



ENGINEER CHALLENGE

TEENS AGE GROUP

GAME RULES

14th – 17th December 2023





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1. Game mat



Below you can see the game mat:



2. Game objects

Important: whenever a game object has to be placed on an area the bordering lines of the area are not considered part of the area. If there is no bordering line, then the edge of the color of the area is considered the border.

Plastic bottle cap (any color allowed):

Amount: 6 pieces

Size: diameter 23 - 28 mm

Placement: put each one with open side up completely inside of the shop area (put the table tennis balls in the bottle caps)

Table tennis ball:

Amount: 6 pieces

Size: standard 40 mm diameter

Placement: each ball goes on a plastic bottle cap

Match box:

Amount: 2 pieces

Size: standard small (35mm x 53mm x 10mm) match box

Placement: (you only need the inside of the match boxes) Place them open-side up, somewhere completely inside the logistic centre in the upper right part of the game field

LEGO minifigure:

Amount: 4 minifigures

Size: standard minifigure without tool

Placement: put one of each figure in the house area (one figure per house area)





Mug:

Amount: 3 pieces

Size: standard 250 ml (max. 85mm (height) x 76 mm (diameter))

Placement: standing up next to each other exactly at the upper left corner of the game mat but outside the game mat

Book:

Amount: minimum 1 piece

Size: minimum 25 cm (width) x 25 cm (length) x 3 cm (height)

Placement: place the book in the restaurant area, so that it could project from the game field, but only cover the restaurant's graphics

2x2 LEGO brick:

Amount: 2 red, 4 black, 4 yellow, 4 blue

Size: 2x2 LEGO brick

Placement: 2 red standing in the field of "Precision Agriculture" area. Black, blue and yellow elements are **randomly placed on "grey buildings"**. One brick will be placed on each building. After the bricks are placed, the remaining two elements are set aside.


Ruler:

Amount: 1

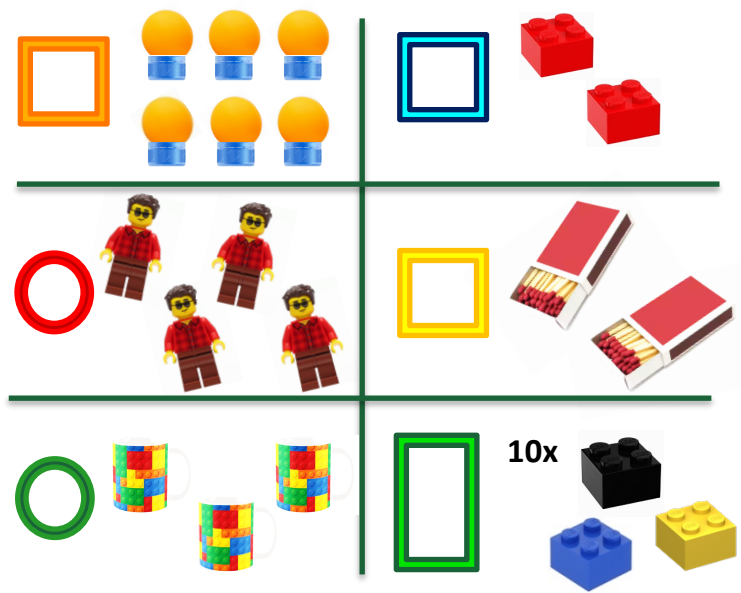
Size: 30 cm

Placement: to show us in the video that the game mat is of the correct size you have to place a ruler on or next to the green rectangle at the bottom of the game field

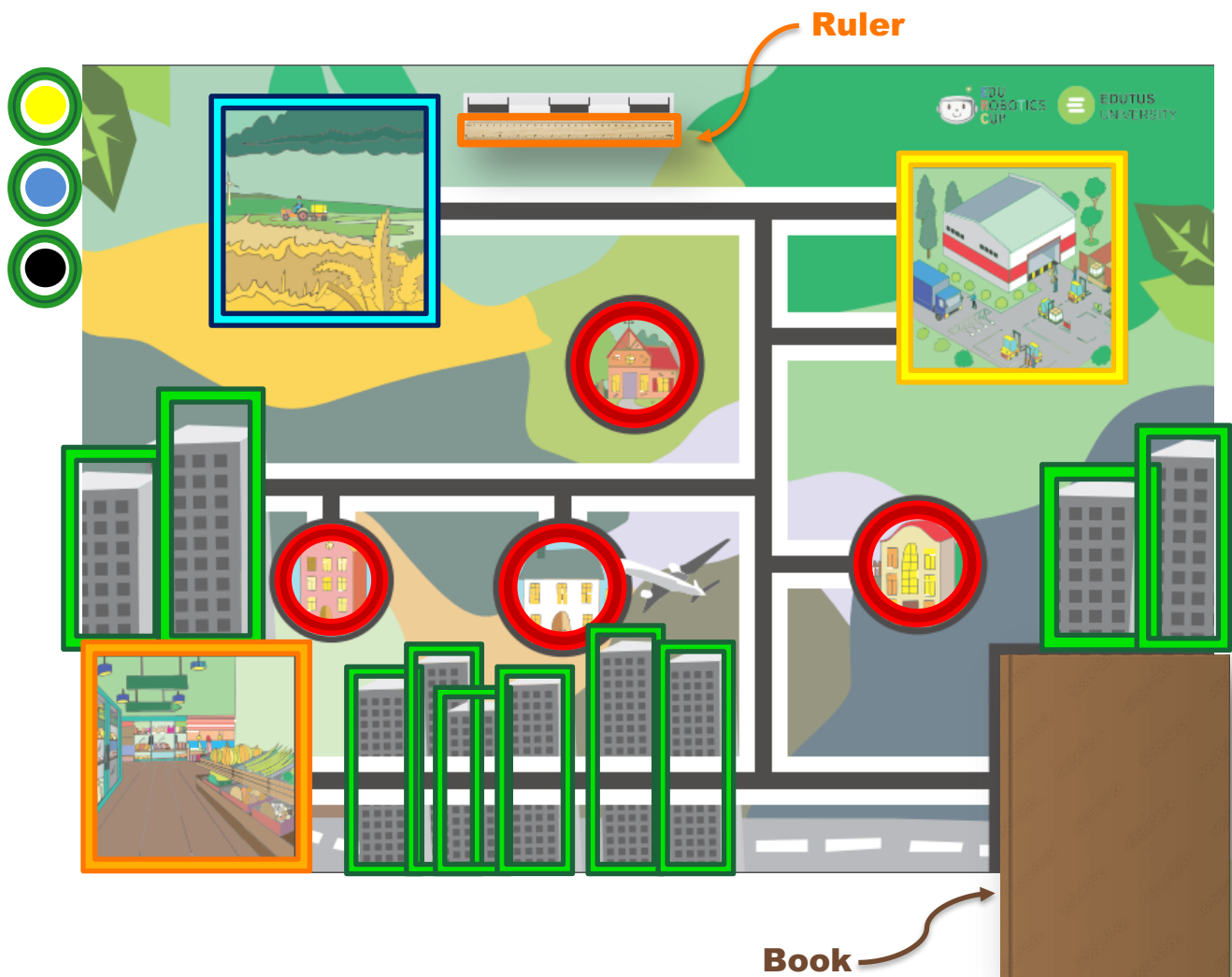
Before the start of the robot run don't forget about:

- start recording
 - introduce your team
 - share with us the name of your sustainable city
 - place a ruler next to the black and white area and show it on record before robot run don't forget to remove it
 - **HAVE FUN!**
- 

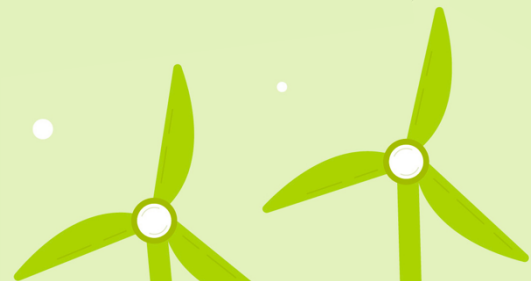
4. Game objects on the mat



See picture below where to place the different game objects:



In case of rule infringement: If a game object is not placed on the game field in the correct position points for that object will not be awarded for the team.



4. Game tasks

The robot has to start completely inside the Shop Area in the bottom left part of the game field.

Engineers and the Precision Agriculture:

Precision agriculture needs engineers to operate efficiently. **Take** the 4 engineers (LEGO minifigures) from their houses and **help them get to the “Precision Agriculture” area.**

Boxing and safe transport:

The agricultural products (red 2x2 bricks) should be placed in boxes so that they can be transported more safely. So, **collect** these products from “Precision Agriculture” area and **place them** in the transport boxes (open match boxes), which are in the “Logistics Centre” area.

Delivery mission:

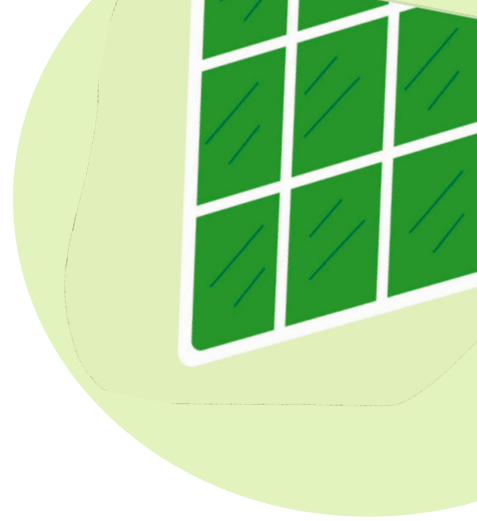
Ordered **products** (bottle cap + table tennis ball) are put together in the shop, you **need to deliver** them to 4 houses, “Logistics Centre” area, and Restaurant.

Recycling:

Collect the recycled waste (black, blue, and yellow 2x2 bricks) and **put them in the appropriate container** (mugs). From top to bottom: **First mug** is plastic waste bin (**yellow**), **second mug** is paper waste bin (**blue**), **third mug** is municipal waste bin (**black**).



5. Scoring



Tasks	Score
Engineers and the Precision Agriculture	maximum 40 points
Engineer is <u>completely inside</u> the Precision Agriculture area.	(10 points / engineer)
Engineer <u>is touching</u> the Precision Agriculture area.	(5 points / engineer)
Boxing and safe transport	maximum 20 points
The agricultural product (red 2x2 brick) <u>is in the transport box</u> (open match box).	(10 points / brick)
The agricultural product is completely inside the “Logistics Centre” area.	(5 points / brick)
Delivery Mission	maximum 60 points
Ordered product (plastic bottle cap + table tennis ball) is <u>completely inside a goal area</u> . (4x House, 1x Logistics Centre, 1x Restaurant area)	(10 points / product)
Recycling	maximum 100 points
Recycled waste is <u>completely inside the correct recycled waste bin</u> .	(10 points / every piece of recycled waste)
Recycled waste is <u>completely inside one of the recycled waste bins</u> .	(5 points / every piece of recycled waste)
Total score:	220 points

Definitions for scoring

Completely inside: every part of the game object that touches the game field only touches the target area not including the surrounding line.

Touching: the game object touches the target area not including the surrounding line. Important that in this case the game object is not completely inside the area, because that is a different case.

