LESSON MAKER PRO

Given This Group

Find probabilities within a selected group.

HIGH SCHOOL · S.P.2.2

S.P.2.2 "Understand and calculate the conditional probability of A given B as P(A and B)/P(B)."

NAME _____ DATE _____

THE GIVEN GROUP

In P(A | B), the condition B tells you to look only at outcomes in B. To find the conditional probability, divide the probability of both A and B by the probability of B: P(A | B) = P(A and B)/P(B).

WORKED EXAMPLE

Of 80 students, 30 volunteered at the library. Of those students, 18 also applied to help at the book fair. Let A mean applied to help at the book fair, and B mean volunteered at the library. Find P(A | B).

1. P(B) = 30/80.
2. P(A and B) = 18/80.
3. P(A | B) = (18/80)/(30/80) = 18/30.

Answer: 3/5

PRACTICE 6 problems

1 If P(A and B) = 1/8 and P(B) = 1/4, find P(A | B).

ANSWER _____

2 In a survey of 50 students, 16 bring a reusable bottle to school. Of those students, 6 also bike to school. Find P(bikes to school | brings a reusable bottle).

ANSWER _____

3 Use the table to find P(watches tutorials | uses captions).

STUDENT VIEWING HABITS

	Uses captions	Does not use captions
Watches tutorials	9	11
Does not watch tutorials	7	13

ANSWER _____

4 If P(A and B) = 2/15 and P(B) = 4/9, find P(A | B).

ANSWER _____

5 Use the table to find P(plays a sport | has a part-time job).

STUDENT ACTIVITIES

	Plays a sport	Does not play a sport
Has a part-time job	8	14
No part-time job	17	21

ANSWER _____

6 Among 90 students, 45 subscribe to a music service. Of those students, 15 download songs for offline listening. Find P(downloads songs | subscribes).

ANSWER _____

APPLY IT Show your work

1 A school surveys 64 students. Of those students, 28 follow a music artist, and 7 both follow the artist and bought a ticket to the artist's concert. If you choose a student who follows the artist, what is the probability that the student bought a ticket?

WORK SPACE

ANSWER _____

2 The table shows how students get to school and whether they attend an after-school club. If you choose a student who uses the bus, what is the probability that the student attends a club?

TRAVEL AND CLUBS

	Uses bus	Does not use bus
Attends after-school club	13	15
Does not attend club	19	23

ANSWER _____

CHALLENGE One step up

A school surveys 100 students. Of the students who own a gaming console, 2/3 play online games. Exactly 24 students both own a console and play online games. How many surveyed students own a console? Show an equation.

WORK SPACE AND ANSWER

Given This Group

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	If P(A and B) = 1/8 and P(B) = 1/4, find P(A | B).	**1/2**
2	In a survey of 50 students, 16 bring a reusable bottle to school. Of those students, 6 also bike to school. Find P(bikes to school | brings a reusable bottle).	**3/8**
3	Use the table to find P(watches tutorials | uses captions).	**9/16**
4	If P(A and B) = 2/15 and P(B) = 4/9, find P(A | B).	**3/10**
5	Use the table to find P(plays a sport | has a part-time job).	**4/11**
6	Among 90 students, 45 subscribe to a music service. Of those students, 15 download songs for offline listening. Find P(downloads songs | subscribes).	**1/3**

PART 2 · APPLY IT

1. **1/4** Use the 28 students who follow the artist as the given group. The probability is 7/28 = 1/4.
2. **13/32** There are 13 + 19 = 32 bus users, and 13 of them attend a club. The probability is 13/32.

CHALLENGE

36 students; 24/x = 2/3, so x = 36.

Accept equivalent fractions or percentages for probabilities. In the challenge, accept any correct equation that uses console owners as the given group.