

Tadej Sakelšek  
Adrian Mikhalchishin

# **MASTERING CHESS ENDGAME CALCULATION**

THEORY AND EXERCISES

LEVEL 1

of the TRILOGY  
that will take YOUR GAME  
to the NEXT LEVEL!



Responsible editor  
Csaba Balogh

Cover designer  
Piotr Pielach

Typesetting  
i-Press <[www.i-press.pl](http://www.i-press.pl)>

First edition 2023 by Chess Evolution

*Mastering Chess Endgame Calculation: Theory and Exercises. Level 1*  
Copyright © 2023 Chess Evolution

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, photocopying, recording or otherwise, without prior permission of the publisher.

ISBN: 978-615-5793-34-9

All sales or enquiries should be directed to Chess Evolution  
2040 Budaors, Nyar utca 16, Hungary

e-mail: [info@chess-evolution.com](mailto:info@chess-evolution.com)  
website: [www.chess-evolution.com](http://www.chess-evolution.com)

Printed in Hungary

# TABLE OF CONTENTS

<b>KEY TO SYMBOLS</b>	<b>5</b>
<b>EDITORIAL PREFACE</b>	<b>7</b>
<b>THEORETICAL PART</b>	<b>11</b>
<b>1. BASIC ENDGAME POSITIONS</b>	<b>11</b>
1.1. CHECKMATE	11
1.2. BASIC PAWN ENDGAMES	14
1.3. QUEEN vs. PAWN ENDGAMES	22
1.4. ROOK vs. PAWN ENDGAMES	24
1.5. KNIGHT vs. PAWN ENDGAMES	27
1.6. ROOK ENDGAMES	29
1.7. BISHOP ENDGAMES	32
<b>2. BASIC ENDGAME TECHNIQUES</b>	<b>34</b>
2.1. ZUGZWANG	35
2.2. THE BODYCHECK or SHOULDERING	36
2.3. CUTTING THE KING	38
2.4. DEFENCE	39
<b>3. REALIZATION OF THE ADVANTAGE</b>	<b>43</b>
<b>4. THE ROLE OF TACTICS and CALCULATION</b>	<b>47</b>
<b>EXCERCISES</b>	<b>49</b>
<b>WIN THE GAME 1</b>	<b>49</b>
SOLUTIONS	63
<b>DEFENCE 1</b>	<b>77</b>
SOLUTIONS	87
<b>MAKE A CHOICE 1</b>	<b>97</b>
SOLUTIONS	103
<b>REALIZATION 1</b>	<b>109</b>
SOLUTIONS	113
<b>WIN THE GAME 2</b>	<b>117</b>
SOLUTIONS	147
<b>DEFENCE 2</b>	<b>181</b>
SOLUTIONS	195

<b>MAKE A CHOICE 2</b>	<b>211</b>
SOLUTIONS	225
<b>REALIZATION 2</b>	<b>245</b>
SOLUTIONS	257

# KEY TO SYMBOLS

=	Equality or equal chances
±	White has a slight advantage
∓	Black has a slight advantage
±	White is better
∓	Black is better
+-	White has a decisive advantage
-+	Black has a decisive advantage
∞	unclear
∞	with compensation
↔	with counterplay
↑	with initiative
→	with an attack
Δ	with the idea
□	only move
N	novelty
!	a good move
!!	an excellent move
?	a weak move
??	a blunder
!?	an interesting move
?!	a dubious move
+	check
#	mate



## EDITORIAL PREFACE

In recent years, tactical test books have become extremely popular in the chess book market. This is a sound trend, as the best way to study any subject is through intensive practice, much like in other sports. However, it is strange to note the complete absence of endgame test books in this market. While there have been some excellent endgame books published in the last decade, true mastery of the subject demands as much practice as possible.

Endgames typically occur in only 2–3 games out of 10 in players' practice. While it is possible to miss them in a game, every player must be ready to play endgames at any moment. Endgame technique is an extremely important ability for top players. Consider Aleksander Alekhine, who conducted a comparative analysis of his opponent Jose Raul Capablanca's style and discovered that he himself was much weaker in endgames. To improve his chances in the match, Alekhine dedicated half a year to studying endgames and proudly proclaimed that he was not weaker than the World Champion in this area. This effort greatly aided him in winning the long match later. Similarly, Garry Kasparov had to undertake a significant amount of work to improve his endgame knowledge before his match against Anatoly Karpov to close the gap in their respective abilities. Therefore, the development of endgame test books would be a valuable addition to the market, allowing players to practice and improve their endgame technique and ultimately become stronger overall players.

In the endgame, we encounter two types of positions: theoretical, or basic positions and practical position. Theoretical positions are detailed in endgame manuals with precise explanations on how to win or draw them. At the Grandmaster level, there are around 100 such positions, which are well-organized in the book "100 Endgames You Must Know" by De La Villa. However, the number of basic positions required for different levels of players varies. For players at the first level, up to 1500 rating, it is important to know around 30 of the most important theoretical positions, along with some key methods for handling endgames.

We have decided to develop three levels of endgame books that cater to players with varying strengths. The first level will target players up to 1700 rating, the second level for players between 1500-2100 rating, and the third level for

players over 2000 rating. Each book will contain an introduction outlining the basic positions that are essential for players at that level to know. However, we acknowledge that the most effective way to improve endgame skills is through practice. Therefore, we will include exercises in each book that allow players to apply the concepts and techniques learned from both theoretical and practical positions covered in the book.

The second type of endgame positions are practical positions. These positions typically require special endgame methods and techniques such as centralizing the king, using passed pawns, and making exchanges to transition into basic positions. It is important to understand these techniques for both realizing advantages and defending against them. Additionally, there are special endgame tactical methods, such as stalemate, which can be used to achieve different goals. To gain expertise in these practical endgame positions, it is recommended to study specialized endgame books and analyze games played by the greatest endgame specialists, such as Capablanca, Rubinstein, Smyslov, and Fischer.

Throughout history, it has been widely accepted that a real game of chess must contain all three phases of the game: the opening, middlegame, and endgame. If a game does not reach the endgame, it is likely that one or both players have made significant mistakes. Some of the greatest authorities in chess, such as Capablanca and Smyslov, have even recommended starting the study of chess from the endgame, as there are fewer pieces on the board and beginners can more easily learn how to create piece cooperation. However, to date, there are no established systems for teaching and studying chess in this way. Nevertheless, a few players, such as Karpov and Kramnik, have used this approach in their early years and have achieved extremely high levels of technical proficiency as a result.

One issue that arises is that young players often find endgame studying boring. However, trainers can take steps to make it more engaging. Endgames can be truly beautiful when analyzing games played by top players. Trainers should provide pupils with a good selection of instructive and aesthetically pleasing studies. Including exercises in the endgame books can also make it more interesting for players. Moreover, there are many examples of great players mishandling endgames terribly due to improper study of basic positions or methods, or lack of practical experience. There are even cases of grandmasters resigning in drawn positions or offering draws in winning positions! Through exercises,



we can learn from the mistakes of the greats and understand the reasons behind each decision, improving our endgame logic and decision-making.

## HOW TO USE THE BOOK?

The book is divided into two parts. In the first part, we cover essential theoretical positions, well-known techniques, and how to realize advantages in a game. We recommend studying the examples provided carefully before proceeding to the second part of the book.

The second part of the book focuses on practice, containing up to 400 puzzles divided into two levels based on their difficulty. Exercises marked with one star are suitable for beginners, while those marked with two stars are for more advanced players. Additionally, the exercises are categorized into four different chapters: win the game, defence, decision-making, and realizing advantages. Each chapter provides solutions to the exercises at the end.

We strongly recommend solving the puzzles without physically moving the pieces, as it will help you enhance your visualization and analytical skills.

Yours, Tadej Sakelšek & Adrian Mihalcisin



# THEORETICAL PART

## 1. BASIC ENDGAME POSITIONS

Mastering the endgame requires more than just brute calculation; it also requires a deep understanding of a set of basic positions. These positions provide a framework for navigating the complexities of the endgame, making it easier to find the best moves and avoid costly mistakes. While every type of endgame has its own set of basic positions, what is most important is knowing how to handle them correctly.

It is important to note that players at different levels should aim to know a certain number of basic positions. Trying to remember too many positions can be overwhelming and counterproductive. For example, players below a rating of 1500 should aim to learn around 30 basic positions, while those below 1800 should aim to learn around 50. In addition to basic positions, players should also learn special endgame techniques that differ from those used in the middlegame. One of the most important skills to master

is knowing how to exchange pieces and pawns effectively.

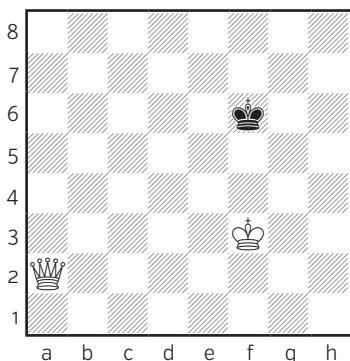
Repetition and analysis are key to improving endgame play. While players often focus on studying openings, revisiting the set of basic positions for their level and analysing recent endgames of top players can be just as beneficial.

Magnus Carlsen, the ex World Champion, is widely considered to be the best endgame technician in the world. However, even he had to work hard to overcome his early struggles with the endgame. His dedication paid off, as his mastery of the endgame was evident in his World Championship match against Vishy Anand, where he won with two impressive endings.

### 1.1. CHECKMATE

The goal of chess is to mate the enemy king. It is important to become familiar with standard mating situations in the endgame.

## Example 1



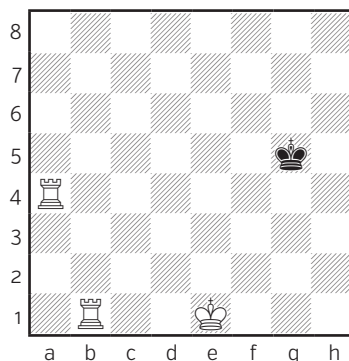
Every chess player should first learn how to give a checkmate with the Queen. It can be done easily in different ways, and one of the simplest techniques is to use the shape of the letter L to force the opponent's King into a corner with the Queen:

1. ♕d5 ♖g6 2. ♕e5 ♖h6 3. ♕f5 ♖g7  
4. ♕e6 ♖f8 5. ♕d7 ♖g8 6. ♕e7 ♖h8

When the opponent's King has only two available squares left, it is time to bring your own King closer to the action.

7. ♖g4 ♖g8 8. ♖g5 ♖h8 9. ♖g6 ♖g8  
10. ♕g7#

## Example 2

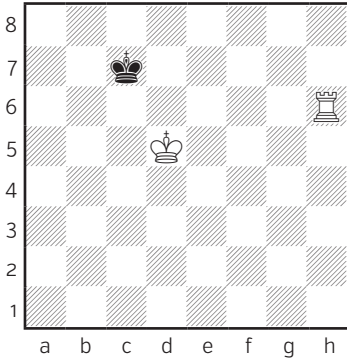


Checkmate by two Rooks is the simplest of all checkmates.

The Rooks work like scissors, cutting the board horizontally or vertically. We use both Rooks simultaneously to force the opponent's King to the edge of the board, where it will be mated.

1. ♖b5+ ♖f6 2. ♖a6+ ♖e7 3. ♖b7+  
♖d8 4. ♖a8#

### Example 3



Checkmate with only one Rook requires the cooperation of the King. The mating process is usually longer compared to checkmate by the Queen or two Rooks.

1. ♖g6 ♔b7 2. ♔c5 ♔a7 3. ♔b5

A much shorter continuation is also possible: 3. ♖b6 ♔a8 4. ♔c6 ♔a7 5. ♔c7 ♔a8 6. ♖a6#

3... ♔b7

When the opposition is reached, it is time to give a check and force the enemy King closer to the edge of the board.

4. ♖g7+ ♔c8 5. ♔b6 ♔d8 6. ♔c6 ♔e8 7. ♔d6 ♔f8 8. ♖e7

A slightly different technique is possible here: 8. ♖a7 ♔e8 9. ♖b7 ♔f8

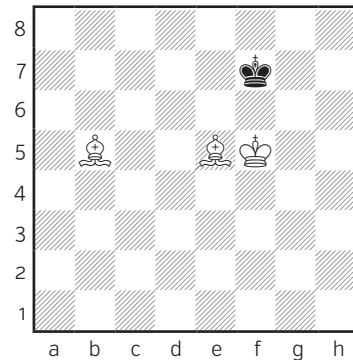
10. ♔e6 ♔g8 11. ♔f6 ♔h8 12. ♔g6 ♔g8 13. ♖b8#

8... ♔g8 9. ♔e6 ♔f8 10. ♔f6 ♔g8 11. ♔g6 ♔f8 12. ♖e1

A waiting move (you can choose any other safe square on the e-file) is played to force the opponent's King into a mating net.

12... ♔g8 13. ♖e8#

### Example 4



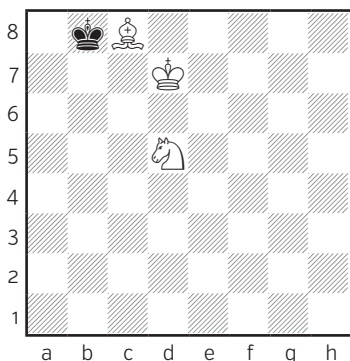
The two Bishops mating technique is a bit different, but it is very logical and easy to understand.

1. ♖f6 ♔f8 2. ♔g6 ♔g8 3. ♖e5

The same operation can be done by moving the Bishop to d4, c3, or b2.

3... ♔f8 4. ♖d6+ ♔g8 5. ♖c4+ ♔h8 6. ♖e5#

## Example 5



Mating with a Bishop and a Knight can indeed be a challenging task when attempted from a random position.

However, a comprehensive technique for achieving such a mating pattern will be discussed in a subsequent book. For this current publication, we will only provide a brief outline of the final execution. It is important to note that the better side should aim to push the opponent's King into the same colored corner as the Bishop, as this is the only position from where a checkmate can be delivered.

1. ♖c3

1. ♗b4 ♔a7 2. ♕c7 ♔a8 3. ♘b7+ ♔a7  
4. ♗c6#

1... ♔a7 2. ♕c7 ♔a8 3. ♘b7+ ♔a7  
4. ♗b5#

## 1.2. PAWN ENDGAMES

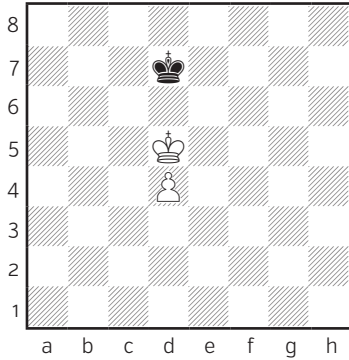
A pawn endgame is a situation in chess where there are only pawns and Kings left on the board. This happens after many of the bigger pieces have been captured. In a pawn endgame, winning or losing can depend on where the pawns and Kings are placed on the board, so careful planning is important.

### 1.2.1. OPPOSITION

In chess, "opposition" is a positional concept that arises when two Kings face each other on the same rank, file, or diagonal, with an odd number of squares between them. The player who moves first in this situation will lose the opposition, and their King will be forced to move to a less desirable square, thereby allowing the opponent to gain an advantage.

The concept of opposition is especially important in endgames, where the placement of Kings on the board can significantly impact the outcome of the game. A thorough understanding of opposition can enable players to seize decisive advantages in certain positions, making it a crucial element of strategic play.

### Example 6



The evaluation of this position depends on which player is to move. If White is to move, Black will be able to hold the draw by maintaining the opposition. However, if Black is to move, White will win by being able to support the pawn with the King.

**1. ♔e5 ♕e7 2.d5 ♖d7 3.d6 ♗d8!**

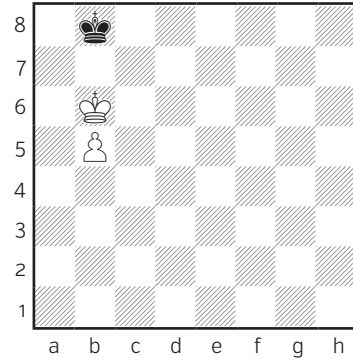
This move must be remembered, as Black is ready to obtain the opposition on the next move.

3... ♕e8?? would be a losing mistake in view of 4. ♔e6 White wins the opposition! 4... ♗d8 5.d7 ♖c7 6. ♔e7+-

**4. ♔e6 ♕e8 5.d7+ ♖d8 6. ♔d6**

Stalemate!

### Example 7



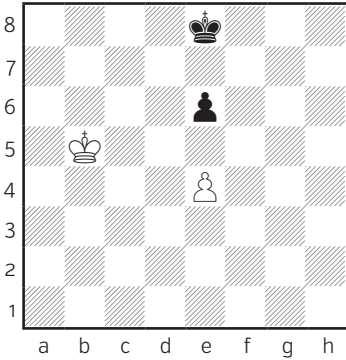
This is one of the most critical positions to remember in chess. When the attacking King is in front of a pawn and has advanced to the 6th rank, this position is typically winning, regardless of which side is on the move, with the exception of the rook pawns. The only tricky situation can arise with the Knight pawn, as the superior side should avoid any potential stalemate defense.

**1. ♔a6!**

Wrong was 1. ♔c6? ♕a7! 2.b6+ (Correct is to return to the starting position 2. ♔c7 ♕a8 3. ♔b6 ♖b8 4. ♔a6) 2... ♕a8!=

**1... ♔a8 2.b6 ♖b8 3.b7+-**

## Example 8



Black is fortunate to be on the move in this position, which allows them to secure a draw. However, if White were to move, they could win by playing 1.e5 and outflanking Black's King.

**1...e5**

Understanding the fundamentals of chess is crucial for every player. By pushing the pawn to e5, Black is able to transition the game into a theoretical draw position.

Wrong was 1...♔d7 2.e5! ♔c7 3.♔c5 White has won the opposition, now the second part is about to follow - pushing the King from the side: 3...♔d7 4.♔b6 ♔d8 5.♔c6 ♔c8 6.♔d6 ♔d8 7.♔xe6 ♔e8 As we already know from the previous example, the position is theoretically winning for White even though Black

has regained the opposition. 8.♔d6 ♔d8 9.e6 ♔e8 10.e7 ♔f7 11.♔d7+-

**2.♔c5 ♔d8 3.♔d5 ♔d7 4.♔xe5 ♔e7=**

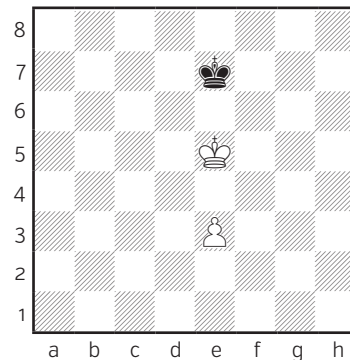
With the correct defense, this position can result in an easy draw for Black. The drawing technique is explained in Example No 6.

1.2.2.

### RESERVE TEMPO

Reserve tempo in pawn endgames refers to the extra move a player has available in a critical position that can be used to gain an advantage or avoid a disadvantage. It's like having an extra ace up your sleeve.

## Example 9





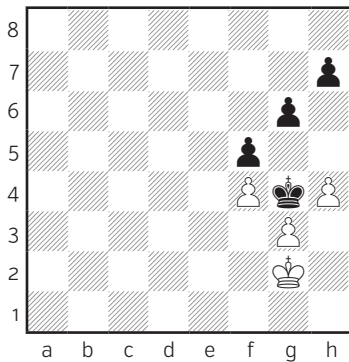
In this position, White has an extra move (a reserve tempo) which forces Black to lose the opposition.

1. e4 ♖d7 2. ♖f6 ♖e8 3. ♖e6

White has reached a theoretically winning position, as described in the previous examples.

3... ♖d8 4. ♖f7 ♖d7 5. e5+-

### Example 10



Black has two extra tempos to use and can avoid the opposition, but there is only one correct way to do so:

1...h6!

Wrong was 1...h5? 2. ♖f2! (Mistake would be 2. ♖h2? ♖f3 3. ♖h3 ♖e2! The chess manoeuvre known as triangulation involves deliberately losing a tempo to force the opponent's King

into a zugzwang position, where they are forced to make a disadvantageous move. 4. ♖g2 ♖e3 5. ♖g1 ♖f3 6. ♖h2 ♖f2 7. ♖h3 ♖g1-+) 2... ♖h3 3. ♖f3 ♖h2 4. ♖f2 ♖h1 5. ♖f1=

2. ♖h2 ♖f3 3. ♖h3 h5!

Forcing white King to lose the opposition.

4. ♖h2 ♖f2 5. ♖h3 ♖g1-+

### 1.2.3. PASSED PAWN

A passed pawn in chess is a pawn that is no longer blocked or threatened by an opposing pawn and has a free way towards the promotion square, the last square in the pawn's way to the other end of the board. It can be a powerful asset because if it reaches the opponent's side of the board and promotes, it can become a more powerful piece, such as a Queen, Rook, Bishop, or Knight, which can be a decisive advantage in the game.

In chess, there are several types of passed pawns based on their location and support. Here are brief definitions of the three types:

1. Central passed pawn: it is place on the central files.

2. Outside passed pawn or distant passed pawn: it is usually placed on the edge of the board and is the furthest away from the other pawns.
3. Protected passed pawn: A pawn that is protected by another pawn, which allows the King to focus on other important tasks, such as attacking the enemy pawns.

pawn that could rival White's own passed pawn on f4.

**1.b4!**

First step: White block the Black's pawns on the Queen side.

**1...♔f6**

Useless was 1...c5 2.bxc5 b4 3.c6 ♔e6 4.f5+! ♔d6 5.f6 Black is unable to stop both white pawns. 5...b3 6.f7 ♔e7 7.f8♙+! Bringing black King under check next. 7...♔xf8 8.c7 b2 9.c8♙+ White is faster as check stops all other activities!

**2.♔e4 ♔e6 3.f5+ ♔f6**

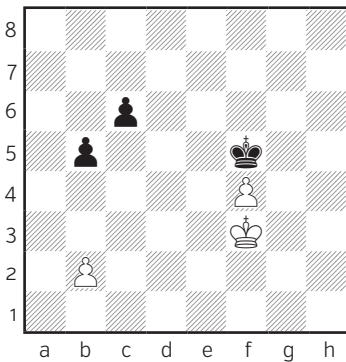
Second step: White will sacrifice its passed pawn to capture pawns on the other side of the board and create another passed pawn.

**4.♔d4 ♔xf5 5.♔c5 ♔e6 6.♔xc6+- ♔e7 7.♔xb5 ♔d7**

Third step: use a well-known technique (as described in previous examples) to promote your passed pawn.

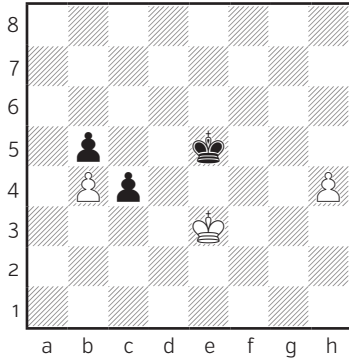
**8.♔a6 ♔c8 9.♔a7 ♔c7 10.b5+-**

### Example 11



Before White can safely advance their f4 passed pawn, it is often necessary to first prevent Black from creating a passed pawn on the Queen side. This is because Black's pawn push on the c-file could potentially create a powerful passed

## Example 12



On the board we have a slightly different situation than in the previous example. White still has a passed pawn on the King side, but the situation on the Queen's side is different. Black has a protected passed pawn on c4, which is protected by the pawn on b5. A protected passed pawn is considered more dangerous than a regular passed pawn because it is not threatened by enemy pawns and does not require the protection of the King. This allows the player with the protected passed pawn to use their king for other purposes, such as supporting their other pawns or attacking the opponent's pawns.

1. ♖f3 ♖f5 2. ♖e3

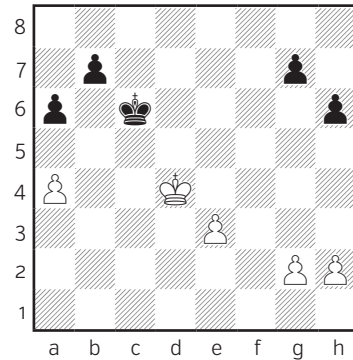
2. ♖g3 c3 3. ♖f3 c2-+

2... ♖g4 3. ♖d4 ♖xh4 4. ♖c5

If White decides to capture the b5 pawn, it will allow the c4 pawn getting promoted to a more valuable piece.

4...c3-+

## Example 13



An outside or distant passed pawn is typically considered more dangerous than a central passed pawn in the endgame, as capturing it brings the opponent's king closer to the pawns on the other side of the board.

1...b5 2.axb5+

2.a5 would not change much. Black can win the game in different ways, for example: 2...♖d6 3.e4 ♖e6 4.e5 b4 5.♖c4 ♖xe5 6.♖xb4 ♖d5-+ Black will be able to capture the a5 pawn.

**2...axb5**

Black has created an outside passed pawn.

**3.e4 ♖d6 4.e5+ ♚e6 5.♙c5 ♚xe5  
6.♙xb5**

Now we can see what the thesis at the beginning of the example means in practice.

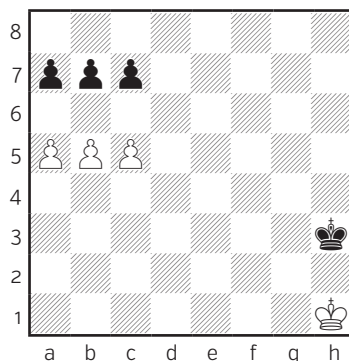
The black King is much closer to the pawns on the King side.

**6...♙e4-+**

1.2.4.  
PAWN BREAK

A pawn break is a crucial tactical method in endgame play, particularly when there are no other options to create a passed pawn.

In some cases, sacrificing one or more pawns is necessary to achieve this objective. Although this technique is commonly used in pawn endgames, it can also be effective in other types of endgames, as we will demonstrate later.

**Example 14**

In front of us is a widely recognized example frequently used in endgame literature. It serves as an excellent illustration of the effectiveness of the pawn break in creating passed pawns.

**1.b6!**

Bad was 1.c6? bxc6 2.bxc6 ♙g4-+  
Since there is no more potential to create a passed pawn, the activity of the black King starts to play the most important role.; or 1.a6? bxa6 2.bxa6 ♙g4-+

**1...cxb6**

1...axb6 2.c6! bxc6 3.a6+-

**2.a6!**

Here comes the decisive pawn sacrifice!