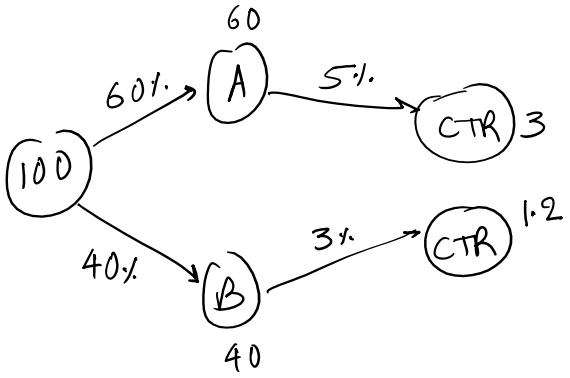
A	2%
B	2.4%
C	3.7%
D	5%



An e-commerce website shows two types of ads: A and B. 60% of the visitors see Type A, and 40% visitors see Type B. The click-through rate for Type A ads is 5%, while the click-through rate for Type B ads is 3%. What is the overall click through rate?

Click on an option to submit your answer

A	3
B	4
C	4.2
D	8

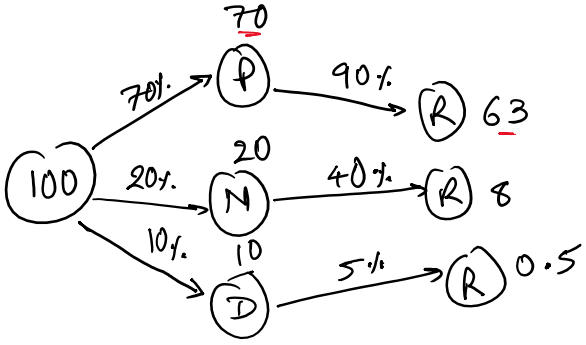


$\therefore$ Overall CTR = 3 + 1.2 = 4.2

In an NPS survey, it is seen that 70% are promoters, 20% are neutral, 10% are detractors. 90% of promoters, 40% of neutral, and 5% of detractors recommend the product to a friend. What is the overall percentalge of people who recommend the product?

Click on an option to submit your answer

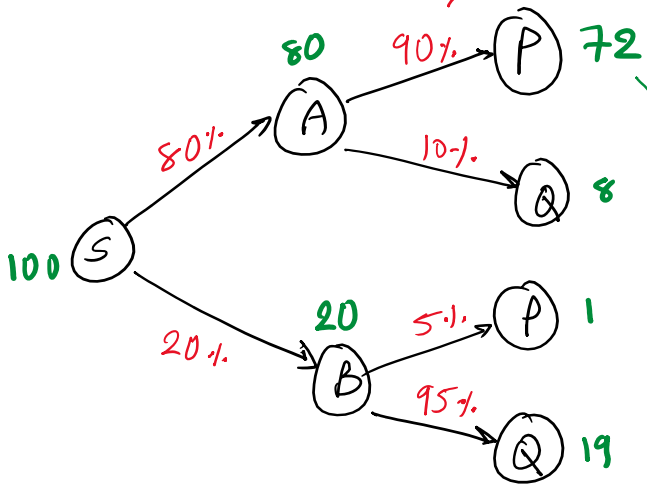
A	50%
B	65.7%
C	71.5%
D	82.9%



Overall = 63 + 8 + 0.5

= 71.5

✡ An important understanding



'P' = Probability of P given that 'A' has occurred = P(P|A)

Portion of 'P' shared by 'P' & 'A' both = P(P ∩ A)

Understanding this concept using Linked in example -

5% of all LinkedIn users are premium users. 10% of premium users are seeking new job opportunities. Only 2% of non-premium users are seeking job. Overall, what percentage of people are seeking new job opportunities?

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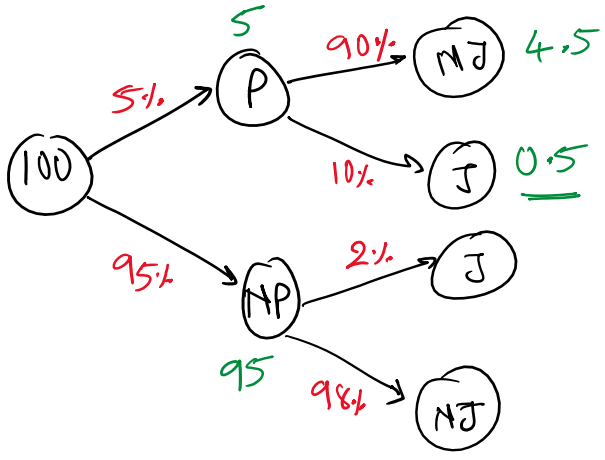

$P(NJ|P) = 90\% = 0.9$

$P(J|P) = 10\% = 0.1$

What fraction of Linked in users are looking for job and they are premium users? $P(J \cap P) = 0.5$