

GAMES AND RULES

Kids Age Group



organized
by



1. Game field

You can see the game field and the areas on the picture below. For further information about the game field please check Engineer Challenge General Rulebook.



2. Game objects

Light mill pieces

(plastic bottle cap – possible colors: pink, light blue, light grey, light green, white etc.)



Number: 4 pieces

Size: 25 mm diameter

Placement: completely on the marked points of the Nine Men's Morris field (see 3. Game object placement)

Dark mill pieces

(plastic bottle cap – possible colors: red, dark blue, dark green, black etc.)



Number: 4 pieces

Size: 25 mm diameter

Placement: completely placed in the circles in the finish area



You must have 2 different colored mill pieces for light and dark pieces that can be easily identified. The light and dark naming comes from the official Nine Men's Morris game.

Box of matches

(only the bottom part is needed) – in the following: box



Number: 1 piece

Size: standard (35x53x10 mm)

Placement: on grandpa's couch, in the rectangle area in the right lower side of the game field

Grandpa LEGO minifigure



Number: 1 piece

Size: standard LEGO minifigure

Placement: completely in the bottom of the box of matches

Sock



Number: 1 piece (does not have to be a pair)

Size: 35 - 52

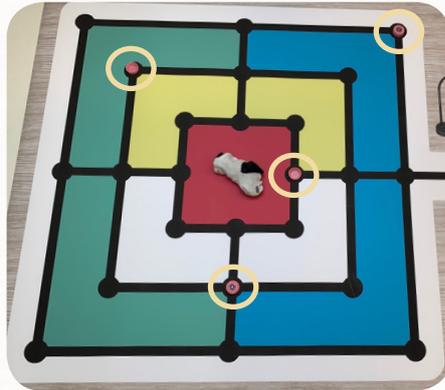
Placement: completely in the middle red area of the Nine Men's Morris board



When a game object is placed in an area that is limited by black lines it has to be completely inside the area and it mustn't touch the lines (neither the object itself nor any parts of it). The LEGO minifigure can only consist of a head, a body and a leg component and its hands have to be empty.

3. Game object placement

At the start **light mill pieces** have to be **placed** on the points **as shown in the picture**.



Dark mill pieces have to be **completely placed in the available 6 circles in the finish area** as in the picture.

At the start the **sock** has to be **placed completely in the middle red area** of the Nine Men's Morris board.



At the start **grandpa minifigure** has to be **placed completely in the box** which is **completely in the rectangle** in the right lower part of the game field.



In case of rule violation:

If any of the game objects are not placed properly for the start, the team will not get the points for that game object.

4. Challenge tasks

The robot can start from anywhere on the game field.

4.1. Tidying the desk

You left your sock on the desk by accident. You have to remove it in order to start playing with your grandpa.

4.2. Complete two mills

Grandpa has already placed the light mill pieces on the Nine Men's Morris board. Now it is your turn to **place your 6 dark pieces** as well. Make sure that you **place them in a way that they form 2 separate mills**. A mill is formed if three dark pieces are placed on three points of the board which are linear and connected with a line.



If you manage to form a mill you can remove one of the light mill pieces from the board (not touching anything else on the board)!

4.3. Avoid light mill pieces

You must avoid the already placed light mill pieces when placing the dark ones on the board. They mustn't be moved from their starting position.

4.4. Help grandpa sit next to the board

While you were placing the dark pieces grandpa was resting but now he wants to join you at the game board. Help him to get to the game board!

4.5. Parking

After the robot finishes the tasks it parks completely in the finish area to let you play Nine Men's Morris with your grandpa.

5. Scoring

Challenge tasks	Points
Tidy the desk	
The robot completely removed the sock from the game field	10
The robot partly removed the sock from the game field	5
Placing dark mill pieces	
The dark piece is completely in any of the free points on the Nine Men's Morris board	30 5 / piece
The dark piece is partly in any of the free points on the Nine Men's Morris board	12 2 / piece
MILL: Three dark pieces form a mill (it doesn't matter if the pieces involved are completely or just partly in their points)	20 10 / mill
Avoid light mill pieces	
Light mill piece is completely in its starting point or is removed correctly when a mill was formed	12 3 / piece
Help grandpa sit at the game board	
The robot transports grandpa in the box completely to the middle red area of the board and grandpa stays inside the match box	8
The robot transports grandpa in the box partly to the middle red area of the board and grandpa stays inside the box	4
Parking (points are only awarded if any other challenge points have been awarded too)	
The robot parks completely inside the finish area	10
Technical points (points are only awarded if any other challenge points have been awarded too)	
The uploaded video includes all the required shots (see General rulebook): <ul style="list-style-type: none"> • recording of the robot, • recording of the game field and game objects, • recording of the competition run, • recording of the game objects and robot end positions. 	5
The team or individual uploaded only one video file and one program documentation file, which were in the correct format and also named correctly.	5
Max. points	100

5.1. Scoring terminology

Completely inside:

The game object or robot is completely inside an area if it only touches the area and its projection from above does not reach out of the area.

Partly inside:

The game object or robot is partly inside an area if it at least touches the area, but also touches other areas or its projection from above reaches out of the area.

6. Scoring manual

Tidying the desk

10 points

Sock **completely outside** of the game field. **10 points awarded** if it is **not touching the game field**, the robot or any game object.



5 points

Sock **partly outside** of the game field. **5 points awarded** if the sock touches the area surrounding the game field, the robot or any game object, but it is not completely outside.



Complete two mills

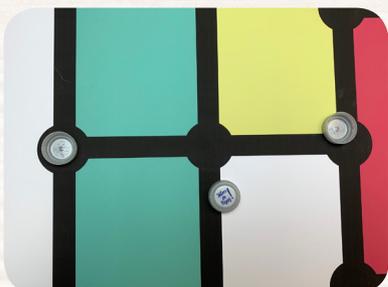
Three dark pieces form a mill, **it doesn't matter if the pieces involved are completely or just partly in their points**. But each dark mill piece placed completely or partially in a free point on the Nine Men's Morris field also awards you points, even if a mill is not formed.



Mill formed correctly and all pieces are completely inside a free black point, so points are $3 \times 5 + 10 = 25$.



Mill is also formed correctly here, but two pieces are only partly inside their black point on the board, so points are $5 + 2 \times 2 + 10 = 19$.



Mill is not complete, but the team is still awarded 5 points for one piece completely inside the point and 2 points for one piece partially in the point, which adds up to 7 points for this setup.

Avoid light mill pieces

12 points (3/piece)

3 points for this light mill piece because it is **still completely inside its starting black point** on the board.

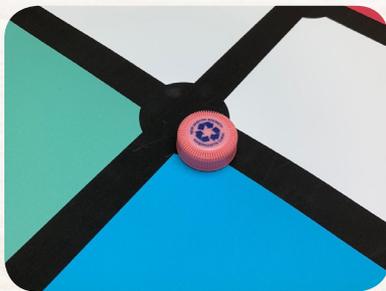


Unlikely, but **still 3 points** for this **light mill piece**, because it is **still completely inside its starting black point** on the board. It does not matter in what position the pieces stays in the area.

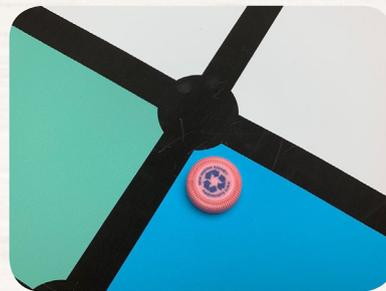


0 points

0 points for this **light mill piece** because it **moved partly outside its starting black point** on the board.



0 points for this **light mill piece** because it **moved completely outside its starting black point** on the board.



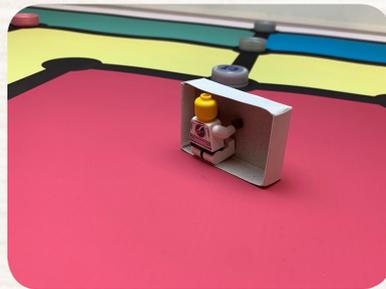
Help grandpa sit at the game board

8 points

The box is completely inside the red area and grandpa only touches the box.



However unlikely it is, if grandpa decides to do some extreme parkour, **maximum 8 points can still be awarded if, if he only touches the box...** like you can see in the following two pictures.



0 points

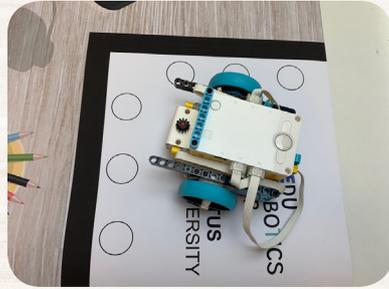
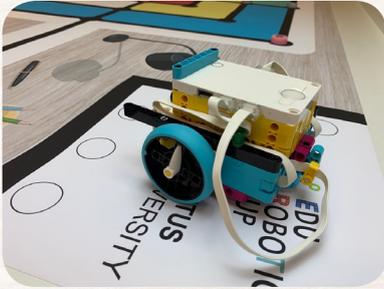
Although the **box is completely inside** the red area, **grandpa is not touching only the box.**



Parking the robot

10 points

Parking **completely** inside the finish area.



0 points

0 points in both cases as **the cables** are counted as part of the robot for parking.

