Notes - Independent Probability

Independent Probability

Solving Probability

You roll a 6-sided die 2 times. What is the probability that you roll a 1 and then a 2.

MULTIPLY the probabilities together

$P(A \text{ and } B) = P(A) \times P(B)$

Independent vs. Dependent

INDEPENDENT	DEPENDENT
A teacher calls on a student by drawing a popsicle stick. After the student has answered the question, **their name goes back in the cup with the rest of the students.**	A teacher calls on a student by drawing a popsile stick. After the student has answered the question, **their name stays out of the cup until everyone else has been called on.**

Independent vs. Dependent

INDEPENDENT	DEPENDENT
• pick something, then return it	• pick something, keep it out
• denominator stays the same with each pick	• denominator decreases after each pick
• item has the same probability of being picked each time	• item has a better probability of being picked each time
• There can be multiple picks as long as one item is picked at a time	• there can be multiple picks as long as one item is picked at a time
Key Words: replaced, returned, put back	**Key Words:** keep it, do not return

Example 1

A card is drawn from a deck of eight cards with letters A, B, C, D, E, F, G, and H. The card is replaced and a second card is drawn. What is the probability of getting a vowel and an F card?

Example 2

What is the probability that a coin will land on heads and then land on tails?

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Example 3

What is the probability of rolling a 3 on a 6-sided die and then NOT rolling a 3 on the same die?

Example 4

What is the probability of drawing an Ace from a deck of cards, replacing it, and then drawing the King of Clubs?

Example 5

You have a bag of marbles. It contains 6 blue, 4 red, and 2 purple marbles. What is the probability of getting a blue marble, replacing it, and then a red marble?

Example 6

A school survey found that 9 out of 10 students like pizza. If three students are chosen at random with replacement, what is the probability that all three students like pizza?

A jar contains 6 blue, 3 red, 5 green, and 2 yellow candies.

Ex. 7: P(two red candies) if replaced.

Ex. 8: P(two greens then a red) if replaced.

Ex. 9: P(a yellow then a blue) if replaced.