

The Board Buddies in LogiQ Land

Introduction

Goals

Children of the Z and Alpha generations will face many new challenges in the future, and most of them will pursue careers that do not even exist today. The primary purpose of the book is to introduce games and exercises that develop creative thinking and thus enable children to tackle and solve unexpected, complex problems confidently.

We choose chess as a medium which we find to be easily accessible for children. Problems arising on the chessboard are universal, so the skills can be more easily transferred to other domains where they can be used successfully. The development of mathematical logic, generalization, and thinking in systems is enormously helpful for grasping the essentials of STEM domains.

LogiQ Board - Unleash your creativity

LogiQ Board is a versatile teaching tool (<https://learningchess.net/logiq-board>). Thanks to the wide variety of graphical elements, LogiQ Board can be used for creating exercises, puzzles, problems, or designing new board games. The instantly loadable and modifiable files make lesson preparation easy and significantly reduce the workload of the teacher.

Technical requirements

- PCs with internet access for working alone or in small groups / physical chessboard
- projector or smart board for larger groups
- LogiQ Board access

Planning a lesson

The lesson should start with a simple warming-up, which can be diversified for setting an optimal challenge for everyone. Depending on the size of the group, the following puzzle can be solved individually or in pairs. These first two exercises should not exceed half of the lesson. The third part is the game. The second half of the lesson is needed for understanding the game and playing multiple rounds. The teacher may want to collect feedback about the successes and challenges at the end of the lesson. The estimated time for each part assumes a lesson of 45 minutes.

The files of the digital supplement can be uploaded to the LogiQ Board directly. To do so, choose the Load option in the LogiQ Board, and select a file. The teacher may wish to work with physical chessboards. In this case, the according amount of colored shapes can be printed. One should pay attention to the actual size of the shapes to match the chessboards.

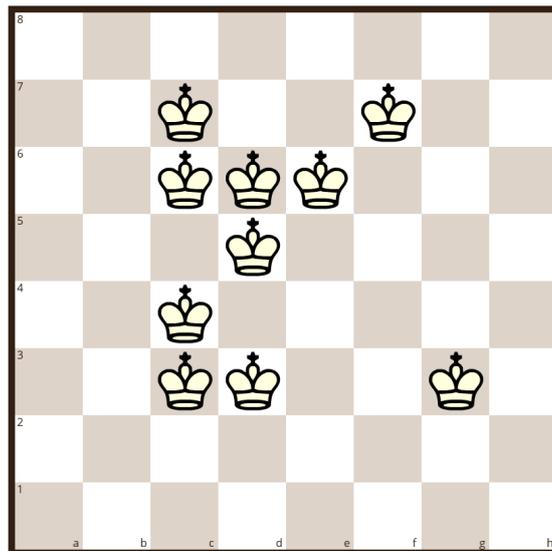
Interactive lesson plan

1. Warming up for the group (approximately 5-10 minutes)

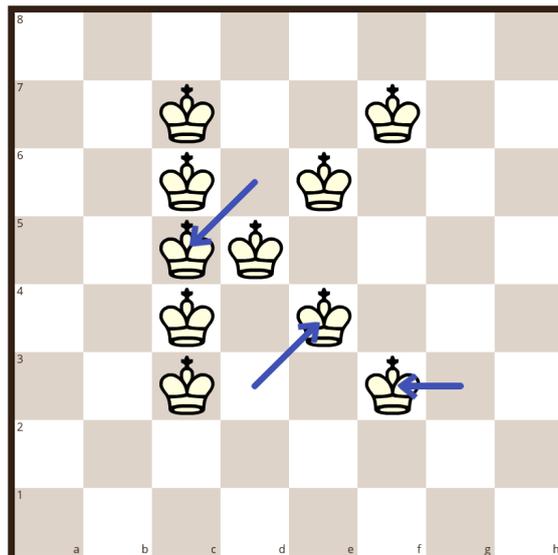
Puzzling Letters

Ask children the name the chess piece that appears in the puzzle (King). Tell them that the initial of this piece is to be written on the chessboard. The letter has to be constructed in the given number of moves. In the following example, it takes three moves to construct the letter K.

Puzzle:



Solution:



Variations

Game for groups of four children: Every group chooses a secret password of four letters. Every member of the group creates a puzzle for one letter of the password. The groups swap places to find out the passwords of other groups. This requires additional time, so the second puzzle can be skipped if necessary.

It is also possible to work in pairs and create an individual puzzle for each other. The maximum number of moves in each problem should not be more than five.

Differentiation

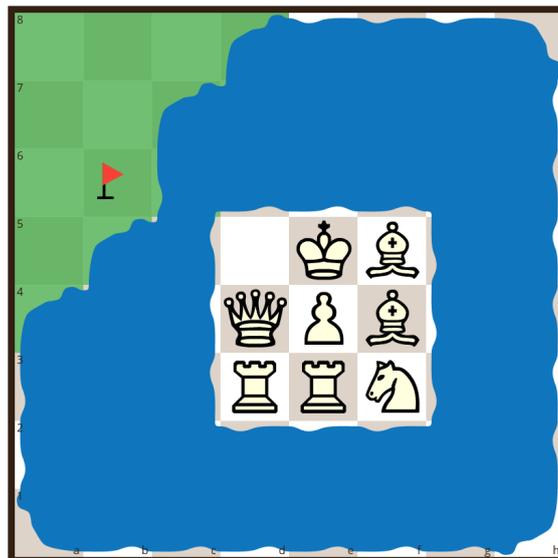
For those who struggle visualizing the letter, a classmate or the teacher can play the first move of the solution. It is also an excellent way to quickly construct a more accessible example in the LogiQ Board, requiring fewer moves.

2. Work in pairs / individual task (approximately 10-15 minutes)

The Flood

Move the chess pieces around to capture the flag with the knight. No piece is allowed to touch the water. Complete the task in the least possible number of moves.

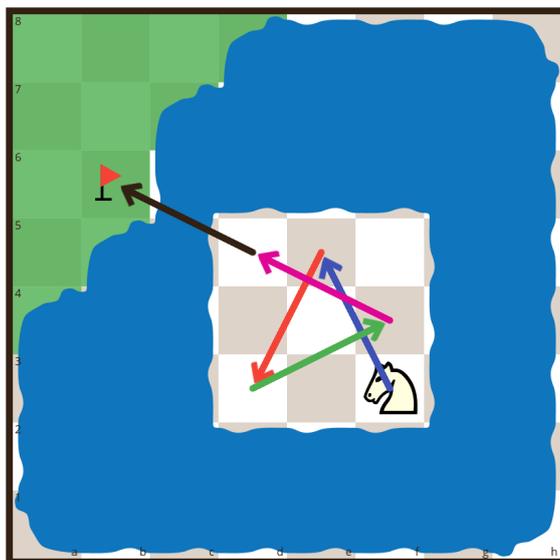
Starting position:



Guidelines

The children may need to be eased into this puzzle with a few simpler questions. For example, you can ask this introductory question: how can the knight reach a square which is diagonally two squares away? On an empty board, this takes four moves. Next, the puzzle can be presented with the knight only.

In the original problem, children who find it challenging to remember the solution should arrange the actual pieces in a line in the order of their moves. In this line, the knight should be omitted. Having rehearsed the sequence of moves with the aid of this line of chess pieces, the solution should be written down: K-N-R-R-N-B-N-Q-K-N and jump to the flag.



Variations

Adding more pieces and using a larger area makes the puzzle too complicated, and it may not be straightforward to find the optimal solution. It is better to use other small portions of the board with an area under ten squares and make variations this way.

3. Play in pairs (approximately 20-25 minutes, or second half of the lesson)

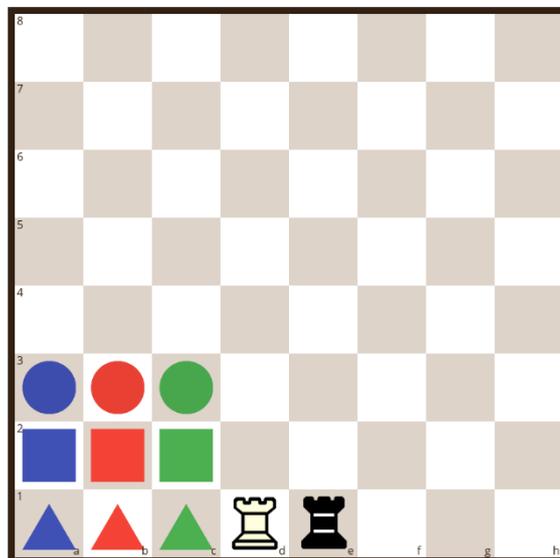
Smart Steps

In the first phase of the game, the players take turns to put a shape on a square of their choice. In order to make the game more interesting, the players choose where to put the opponent's rook on the board. Now the second phase begins. The players move with their rooks in turn. Each player has to follow the restrictions of the scroll:

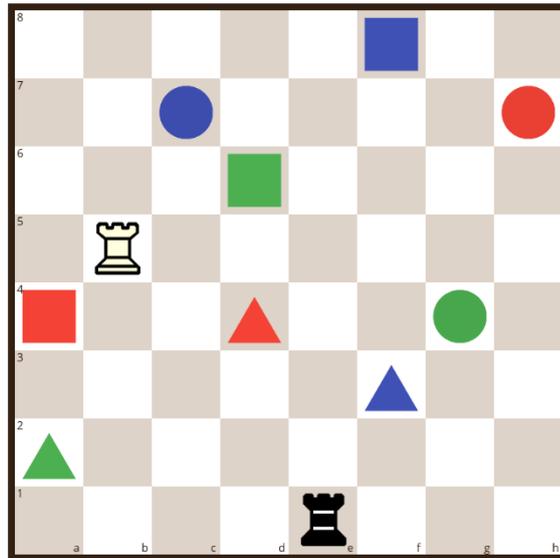
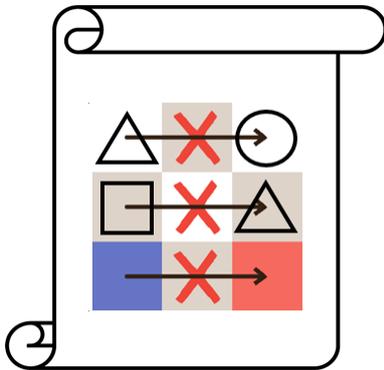
- A rook cannot capture a circle after a triangle.
- It is forbidden to capture a triangle following the capture of a square.
- Neither players can move from a blue shape to a red one.

The goal is to collect as many points as possible. The rooks cannot capture or jump over each other. It is not possible to jump over the shapes. It is not necessary to make a capture in every move.

Position before the game:

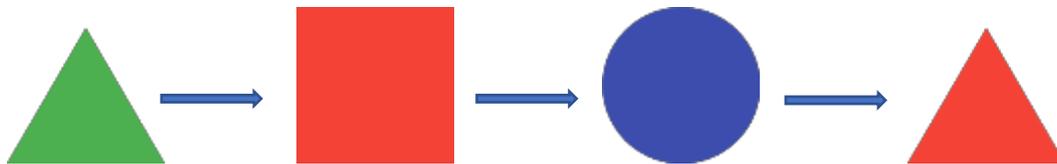


The rules and a sample starting position:



Guidelines

Depending on the age and abilities of the group, it is possible to introduce the game with a couple of sample sequences like this one:



The goal is to determine if the sequence is following the rules of the scroll. Here, the rule breaks between the third and the fourth element, because it is not allowed to move from a blue shape to a red one, regardless of their types.

It is rewarding to plan ahead to avoid dead ends and save some moves. The player should check if his opponent's last move was legal. It is worth revising the restrictions a few times before the game begins. After playing a few rounds, let children come up with their own set of rules.

Variations

This game is also playable with two knights or queens. Teleportation points can be added with pairs of flags of the same color. The piece moving to a flagged square will advance to the square with a flag of the same color.