LESSON MAKER PRO

Given That

Find the chance when one fact is already known.

HIGH SCHOOL · MA.912.DP.4.3

MA.912.DP.4.3 "Calculate the conditional probability of two events and interpret the result in terms of its context."

NAME _____ DATE _____

CONDITIONAL PROBABILITY

Conditional probability is the chance of event A when you know event B happened. Use P(A | B) = P(A and B) / P(B), as long as P(B) is not 0.

WORKED EXAMPLE

At a volunteer event, 18 students sign up. Of the 11 students who attend the planning meeting, 7 also bring supplies. Find P(bring supplies | attend the meeting).

1. P(supplies | meeting) = P(supplies and meeting) / P(meeting)
2. Use the students in the meeting as the whole group.
3. P(supplies | meeting) = 7/11

Answer: 7/11. Of the students who attend the meeting, 7/11 bring supplies.

PRACTICE 5 problems

1 Find P(A | B). P(A and B) = 3/10 and P(B) = 1/2. Interpret the result.

ANSWER _____

2 A jar has 4 blue, 6 green, and 2 yellow tiles. Find P(blue | not yellow). Interpret the result.

ANSWER _____

3 At a game, 25 students wear a team shirt. Of those students, 5 also wear a team hat. Find P(team hat | team shirt).

ANSWER _____

4 During 30 days, 12 days are cloudy. On 9 days, it is both cloudy and rainy. Find P(rainy | cloudy).

ANSWER _____

5 A student saves 16 posts. Twelve posts are videos, and 8 are videos from artists the student follows. Find P(from an artist followed | video).

ANSWER _____

APPLY IT Show your work

1 A student survey finds that 40 students follow a gaming channel, 24 follow a music channel, and 15 follow both. If a student follows a music channel, what is the probability that the student also follows a gaming channel? Interpret the result.

WORK SPACE

ANSWER _____

2 At esports tryouts, 32 students register. Twenty play strategy games, and 12 play both strategy and racing games. If a registered student plays strategy games, what is the probability that the student also plays racing games? Interpret the result.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student council survey includes 48 students. Thirty plan to vote, 22 follow a candidate's account, and 14 do both. If a student does not follow a candidate's account, find the probability that the student plans to vote. Interpret the result.

WORK SPACE AND ANSWER

Given That

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find P(A | B). P(A and B) = 3/10 and P(B) = 1/2. Interpret the result.	**3/5. Among outcomes in B, 3/5 are also in A.**
2	A jar has 4 blue, 6 green, and 2 yellow tiles. Find P(blue | not yellow). Interpret the result.	**2/5. Of the tiles that are not yellow, 2/5 are blue.**
3	At a game, 25 students wear a team shirt. Of those students, 5 also wear a team hat. Find P(team hat | team shirt).	**1/5. Of the students wearing a team shirt, 1/5 also wear a team hat.**
4	During 30 days, 12 days are cloudy. On 9 days, it is both cloudy and rainy. Find P(rainy | cloudy).	**3/4. Of the cloudy days, 3/4 are rainy.**
5	A student saves 16 posts. Twelve posts are videos, and 8 are videos from artists the student follows. Find P(from an artist followed | video).	**2/3. Of the saved videos, 2/3 are from artists the student follows.**

PART 2 · APPLY IT

1. **5/8. Of students who follow a music channel, 5/8 also follow a gaming channel.** Use music-channel followers as the condition group: 15/24 = 5/8.
2. **3/5. Of the students who play strategy games, 3/5 also play racing games.** Use strategy-game players as the condition group: 12/20 = 3/5.

CHALLENGE

8/13. There are 26 students who do not follow an account, and 16 of them plan to vote, so 16/26 = 8/13. Of students who do not follow a candidate's account, 8/13 plan to vote.

Accept equivalent fractions and clear context-based interpretations. For conditional probability, the denominator must represent the given condition group.