

Robot ZONE [01]

TREASURE HUNT

6-10 years old

Educational Challenge

Image by [Nadiib BR](#)



Context

During the last expedition on Planet Z, the explorers hid valuable gemstones—nyxium, saphira, and luminite—in various locations. Your mission is to find them in an exciting treasure hunt!



Robot Description

Robots participating in the challenge must adhere to the following guidelines:

1. The robot must fit entirely within the starting area, which includes the red border, defined as a 25 cm x 25 cm square.
2. Only one controller is allowed (WeDo, Spike, EV3, Tudao, etc.), with a maximum of two ports connected.
3. A tablet or computer may be used to run multiple programs during the challenge, and modifications to the programs are permitted throughout the round.

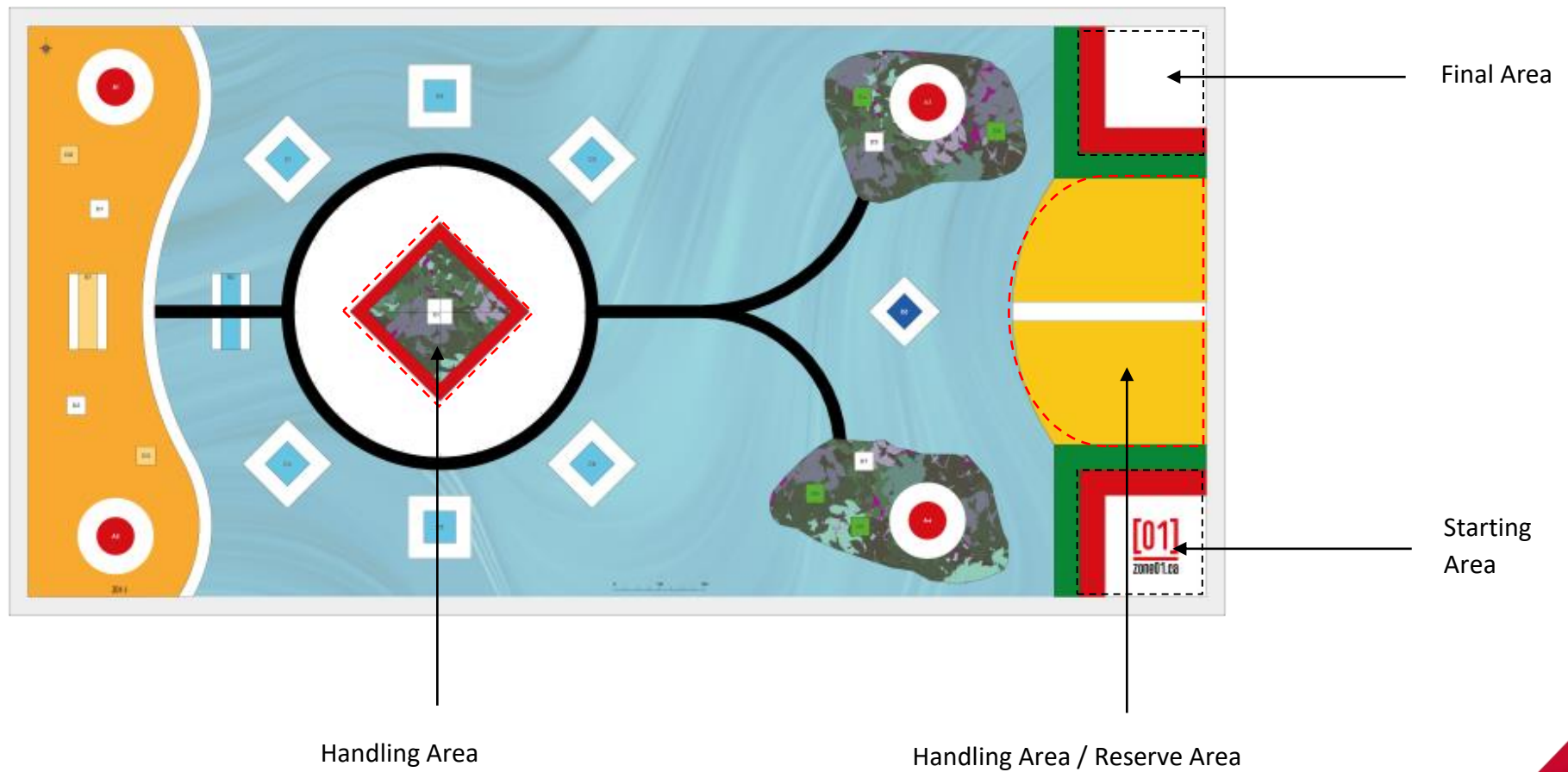
Playing Field Description

Surface used: Tapis Z01-J

The mat is highly recommended for practicing the challenge since the mat's colors and lines define the precise locations of the objects.

The mat is available at the [Zone01 shop](#).

View of the Mat in 2 Dimensions



Accessories Description

Luminite

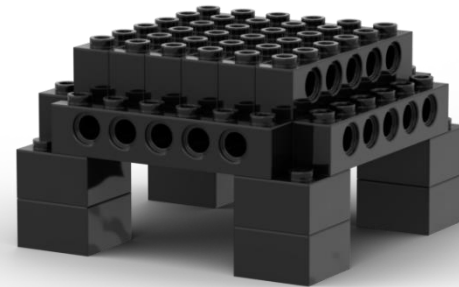
Luminite is a small, bright yellow gemstone always found beneath an object. There are five luminite stones on the game surface.



Black Rock

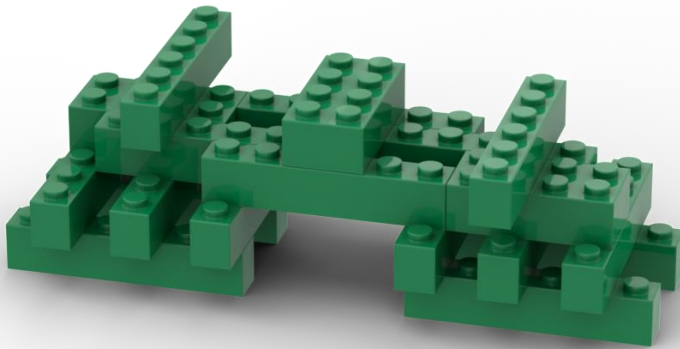
The black rock is a movable obstacle that conceals luminite underneath. There are four black rocks on the game surface.

The top of the black rock consists of six 1x6 LEGO bricks, while the color of the rest of the rock is irrelevant.



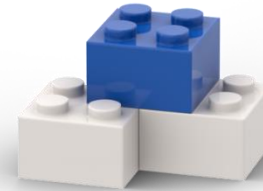
Petrified Wood

Fossilized fallen trees have formed a pile of irregularly shaped petrified wood, which hides a luminite stone.



Saphira

The saphira is a gemstone with blue and white reflections, found buried on small islands or beaches. There are ten saphira stones on the game surface.



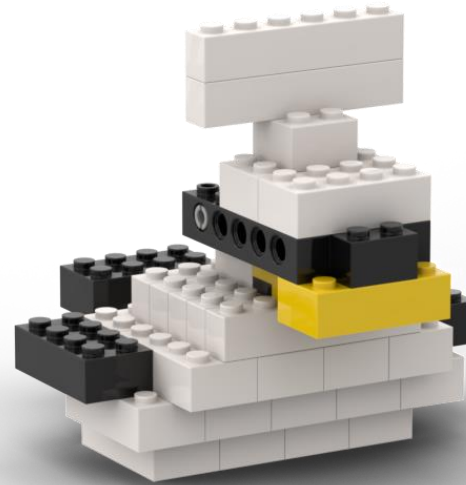
Nyxium

Nyxium is a red gemstone hidden within the totem.

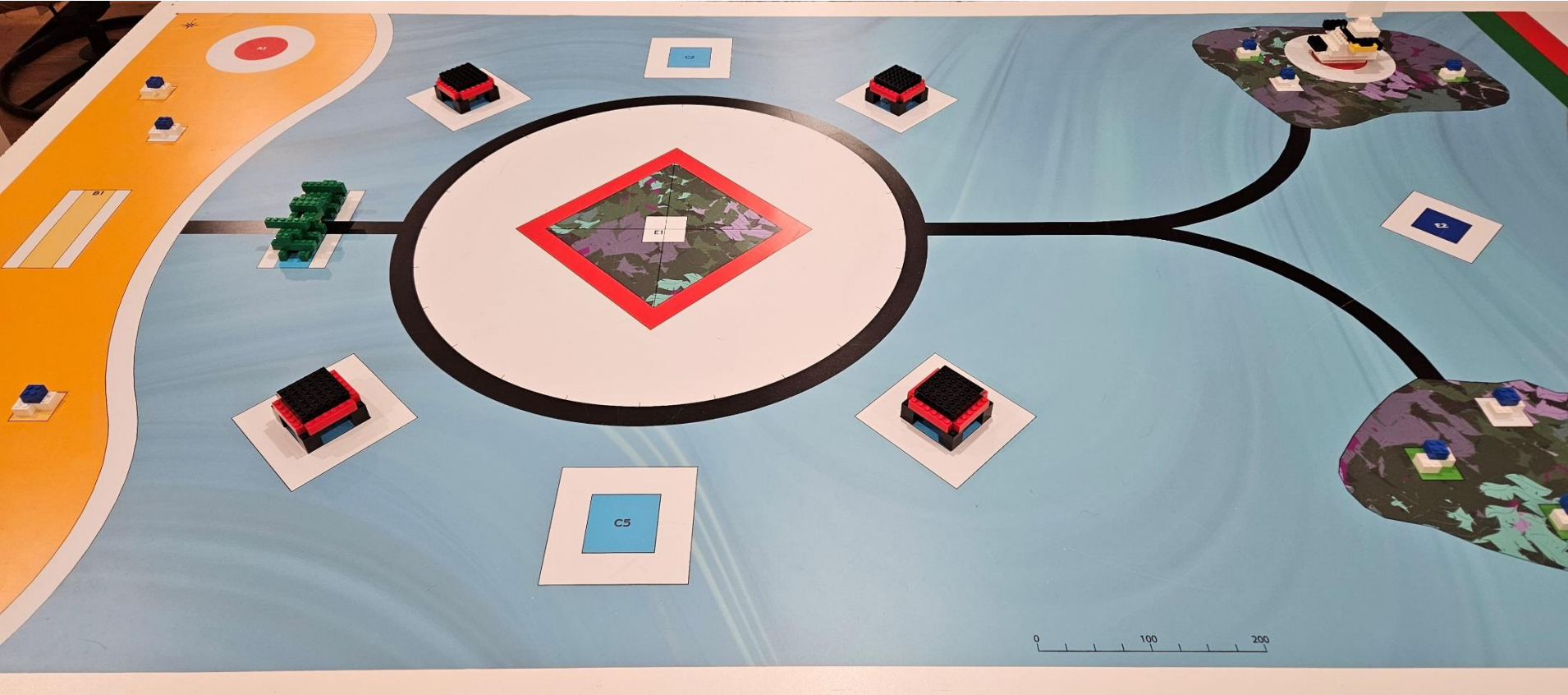


Totem

The totem depicts a famous pollinator bird known as the polliflora. When you press on its head, it opens its mouth and drops the hidden nyxium.



Positioning Example



Accessories Positioning

- The rocks are positioned at C1, C3, C4, and C6, with luminite underneath.
- The saphira is in positions D1 through D10.
- The petrified wood is centered in rectangle B2, also with luminite beneath it.
- The totem is placed on the red circle A3, facing south, and will always have nyxium in its mouth.

Detailed Challenge Description

Objectives

The Treasure Hunt challenge aims to develop several skills in students:

1. Collaborating effectively as a team.
2. Adapting to new information.
3. Choosing their own sequence of actions.

At the start of the challenge, the judge will provide the team with a list of clues for the treasure hunt. This list indicates the locations the robot must visit for Mission 2 of the challenge. Since the list is revealed during the round, students must plan their actions independently, without adult assistance.

Allowed Manipulations

Robot Handling

Students may manipulate, realign, or move the robot only when it is in zone E1 (including its red square) or in the yellow reserve zone (including the white line).

The robot is allowed to move between zone E1 and the reserve zone, and vice versa. At least one wheel of the robot must be within one of the zones before and after any manipulation, prior to starting a new program.

Accessory Handling

Students are not permitted to enter or remove accessories from zone E1 or the reserve zone; only the robot may do so.

Accessories can be repositioned within the zone but must remain on the ground if they are already there.

Starting Procedure

The team must position the robot completely in the starting zone.

Upon the judge's signal, the judge will reveal **the treasure hunt clues**, which include three locations from C and four from D where precious items must be collected.

The students will analyze the list, plan their actions, and start the robot to complete the missions in any order.

Missions

Mission 1

Push the totem head to open its mouth and release the nyxium, then transport it to the reserve.

Mission 2

Based on the treasure hunt clues:

Locations C: Push the rock out of the white square to retrieve the hidden luminite and bring it to the reserve.

Locations D: Collect the saphira and transport it to the reserve.

****Warning:** Only collect the gemstones and move the rocks listed in the treasure hunt clues. At the end of the challenge, bonus points will be awarded for any items that were not moved and were not on the list.*

Mission 3

Insert the petrified wood completely into the white rectangle B1, retrieve the hidden luminite beneath it, and take it to the storage area.

Mission 4

Finish in the final zone. The robot is in the final zone only if all its support points are within that area.

Scoring

Missions	Max Points
Petrified wood completely in final position (8) or <i>Petrified wood partially in final position</i>	8 5
Rock from the list completely outside of the white square (4)	12
Luminite in the reserve area (5)	20
Saphira from the list in the reserve area (4)	16
Nyxium in the reserve area (15) or <i>Nyxium out of the totem (6)</i>	15 6
Robot in the final zone	5

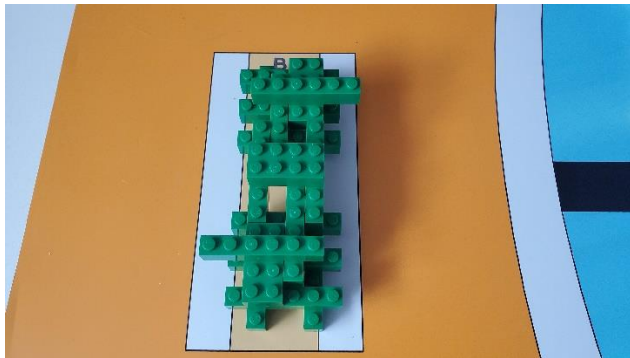
Bonus points for items not in the list	Max Points
Saphira not moved (6 x 3 points)	18
Rock not moved	6

Penalty	Max Points
Totems damaged or outside of its red circle	-11

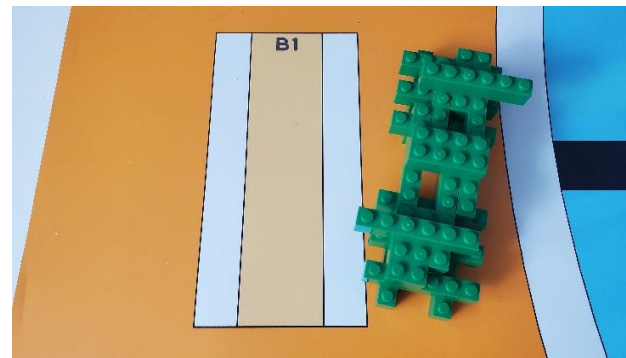
Total points	100
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Score Interpretation

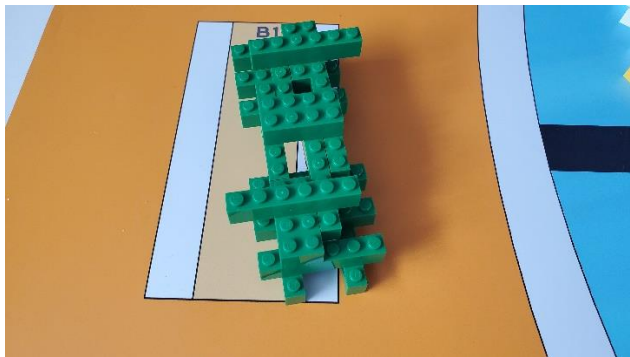
Petrified Wood



Completely in the zone = 8 points



Not in the zone (not touching) = 0 point



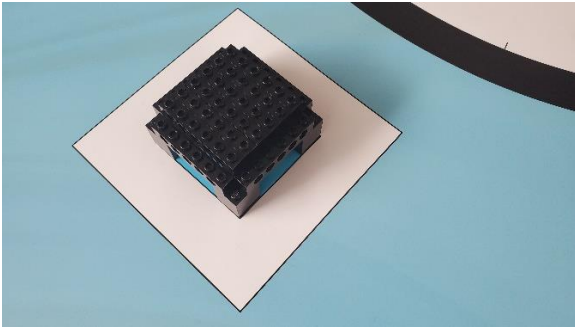
Partially in the zone (touching the outside) = 5 points

Totem

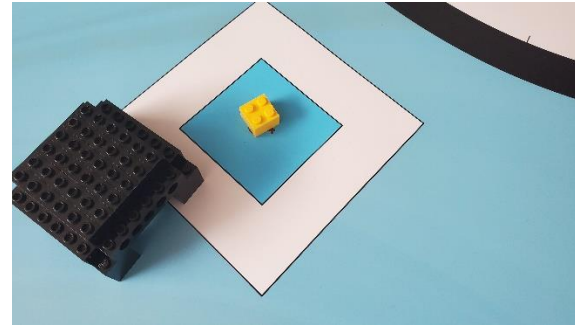


Totem damaged or completely outside of its red circle = -11 points

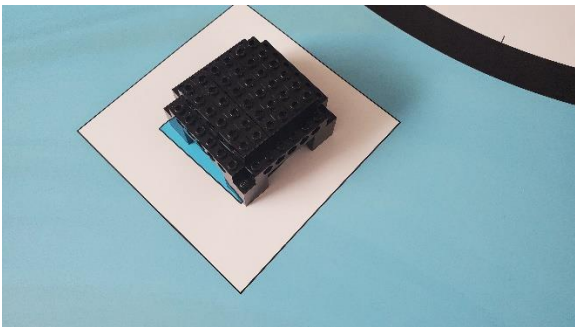
Rock



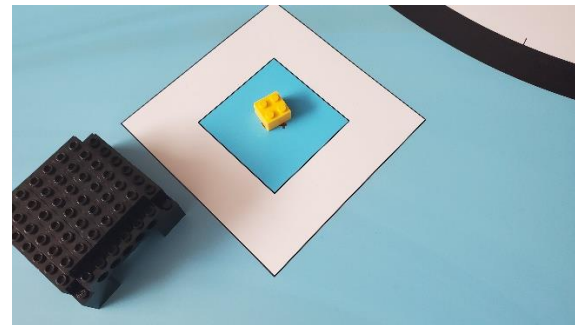
Rock out of the list not moved = 6 points



Rock in the list touching the white square = 0 point

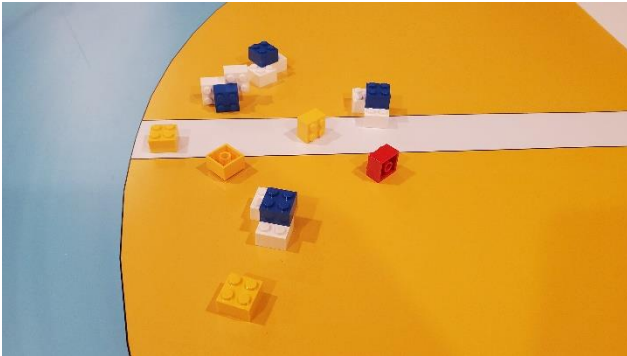


Roche not in the list moved (touching outside of the blue square) = 0 point

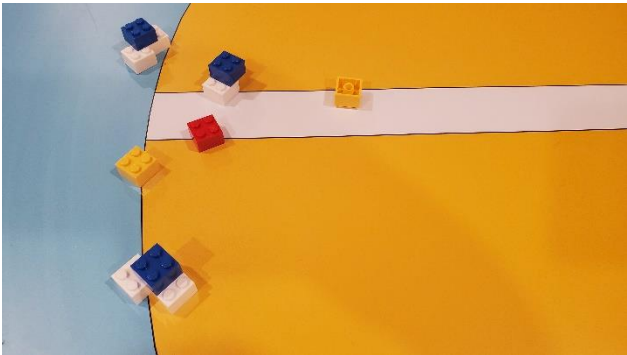


Rock in the list outside of the white square = 4 points

Gemstones in the reserve area



Every gemstone completely in the reserve area = 4×4 points + 4×5 points + 15 points = 51 points



Possible result: Only 3 gemstones completely in the reserve area = $4 + 5 + 15$ points = 24 points

Saphira



Saphira not in the list not moved = 6 points



Saphira not in the list moved (touching outside of the green square) = 0 point

Nyxium



Nyxium inside the totem = 0 point

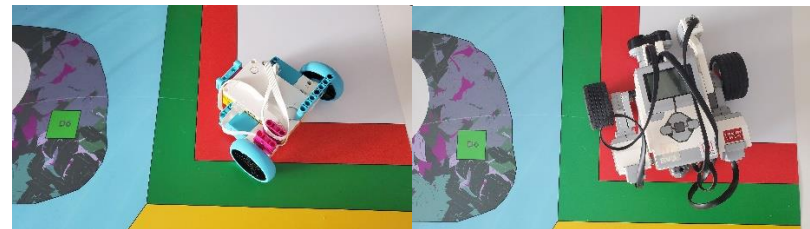


Nyxium out of the totem but not in the reserve area = 3 points

Robot in the final zone



Robot in the final zone (every contact point is inside the white and red zone) = 2 points

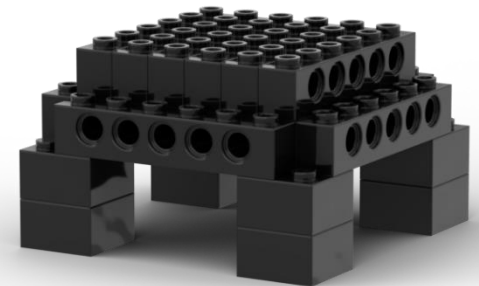
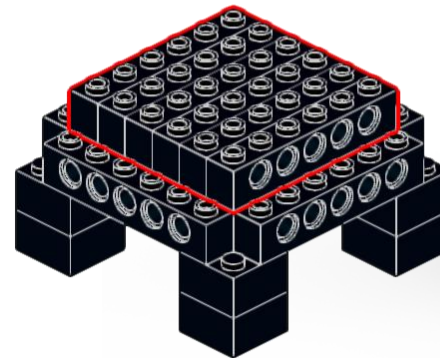
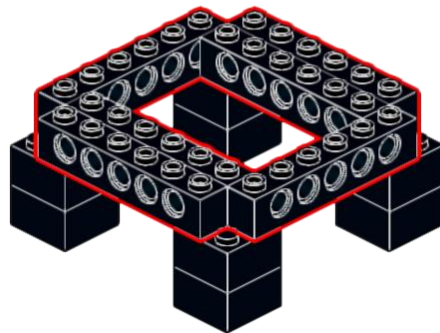
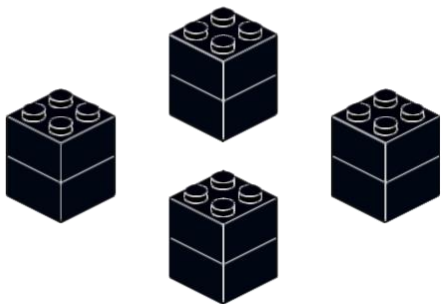
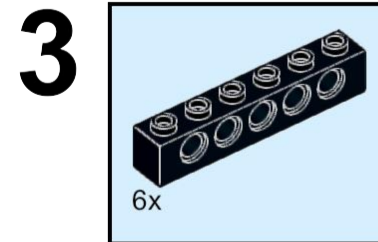
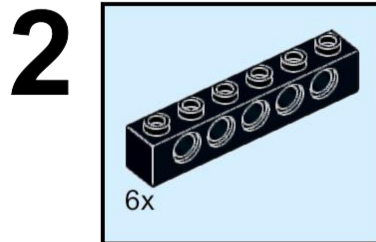
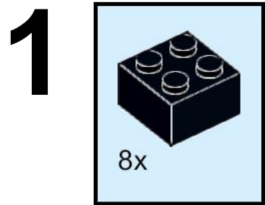


Robot not in the final zone (contact point outside the zone) = 0 point

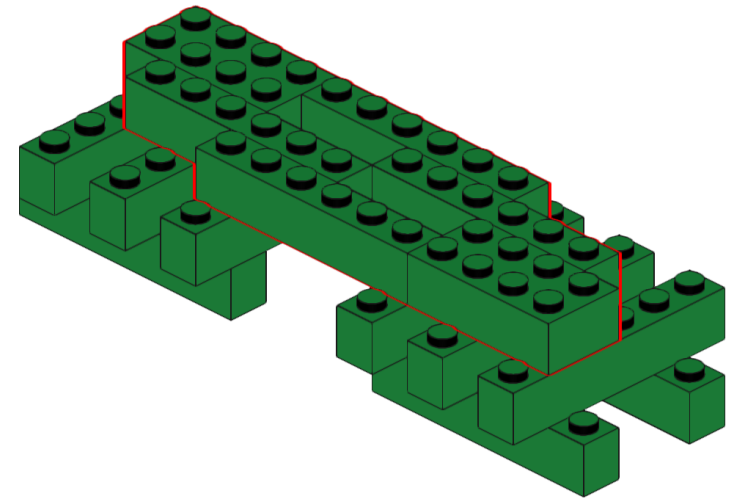
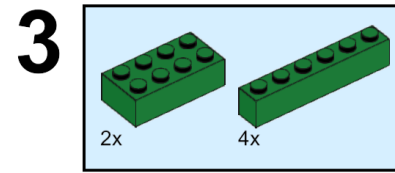
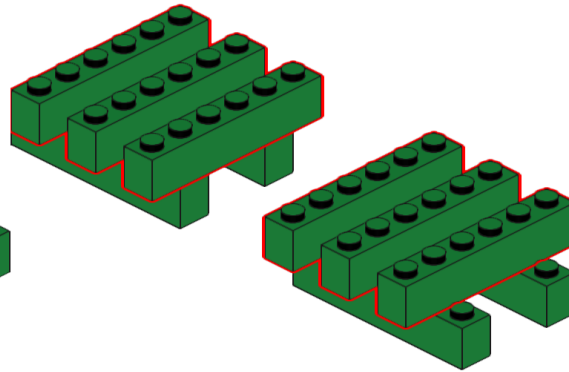
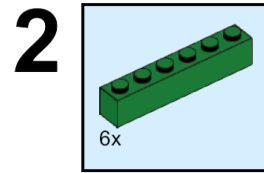
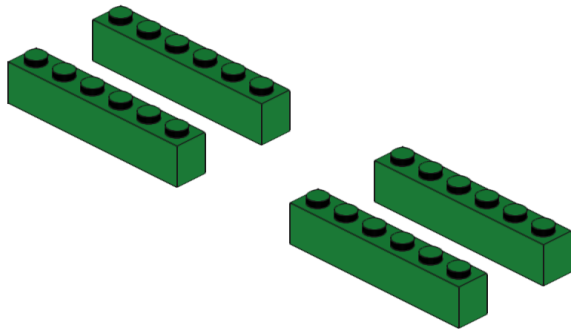
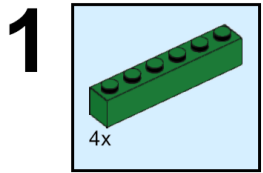
Building Instructions

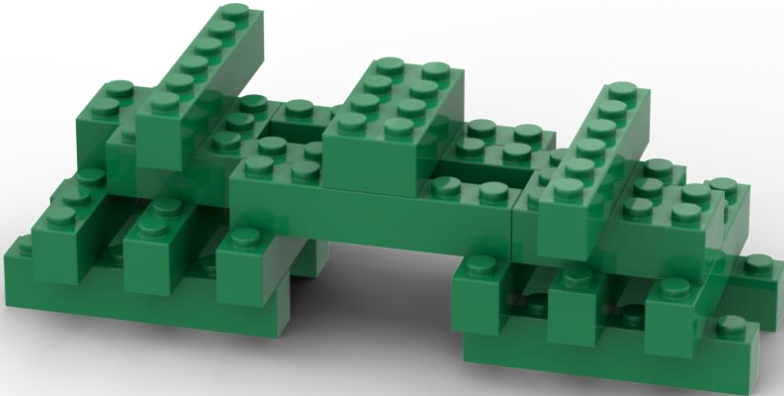
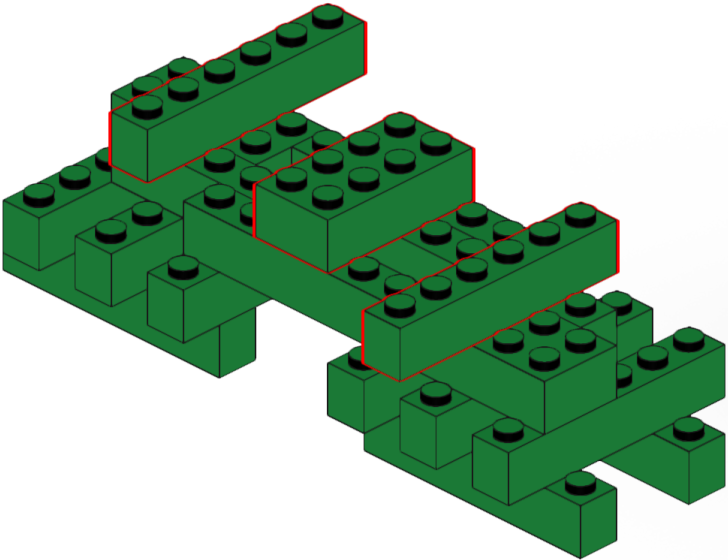
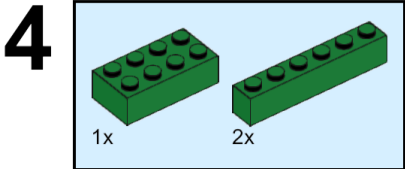
Rock (x4)

The six 1x6 LEGO bricks in step 3 are black. The color of the remaining rock is irrelevant.

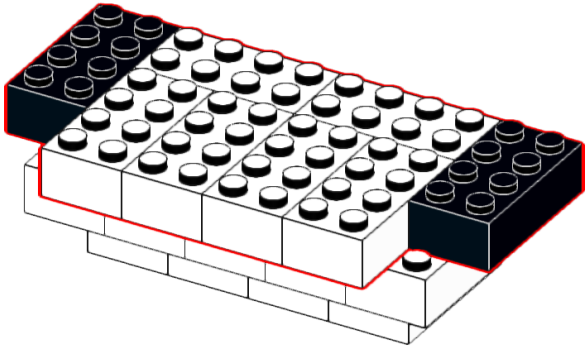
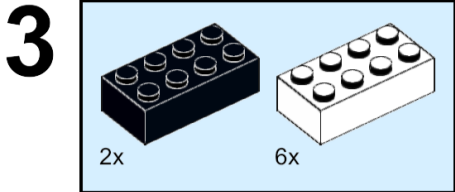
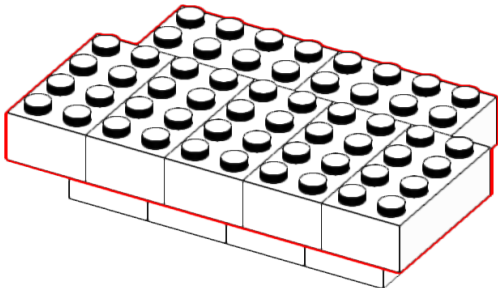
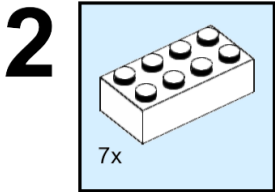
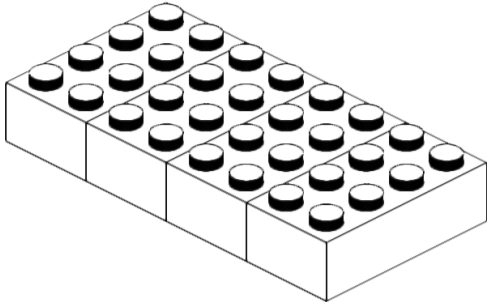
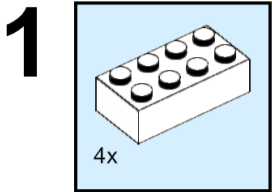


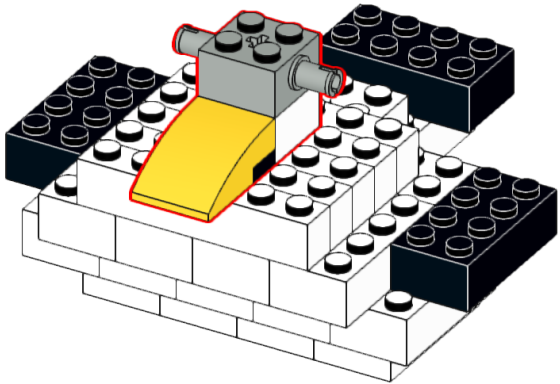
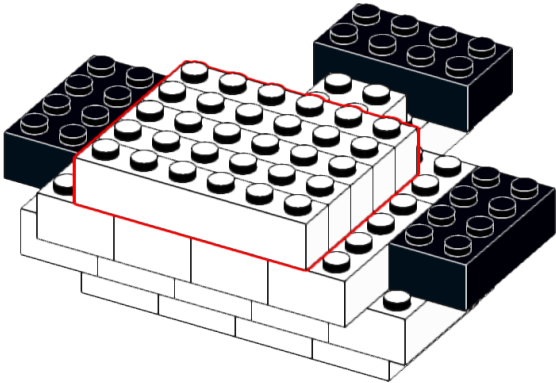
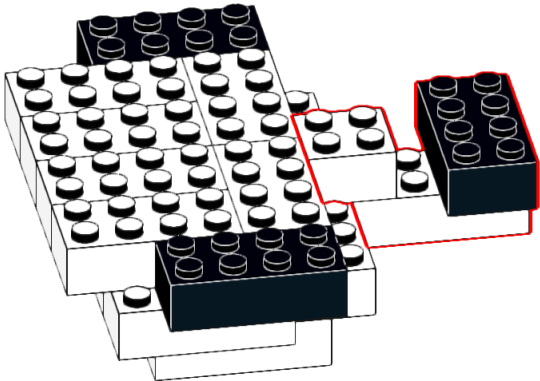
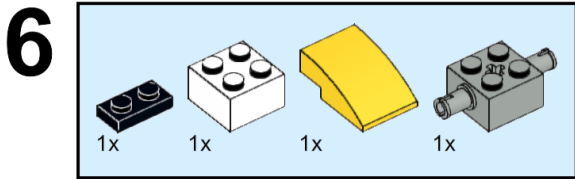
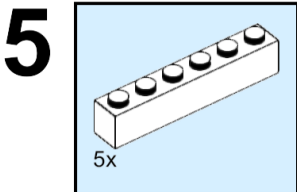
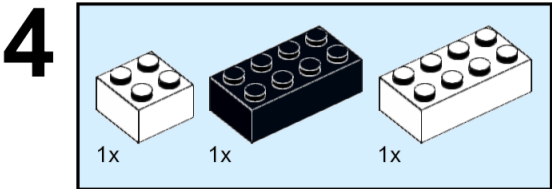
Petrified Wood

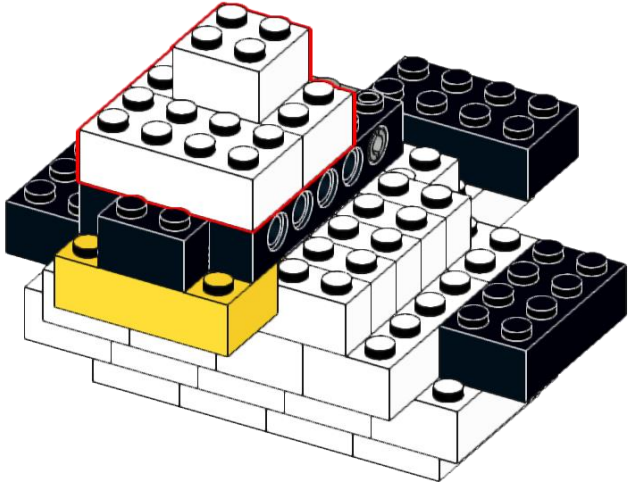
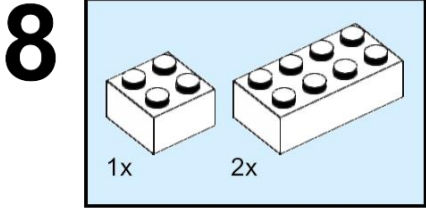
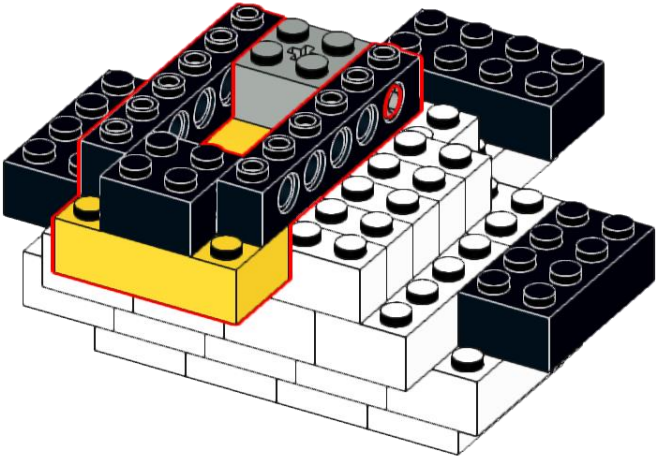
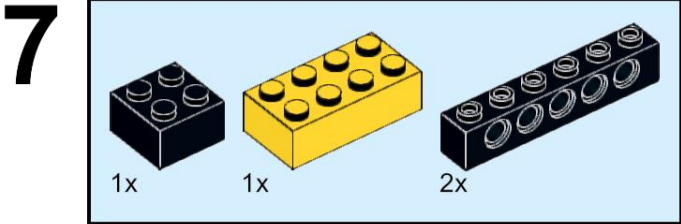




Totem







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