

Conditional Probability

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

1. Find P(performed the piece | practiced this week). The condition after the bar is the population to use.

	performed the piece	did not perform the piece	Total
practiced this week	11	6	17
did not practice this week	5	8	13
Total	16	14	30

2. Find P(did not work in the garden and did not plant seeds). Use the full table as the sample population.

	planted seeds	did not plant seeds	Total
worked in the garden	10	7	17
did not work in the garden	8	7	15
Total	18	14	32

Conditional Probability

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

3. A bag has 9 black and 6 white tokens. Two are drawn at random without replacement. Find $P(\text{first is black and second is black})$.

4. A bag has 3 black and 3 white tokens. Two are drawn at random without replacement. Given that the first is black, find $P(\text{second is white} \mid \text{first is black})$.

Conditional Probability

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

5. A bag has 3 orange and 6 purple tokens. Two are drawn at random without replacement. Find $P(\text{first is purple and second is orange})$.

6. Find $P(\text{missed the event} \mid \text{joined a club})$. The condition after the bar is the population to use.

	attended the event	missed the event	Total
joined a club	13	4	17
did not join a club	3	10	13
Total	16	14	30

Conditional Probability

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

7. Find $P(\text{uses a study plan and completed review})$. Use the full table as the sample population.

	completed review	did not complete review	Total
uses a study plan	11	2	13
does not use a study plan	9	8	17
Total	20	10	30

8. A bag has 7 red and 5 blue tokens. Two are drawn at random without replacement. Given that the first is red, find $P(\text{second is blue} \mid \text{first is red})$.

Conditional Probability

Worked Answer Key

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

1. Find $P(\text{performed the piece} \mid \text{practiced this week})$. The condition after the bar is the population to use.

	performed the piece	did not perform the piece	Total
practiced this week	11	6	17
did not practice this week	5	8	13
Total	16	14	30

- Answer: 11/17
- 1. Condition on practiced this week: that row contains 17 observations.
 - 2. 11 of them are also performed the piece.
 - 3. $P(\text{performed the piece} \mid \text{practiced this week}) = 11/17 = 11/17$.

2. Find $P(\text{did not work in the garden and did not plant seeds})$. Use the full table as the sample population.

	planted seeds	did not plant seeds	Total
worked in the garden	10	7	17
did not work in the garden	8	7	15
Total	18	14	32

- Answer: 7/32
- 1. The joint cell for did not work in the garden and did not plant seeds contains 7 observations.
 - 2. The full table contains 32 observations.
 - 3. $P(\text{did not work in the garden and did not plant seeds}) = 7/32 = 7/32$.

Conditional Probability

Worked Answer Key

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

- 3. A bag has 9 black and 6 white tokens. Two are drawn at random without replacement. Find $P(\text{first is black and second is black})$.**

Answer: $12/35$

1. First draw: $9/15$. Without replacement, the second-draw denominator is 14.
2. 72 ordered favorable pairs out of 210 ordered pairs.
3. $P(\text{first black and second black}) = 72/210 = 12/35$.

- 4. A bag has 3 black and 3 white tokens. Two are drawn at random without replacement. Given that the first is black, find $P(\text{second is white} \mid \text{first is black})$.**

Answer: $3/5$

1. After the given first draw, 5 tokens remain.
2. 3 remaining tokens are white.
3. $P(\text{second white} \mid \text{first black}) = 3/5 = 3/5$.

Conditional Probability
Worked Answer Key

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

5. A bag has 3 orange and 6 purple tokens. Two are drawn at random without replacement. Find P(first is purple and second is orange).
Answer: 1/4

- 1. First draw: 6/9. Without replacement, the second-draw denominator is 8.
- 2. 18 ordered favorable pairs out of 72 ordered pairs.
- 3. P(first purple and second orange) = 18/72 = 1/4.

6. Find P(missed the event | joined a club). The condition after the bar is the population to use.

	attended the event	missed the event	Total
joined a club	13	4	17
did not join a club	3	10	13
Total	16	14	30

- Answer: 4/17
- 1. Condition on joined a club: that row contains 17 observations.
 - 2. 4 of them are also missed the event.
 - 3. P(missed the event | joined a club) = 4/17 = 4/17.

Conditional Probability
Worked Answer Key

For each question, identify the conditioning population or the joint event. Show the favorable count and sample count, then reduce the exact fraction.

7. Find $P(\text{uses a study plan and completed review})$. Use the full table as the sample population.

	completed review	did not complete review	Total
uses a study plan	11	2	13
does not use a study plan	9	8	17
Total	20	10	30

- Answer: 11/30**
- 1. The joint cell for uses a study plan and completed review contains 11 observations.
 - 2. The full table contains 30 observations.
 - 3. $P(\text{uses a study plan and completed review}) = 11/30 = 11/30$.

8. A bag has 7 red and 5 blue tokens. Two are drawn at random without replacement. Given that the first is red, find $P(\text{second is blue} \mid \text{first is red})$.

- Answer: 5/11**
- 1. After the given first draw, 11 tokens remain.
 - 2. 5 remaining tokens are blue.
 - 3. $P(\text{second blue} \mid \text{first red}) = 5/11 = 5/11$.