LESSON MAKER PRO

Given This Group

Use two-way tables to find conditional probabilities.

HIGH SCHOOL · A1P.DSP.G

A1P.DSP.G "Conditional probabilities – that is, those probabilities that are "conditioned" by some known information – can be computed from data organized in contingency tables. Conditions or assumptions may affect the computation of a probability."

NAME _____ DATE _____

WHICH TOTAL COUNTS?

In P(A | B), the condition B tells you which group to use. Divide the number in that group who also meet condition A by the total number in group B.

WORKED EXAMPLE

A school surveys how students get to campus. Find P(bike | senior).

TRIPS TO CAMPUS

Grade	Bike	Walk	Total
Senior	17	23	40
Junior	29	31	60
Total	46	54	100

1. Use the senior row because the condition is senior.
2. There are 40 seniors, and 17 of them bike.
3. Divide: 17/40.

Answer: 17/40

PRACTICE 6 problems

1 A student is chosen at random. Find P(fish | art club).

FAVORITE PET

Group	Fish	Cat	Total
Art club	4	6	10
Not in art club	8	2	10
Total	12	8	20

ANSWER _____

2 A song is chosen at random. Find P(saved | rock).

SCHOOL PLAYLIST SONGS

Status	Pop	Rock	Total
Saved	9	3	12
Not saved	6	6	12
Total	15	9	24

ANSWER _____

3 One drink order is chosen at random. Find P(afternoon | iced).

CAFE DRINK ORDERS

Time	Hot	Iced	Total
Morning	5	7	12
Afternoon	10	2	12
Total	15	9	24

ANSWER _____

4 One survey response is chosen at random. Find P(mobile data | download).

HOW STUDENTS GOT MUSIC

Method	Wi-Fi	Mobile data	Total
Stream	8	4	12
Download	2	6	8
Total	10	10	20

ANSWER _____

5 A student is chosen at random. Find P(practice | bought lunch).

PRACTICE AND LUNCH

After-school plan	Packed lunch	Bought lunch	Total
Practice	6	9	15
No practice	4	5	9
Total	10	14	24

ANSWER _____

6 A student is chosen at random. Find P(did not watch | heard through social media).

SCHOOL CONCERT

Concert	Social media	Other source	Total
Watched	7	5	12
Did not watch	3	9	12
Total	10	14	24

ANSWER _____

APPLY IT Show your work

1 At a school movie night, one ticket paid for by card is chosen at random. What is the probability that it is a student ticket?

MOVIE NIGHT TICKETS

Ticket	Card	Cash	Total
Student	11	4	15
Guest	8	5	13
Total	19	9	28

ANSWER _____

2 Students in a gaming club chose a tournament day and game format. If a student who chose Saturday is selected at random, what is the probability that the student chose team play?

GAMING CLUB CHOICES

Game format	Saturday	Friday	Total
Team play	8	6	14
Solo play	4	10	14
Total	12	16	28

ANSWER _____

CHALLENGE One step up

Find P(multiplayer | club member) and P(club member | multiplayer). Explain in one sentence why the probabilities differ.

GAME CHOICE AND CLUB MEMBERSHIP

Group	Multiplayer	Single-player	Total
Club member	6	4	10
Not a club member	3	9	12
Total	9	13	22

WORK SPACE AND ANSWER

Given This Group

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A student is chosen at random. Find P(fish | art club).	**2/5**
2	A song is chosen at random. Find P(saved | rock).	**1/3**
3	One drink order is chosen at random. Find P(afternoon | iced).	**2/9**
4	One survey response is chosen at random. Find P(mobile data | download).	**3/4**
5	A student is chosen at random. Find P(practice | bought lunch).	**9/14**
6	A student is chosen at random. Find P(did not watch | heard through social media).	**3/10**

PART 2 · APPLY IT

1. **11/19** Of the 19 tickets paid for by card, 11 are student tickets. The probability is 11/19.
2. **2/3** Of the 12 students who chose Saturday, 8 chose team play. Divide 8/12 and simplify to 2/3.

CHALLENGE

P(multiplayer | club member) = 6/10 = 3/5, and P(club member | multiplayer) = 6/9 = 2/3. They differ because the first uses 10 club members as its group, while the second uses 9 multiplayer players.

Accept equivalent fractions for all probabilities. In the challenge, the explanation should identify the different totals used for the two conditions.