LESSON MAKER PRO

Given This Group

Find the probability within a selected group.

HIGH SCHOOL · A1P.DSP.G.41

A1P.DSP.G.41 "Explain why the conditional probability of A given B is the fraction of B's outcomes that also belong to A, and interpret the answer in context."

NAME _____ DATE _____

THE GIVEN GROUP

The word "given" tells you which outcomes to keep. To find P(A | B), count the outcomes in B that are also in A, then divide by the total number of outcomes in B. The answer describes a fraction of group B, not a fraction of everyone.

WORKED EXAMPLE

At a club meeting, 23 students attend. Of those students, 11 bring a reusable bottle, and 8 bring both a bottle and a snack. Given that a student brings a bottle, what is the probability the student also brings a snack?

1. Keep the 11 students who bring a bottle.
2. Of those 11 students, 8 also bring a snack.
3. P(snack | bottle) = 8/11.

Answer: 8/11. Among students who bring a bottle, 8 out of 11 also bring a snack.

PRACTICE 6 problems

1 A club sells 20 tickets. Of these, 12 are bought online, and 5 are bought online for Friday. Given that a ticket was bought online, what is the probability it is for Friday?

ANSWER _____

2 Use the table. Given that a student played a team game, what is the probability the student used a console?

GAMING CLUB CHOICES

Device	Team game	Solo game
Console	9	4
Computer	6	5

ANSWER _____

3 In a group of 32 students, 10 are in choir, and 6 are in both choir and band. Given that a student is in choir, what is the probability the student is also in band? Explain why you chose your denominator.

ANSWER _____

4 Use the table. Given that a student saves songs offline, what is the probability the student uses shuffle?

MUSIC POLL

	Saves offline	**Does not save offline**
Uses shuffle	4	9
Does not use shuffle	5	10

ANSWER _____

5 In a survey of 28 students, 14 own a bike, and 9 own both a bike and a skateboard. Given that a student owns a bike, what is the probability the student also owns a skateboard?

ANSWER _____

6 A deck has 30 cards. Of these, 15 have a star, and 5 are both blue and marked with a star. Given that a card has a star, what is the probability it is blue? Interpret your answer.

ANSWER _____

APPLY IT Show your work

1 Students sell shirts at a school concert. Use the table to find the probability that a student buys a shirt, given that the student bought an early ticket. Interpret your answer.

CONCERT TICKET AND SHIRT SALES

Ticket	Bought a shirt	Did not buy a shirt
Early	12	18
At the door	6	14

ANSWER _____

2 At an esports club, 48 students answer a survey. Of those, 24 play strategy games, 16 watch tournaments, and 12 both play strategy games and watch tournaments. Given that a student watches tournaments, what is the probability the student plays strategy games? Interpret your answer.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Use the table to find P(popcorn | comedy) and P(comedy | popcorn). Explain why the probabilities differ even though both use the same group of students in the numerator.

SCHOOL MOVIE NIGHT

Movie choice	Bought popcorn	Did not buy popcorn
Comedy	12	6
Not comedy	4	10

WORK SPACE AND ANSWER

Given This Group

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A club sells 20 tickets. Of these, 12 are bought online, and 5 are bought online for Friday. Given that a ticket was bought online, what is the probability it is for Friday?	**5/12**
2	Use the table. Given that a student played a team game, what is the probability the student used a console?	**9/15 = 3/5**
3	In a group of 32 students, 10 are in choir, and 6 are in both choir and band. Given that a student is in choir, what is the probability the student is also in band? Explain why you chose your denominator.	**6/10 = 3/5. The denominator is 10 because only choir students are in the given group.**
4	Use the table. Given that a student saves songs offline, what is the probability the student uses shuffle?	**4/9**
5	In a survey of 28 students, 14 own a bike, and 9 own both a bike and a skateboard. Given that a student owns a bike, what is the probability the student also owns a skateboard?	**9/14**
6	A deck has 30 cards. Of these, 15 have a star, and 5 are both blue and marked with a star. Given that a card has a star, what is the probability it is blue? Interpret your answer.	**5/15 = 1/3. Of the cards with a star, 1 out of 3 is blue.**

PART 2 · APPLY IT

1. **12/30 = 2/5. Of the students who bought early tickets, 2 out of 5 bought a shirt.** There are 12 + 18 = 30 early-ticket buyers. Of those, 12 bought a shirt.
2. **12/16 = 3/4. Of the students who watch tournaments, 3 out of 4 play strategy games.** Use the 16 tournament watchers as the given group. The 12 who also play strategy games are the outcomes counted in the numerator.

CHALLENGE

P(popcorn | comedy) = 12/18 = 2/3. P(comedy | popcorn) = 12/16 = 3/4. Both count the 12 students who chose a comedy and bought popcorn, but the first uses all 18 comedy viewers as its given group, while the second uses all 16 popcorn buyers.

Accept equivalent fractions and interpretations that identify the given group. For explanations, look for a denominator based on that group rather than the full survey.