

# Robot ZONE [01]

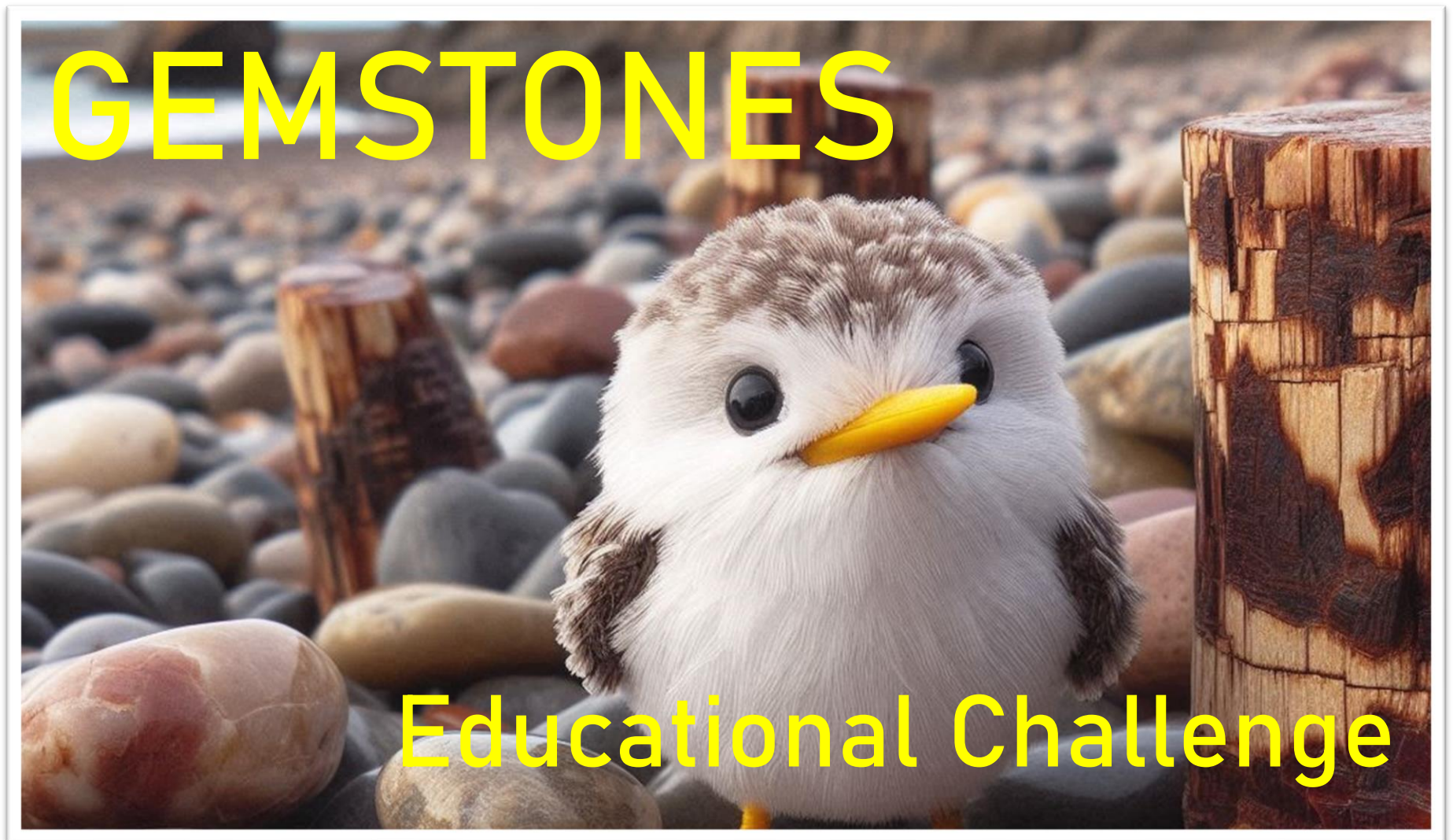


Image by IA

## 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!



## 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, Tudaο, etc.), with a maximum of two ports connected.
3. The challenge is performed in autonomous mode. The program must be downloaded to the robot and started using the button on the brick or a touch sensor.

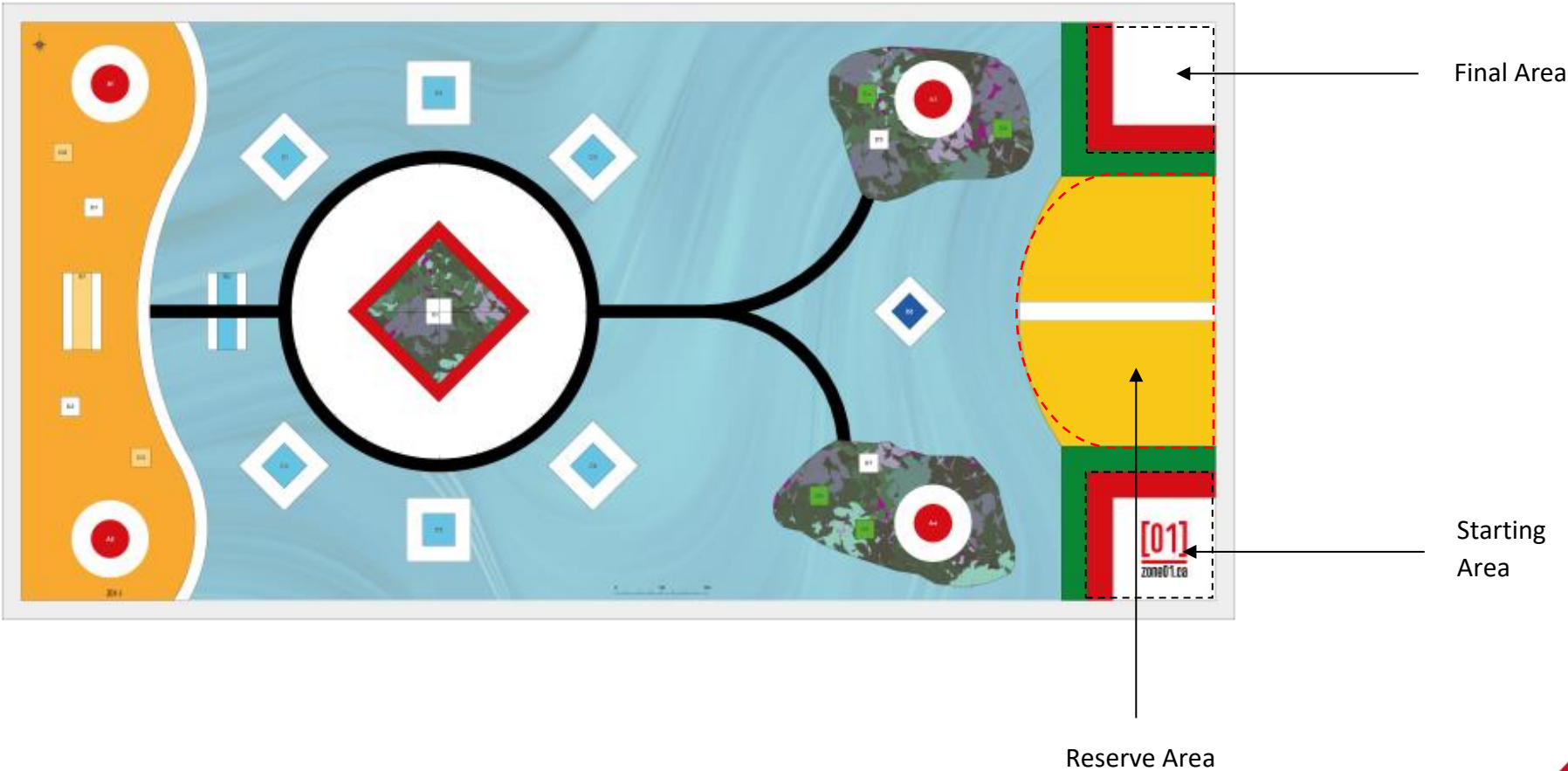
## Playing Field Description

### 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

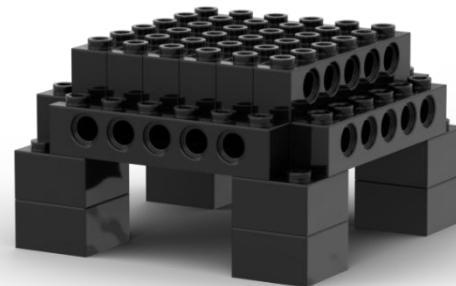
Luminite is a small, bright yellow gemstone always found beneath an object. There are five luminite stones on the game surface.



### Black Rock

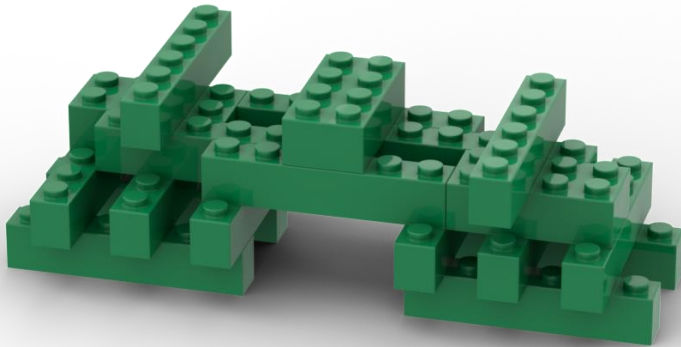
The black rock is a movable obstacle that conceals luminite underneath. There are four black rocks on the game surface.

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



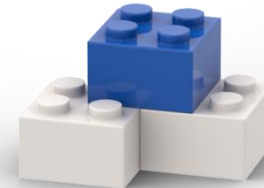
## Petrified Wood

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



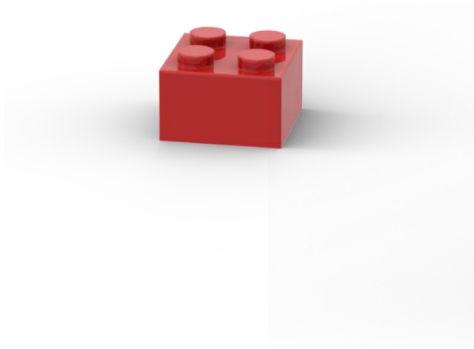
## Saphira

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.

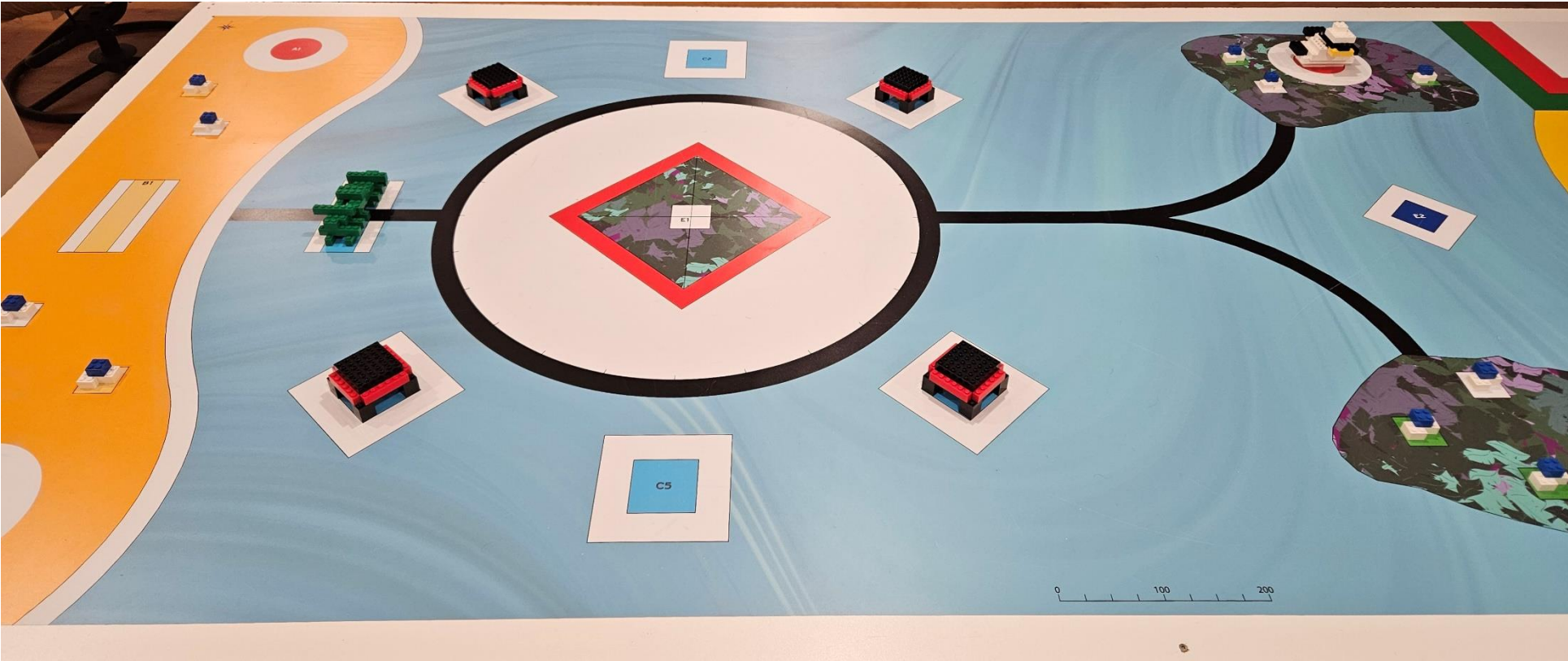


## Totem

The totem depicts a famous pollinator bird known as the polliflora. When you lift 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.

**13-19 years old level at the national final: the black rocks could be placed randomly in 4 of positions C1 to C6.**

- The saphira is located 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.
- **Warning: Zone01 recommends that teams avoid passing near zone E1!**

## Detailed Challenge Description

### Starting Procedure

The team must fully place the robot in the starting zone.

The judge will position any random elements if necessary.

Upon the judge's signal, the team activates the robot, which can complete the tasks in any order.

The challenge ends when a team says "STOP," touches the robot, or when the maximum time of 2 minutes has elapsed.

### Missions

#### Mission 1

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



## Mission 2

Push the rocks out of their white square, or for more points, flip them over. Then, collect the luminite and bring it to the storage area.

Also, bring any available saphira to the storage.

## Mission 3

Push 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 the B1 position or <i>Petrified wood partially in the B1 position</i>	8 5
Black rock flipped over (4) or <i>Completely outside of the white square (2)</i>	12 8
Luminite in the reserve area (5)	25
Saphéra in the reserve area (2)	20
Nyxium in the reserve area (9) or <i>Nyxium out of the totem (6)</i>	9 6
Robot in the final zone	6

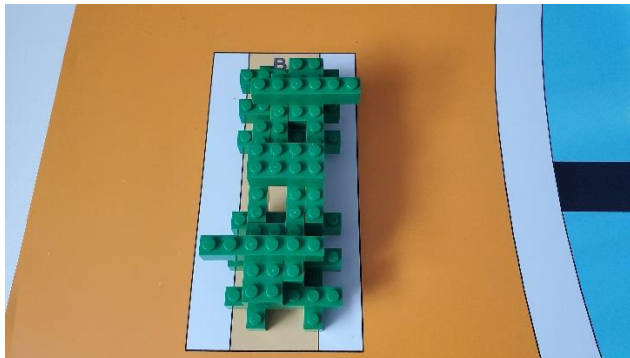
Penalty	Max Points
Totem damaged or outside of the red circle	-11

At the competition	Max Points
Solve the surprise rule	20

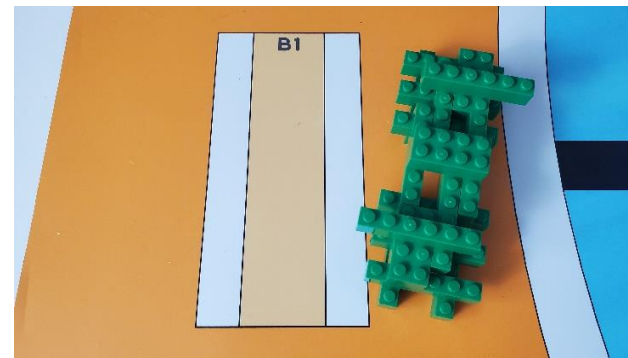
<b>Total points</b>	<b>100</b>
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## Score Interpretation

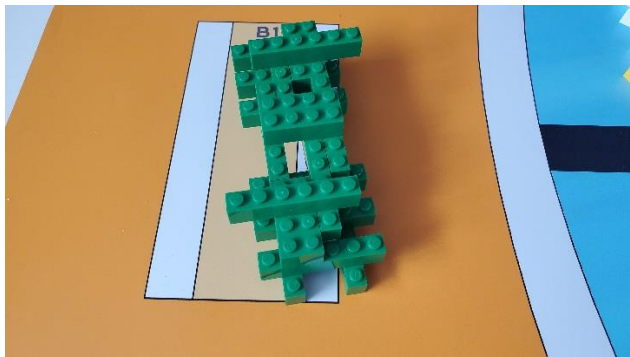
### Petrified Wood



Completely in the zone = 8 points

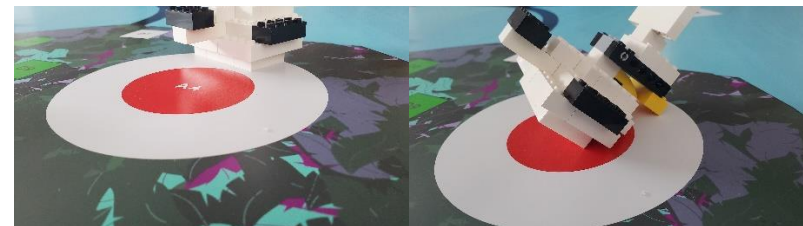


Not in the zone (not touching) = 0 point



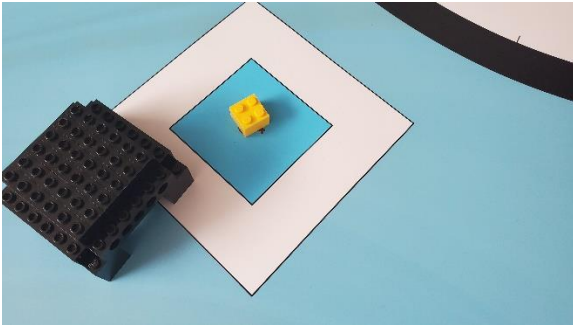
Partially in the zone (touching the outside) = 5 points

### Totem

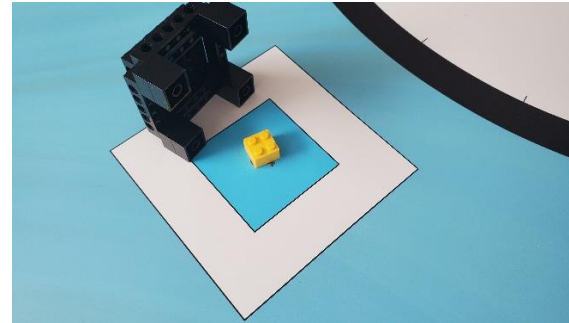


Totem damaged or completely outside of its red circle = -11 points

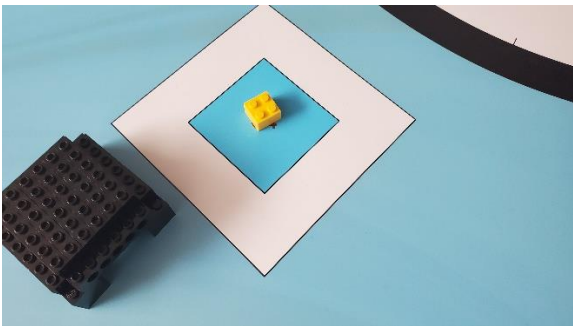
## Black Rock



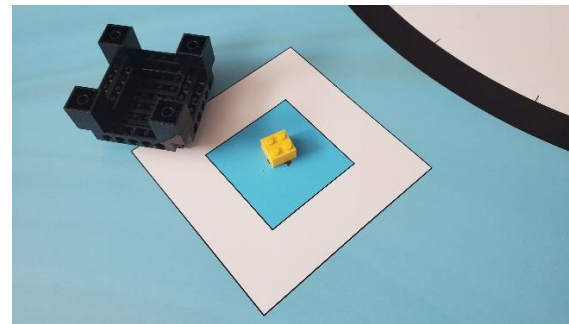
Black rock not flipped over and touching the white square = 0 points



Black rock flipped over (no matter its position) = 3 points

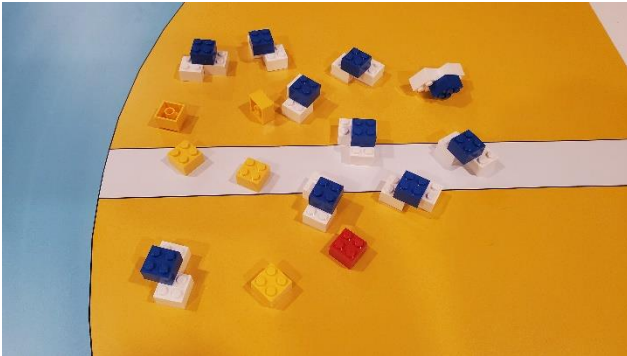


Black rock not flipped over but outside the white square = 2 points

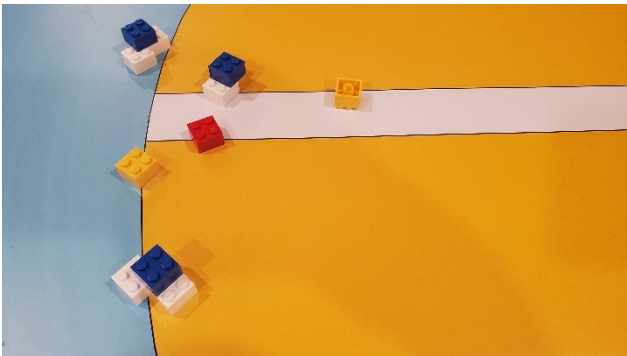


Black rock flipped over (no matter its position) = 3 points

## Gemstones in the reserve area



Every gemstone completely in the reserve area =  $5 \times 5$  points +  $10 \times 2$  points + 9 points = 54 points



Possible result: Only 3 gemstones completely in the reserve area =  $5 + 2 + 9$  points = 16 points

## Nyxium



Nyxium inside the totem = 0 point



Nyxium out of the totem but not in the reserve area = 6 points

## Robot dans la zone finale



Robot in the final zone (every contact point is inside the white and red zone) = 6 points

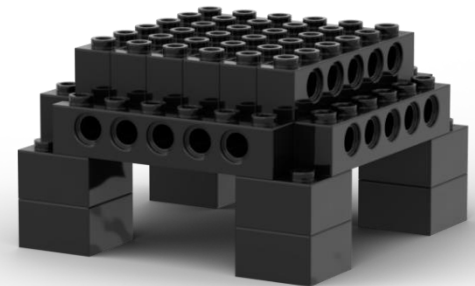
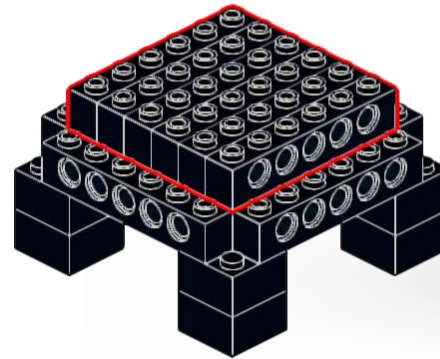
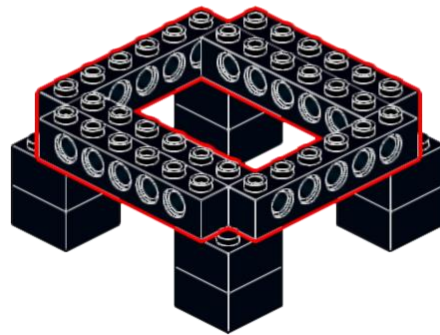
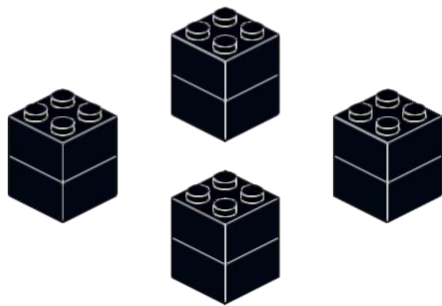
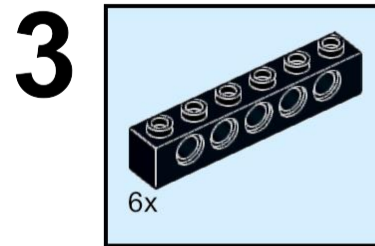
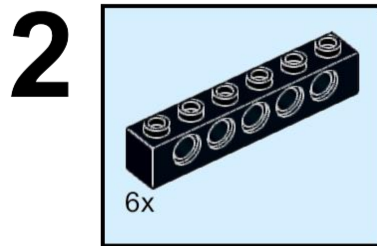
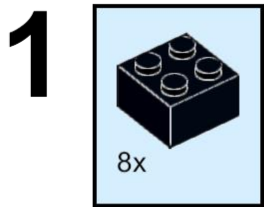


Robot not in the final zone (contact point outside the zone) = 0 point

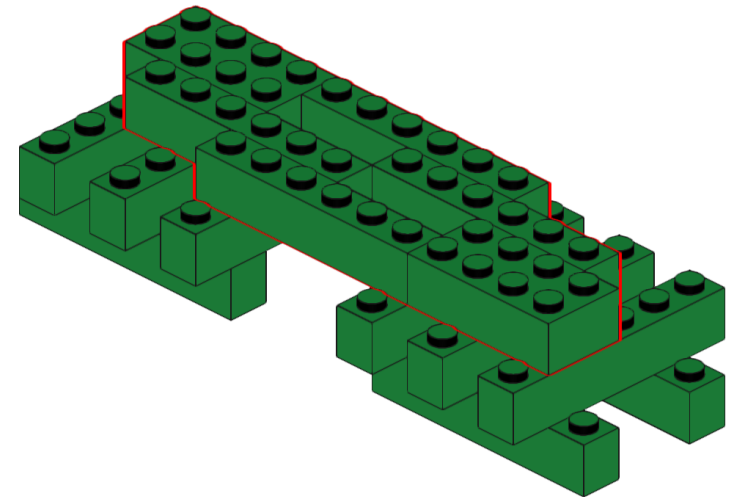
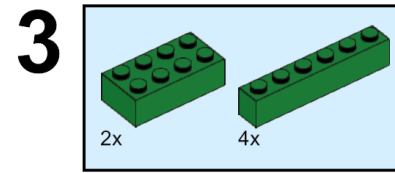
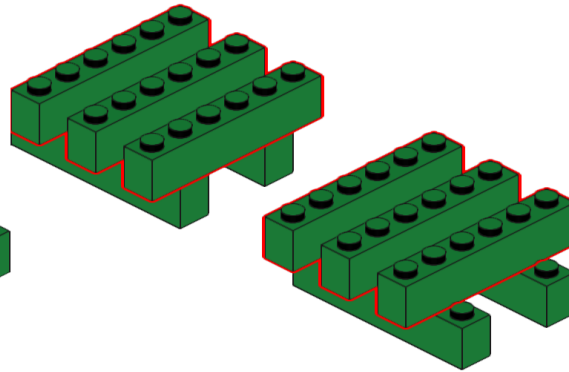
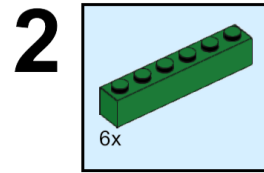
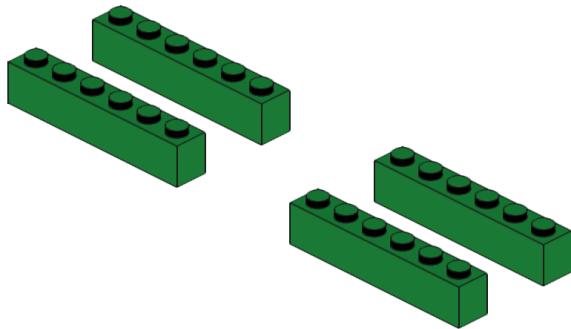
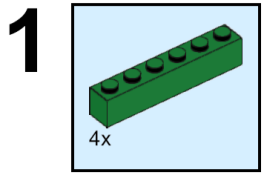
## Building Instructions

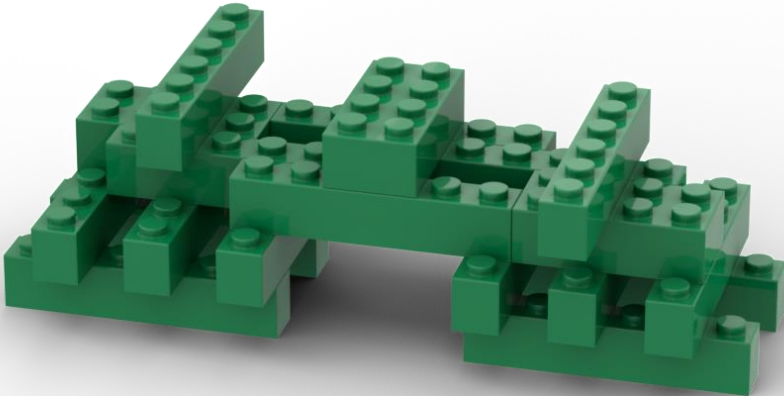
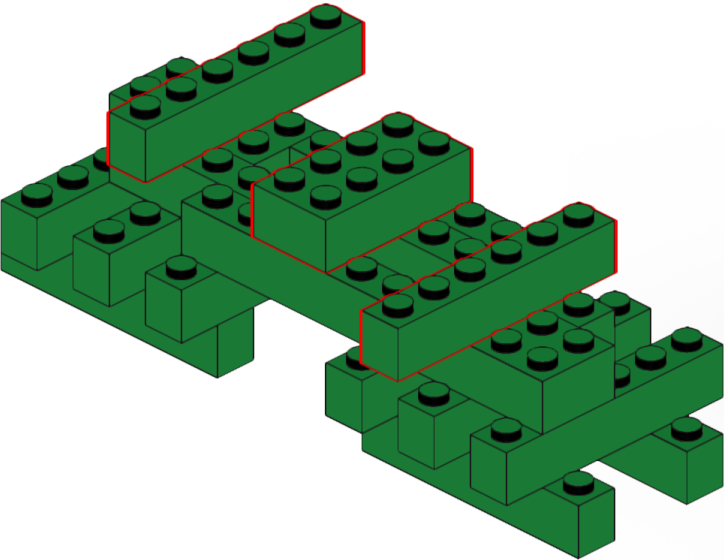
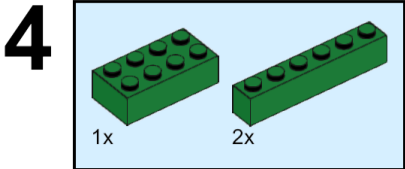
### Black Rock (x4)

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



## Petrified Wood







## Totem

