Probability

A large-scale survey finds that 80% of college students enjoy eating chocolate ice cream, 65% of college students enjoy eating mango ice cream, and 55% of college student enjoy eating both chocolate and mango ice cream. What proportion of college students enjoys eating chocolate or mango ice cream?

or both

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

A: choco   B: mango

$$P(A \cup B) = 0.8 + 0.65 - 0.55 = 0.9$$

Multiplication Theorem :-

$$P(A \cap B) = P(B|A)\, P(A)$$
$$= P(A|B)\, P(B)$$

$P(A|B)$ & $P(B|A)$ are   conditional   probabilities

$$\therefore P(B|A) = \frac{P(A \cap B)}{P(A)}$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

In a large class, the probability of randomly selecting a woman student is 0.65. The probability of randomly selecting a student who is a woman and who earned a grade A is 0.25. If you randomly select a student who is a woman, what is the probability that she earned a grade A?

$$P(W) = 0.65 \qquad P(W \cap A) = 0.25$$

$$P(A|W) = \frac{P(W \cap A)}{P(W)} = \frac{0.25}{0.65} = 0.3846$$