

Robot ZONE [01]

Jurassic Instinct

Educational Challenge

Image by [Mehmet Turgut Kirkgoz](#)

Context

After crossing what appeared to be an ocean with your dredging skills in season 1 of Planet Z, you can finally set foot on dry land.

The location you've landed in looks tropical, and the forest is covered with flowering plants, the dominant vegetation of the Cretaceous period.

It's only when you come across a reptile the size of a building that you realize that, on this planet that bears a striking resemblance to Earth, ...

... the meteorite never hit!

Robot Description

Robots taking part in the challenge must comply with the following constraints:

1. The robot must completely enter the starting area, which includes the red border, so inside a 25cm x 25cm square.
2. Only one controller (EV3 brick or Spike Prime)

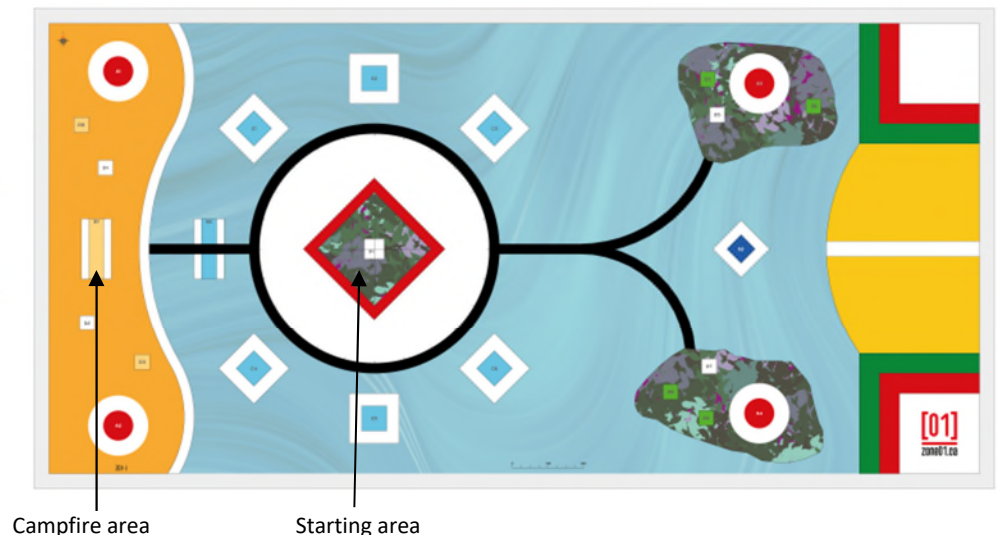
Description of the Playing Field

Surface used: Z01-J Mat

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

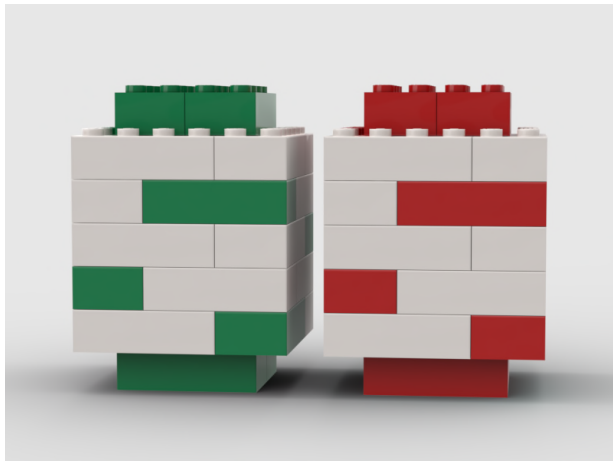


Description of the Accessories

Intact dinosaur eggs

There are two intact dinosaur eggs. The white and green egg is a Tricornosaurus egg, a herbivorous dinosaur. The white and red egg is a Z-Rex egg, a carnivorous and very dangerous dinosaur.

The eggs are made of 2x4 LEGO bricks.



The broken dinosaur egg

The broken dinosaur egg is a Megasaurus egg that has already hatched. Inside the egg, however, there's still a nutrient-rich substance that's good to eat when cooked.

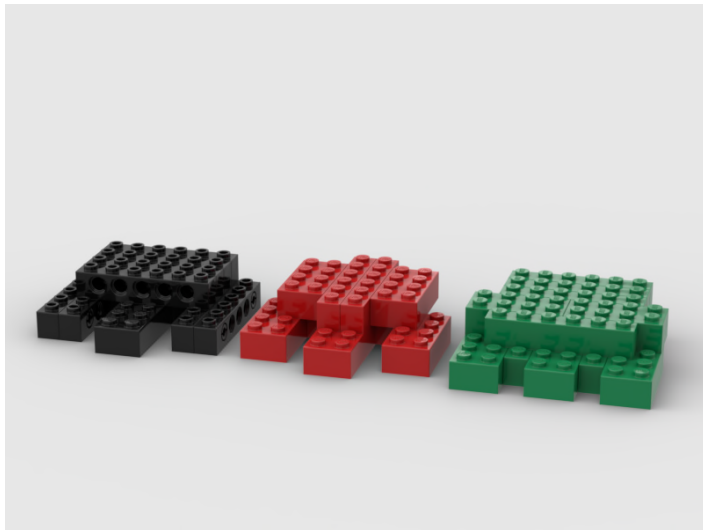
The broken egg is made of 2x4 and 2x2 LEGO bricks.



Dinosaur footprints

Dinosaur footprints are left by Tricornosaurus, Z-Rex and Megasaurus near their spawning grounds. There's a red footprint, a green footprint, and a black footprint.

They are made of LEGO bricks 2x4 and 1x6.



Camera

You've brought a camera and want to capture beautiful images of this new environment.

The camera is placed on a tripod and allows you to film dinosaur activity.

It consists of various parts* (see assembly instructions).

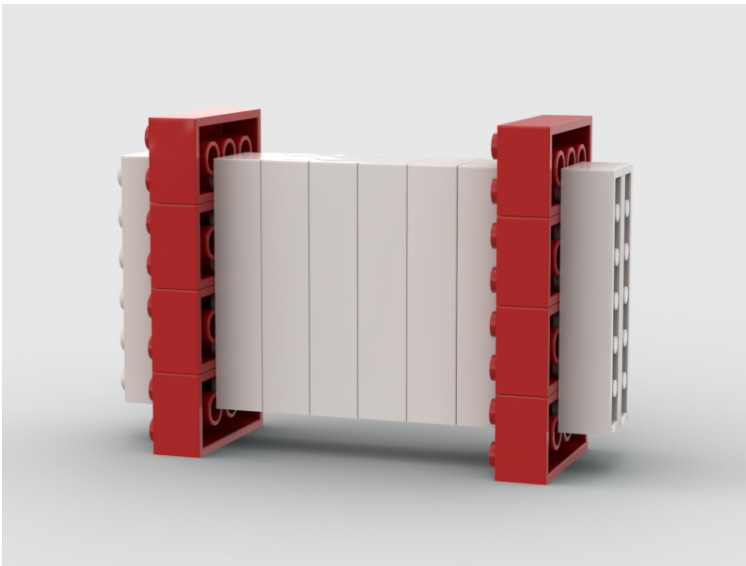


* This camera will be used at the competition. However, should any parts be missing, a second version of the camera is available in the assembly instructions section.

The barrier

You've built a barrier to protect yourself from dangerous dinosaurs.

The barrier is made of LEGO bricks 2x4 and 1x6.



The aquarines

The aquarine is a marine plant that grows at different heights and produces aquatic kesos. There are low and high aquarines.

The aquarine base is made of LEGO bricks 1x6, 2x2 and 2x4. The central rod of the low aquarine measures 16 beams high from the ground, and that of the high aquarine 24. The platform is made up of various LEGO parts* (see assembly instructions).

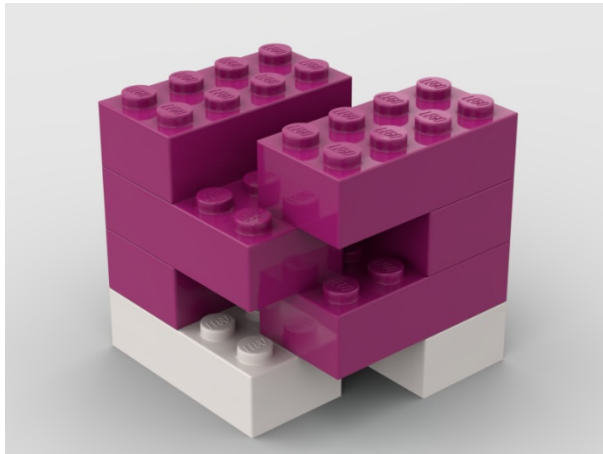


* This platform will be used at the competition. However, it can be built with other equivalent parts if required.

The aquatic keso

The aquatic keso is a food that grows on aquarines and is a good source of nourishment.

The keso is made from LEGO 2x4* bricks.

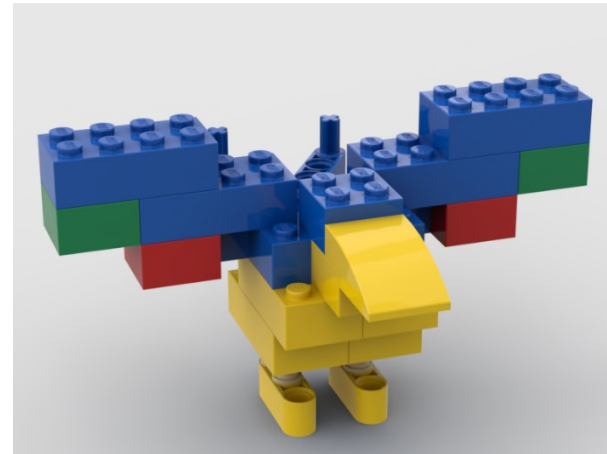


* the keso's color is not important.

Diego the bird

Diego is a bird who started following you on your adventure. You soon became good friends. He likes to land on high points to watch you.

Diego the bird is made up of LEGO 2x4 and 2x2 bricks, plus other EV3 and Spike* parts.

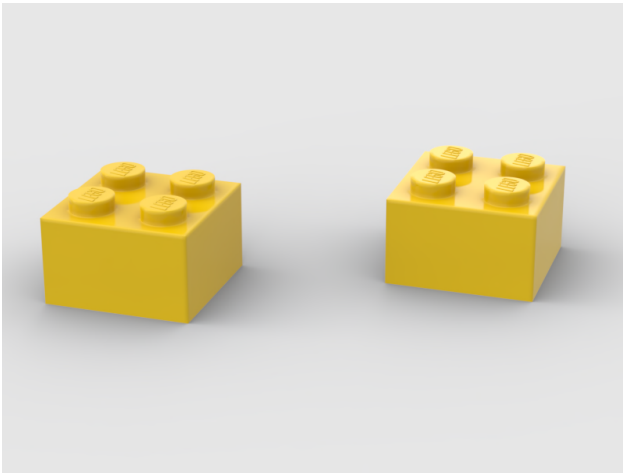


* In the event of missing parts, Diego can be built differently since it's mainly used for decorative purposes in the challenge.

Bird seeds

You've found some seeds on the ground that Diego the bird seems to love.

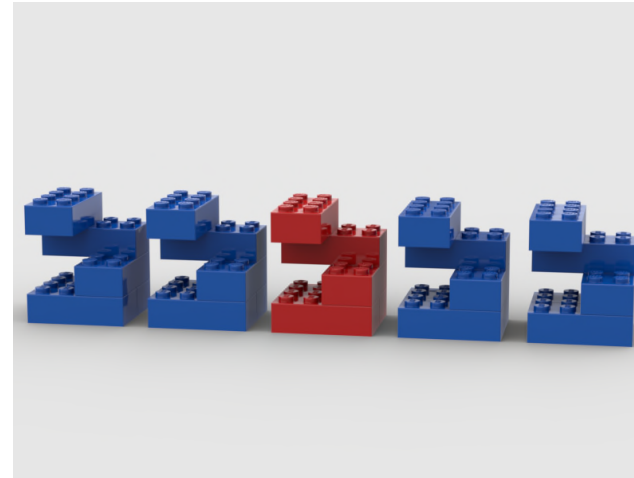
These seeds are represented by yellow LEGO 2x2 blocks.



The pompons

The pompons are a type of vegetation that grows on Planet Z. They must not be disturbed, as this could disrupt the ecosystem. There are 4 blue ones and one red one on the game surface.

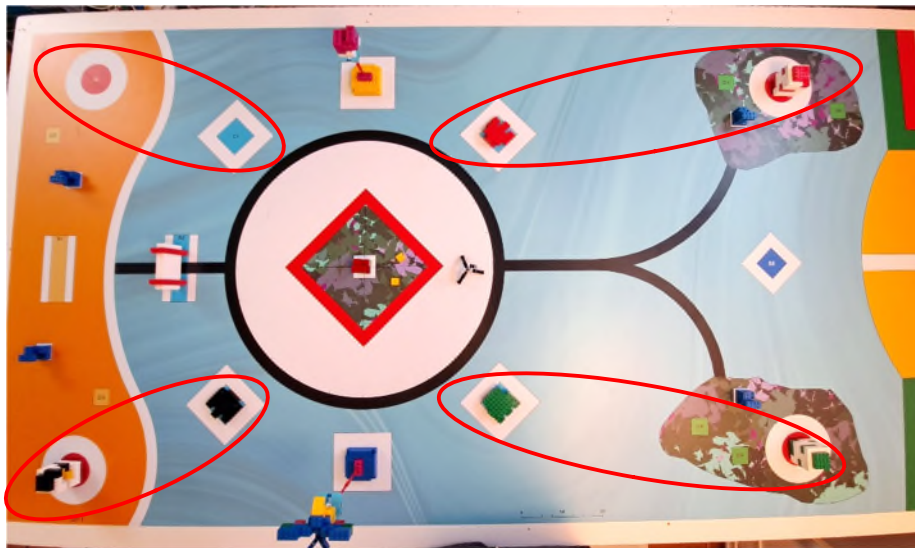
They are made of 2x4 LEGO bricks.



Positioning of the Accessories

Footprints and eggs

Each dinosaur footprint indicates the position of the egg laid by that same dinosaur. The respective egg will be positioned in the red circle A closest to its footprint. Square C3 is therefore linked to position A3, square C6 to A4, square C1 to A1 and square C4 to A2, as shown in the image. The broken egg's opening always faces the center.



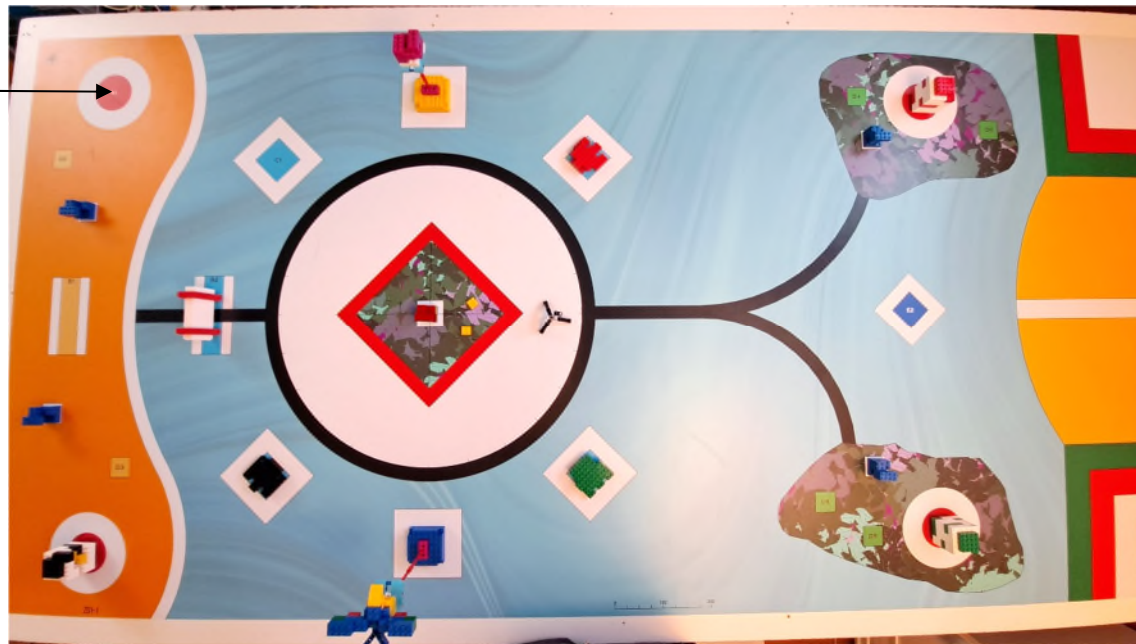
Other accessories

- The camera is placed by the team anywhere within the white circle of the central island, thus excluding the starting area and the black border.
- The barrier is placed in the center of the B2 rectangle.
- The aquatic keso is placed above the low aquarine.
- Diego the bird is placed above the high aquarine.
- The two bird seeds are placed by the team anywhere in the starting area (they can be on the robot).
- The pompons are placed in squares D1, D2, D5 and D7.
- A red pompom will be added by the judge in the white square E1 as soon as the robot has completely left the starting area.

For the primary (elementary) level, accessories are always placed in the same place:

- The Tricornosaurus footprint (green) is placed on square C3.
- The Z-Rex footprint (red) is placed on square C6.
- The Megasaurus footprint (black) is placed on square C4.
- Intact (green and red) and broken (black) eggs are placed accordingly.
- The low aquarine is placed in square C2 and the high aquarine in square C5.
- The finish area is always the red circle A1.

Finish area



Positioning of accessories for the elementary level

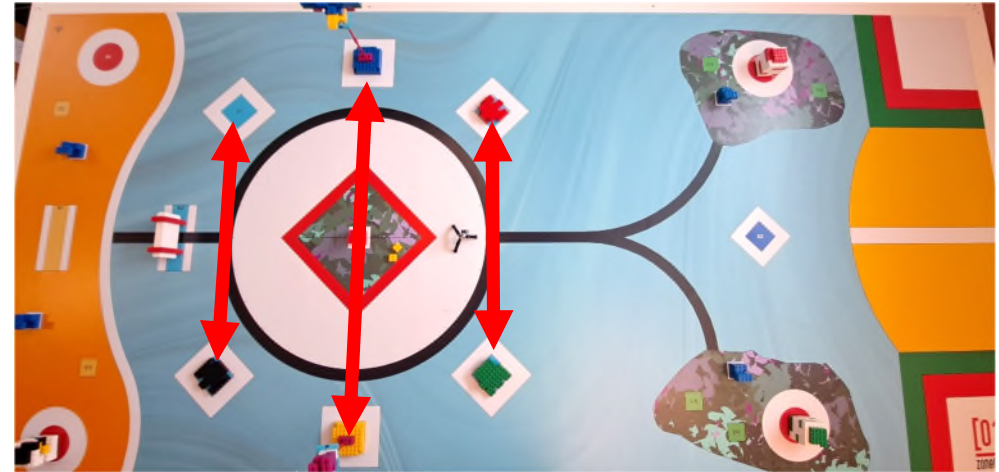
For the junior/senior level, some accessories are placed randomly:

At the regional competition, a random positioning for the objects will be chosen on the morning of the competition and will remain the same throughout the day.

In the national final, there will be a new random positioning for the objects each round. The robots will therefore not know the position of the objects in advance.

- The Z-Rex footprint (red) is randomly located in C3 or C6, and the Tricornosaurus footprint (green) in the other square. Intact eggs (green and red) are placed accordingly.
- The Megasaurus footprint (black) is randomly located in C1 or C4. The broken egg and final zone are placed accordingly.

- The high aquarine is randomly located in C2 or C5, and the low aquarine in the other square. The keso and bird are placed accordingly.



Example of accessory positioning for junior/senior level

Detailed description of the challenge

The team installs the robot and bird seed completely inside the square in the center of the central island, including the red border.

The team places the camera in the white circle.

For junior and senior levels, the judge randomly selects the position of the eggs, footprints and aquarines (national final only).

At the judge's signal, the team presses the button on the brick and the robot begins its missions in any order.

As soon as the robot leaves the starting area, the judge adds the red pompom to the white square E1.

Missions

1. Feed Diego by placing bird seed in the white square around the tall aquarine.
2. Place the camera completely on the island where the Tricornosaurus egg is located.
3. Place the barrier next to the Z-Rex egg so that the two red stripes touch the white circle.
4. Bring the broken egg completely to the campfire area in B1 to cook.
5. Collect the aquatic keso and keep it on the robot until the end of the challenge.
6. Park the robot partially on the red circle in the appropriate end zone.

The challenge is completed when a team member says "Stop", when the time runs out (**max 2 minutes**) or **if an intact egg is moved completely out of its red circle.**

Scoring

Missions	Max points
Put the seeds completely in the white square where Diego is. (7)	14
Bring your camera fully upright on th2 Tricornosaurus Island	12
Position the barrier so that the red stripes touch the white circle on the Z-Rex Island. (11)	22
Bring the broken egg completely to the campfire area	16
<i>Bring partially broken egg to campfire area</i>	8
Take and store aquatic keso on the robot	21
Park the robot partially within the red circle of the appropriate end zone (projection)	7

Bonus points	Max points
Do not move or damage the blue pompons (3)	12
Maintaining the quality of prints (2)	6

Penalties	Max points
Damaging, dropping, or moving the aquarine out of its white square (-4)	-8
Hurt Diego	-15
Moving or damaging the red pompon	-11

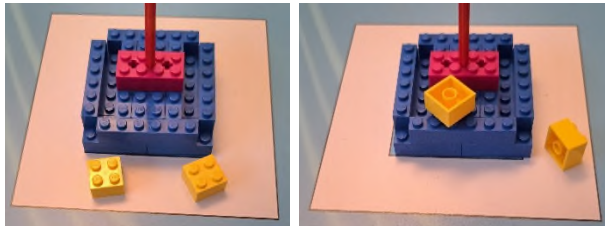
At the competition	Max points
Solve the surprise rule	20

Total points max	130
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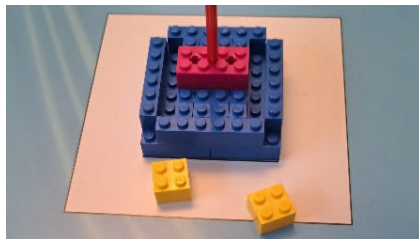
Score Interpretation

Seeds in Diego's white square

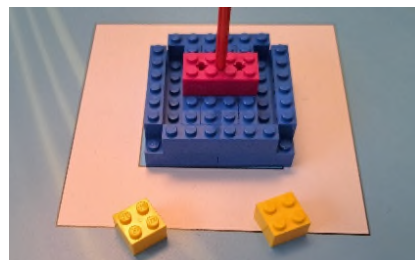
2 seeds = 14 points



1 seed = 7 points



No seeds = 0 points



Camera on the island

Camera completely on the island = 12 points



Camera fell, is damaged or partially on the island = 0 points

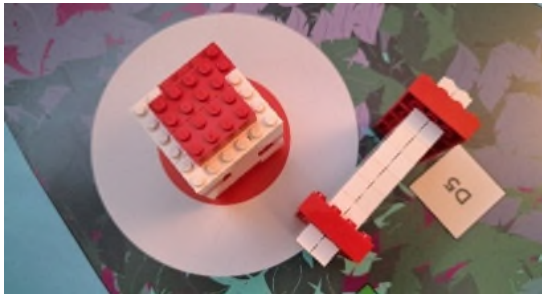


Placement of the barrier

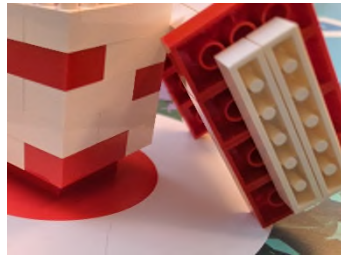
2 red stripes partially inside the white circle = 22 points



1 red stripe partially inside the white circle = 11 points



Barrier fell, is sloping or outside the white circle = 0 points

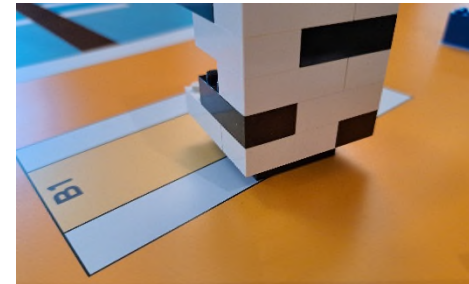


Broken egg in campfire area

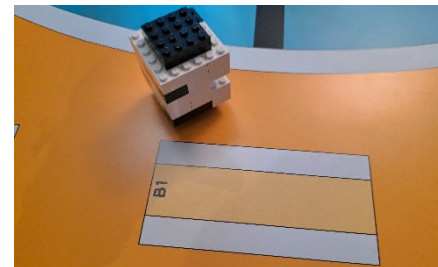
Egg completely in the campfire area = 16 points



Egg partially in the campfire area = 8 points

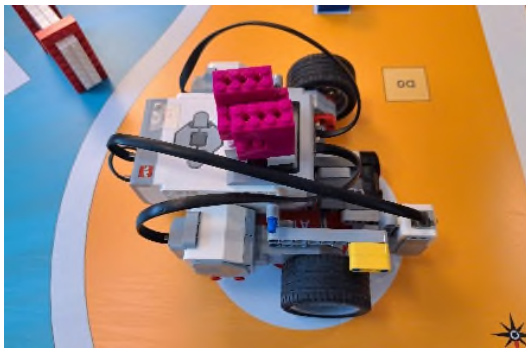


Egg completely out of the campfire area = 0 points

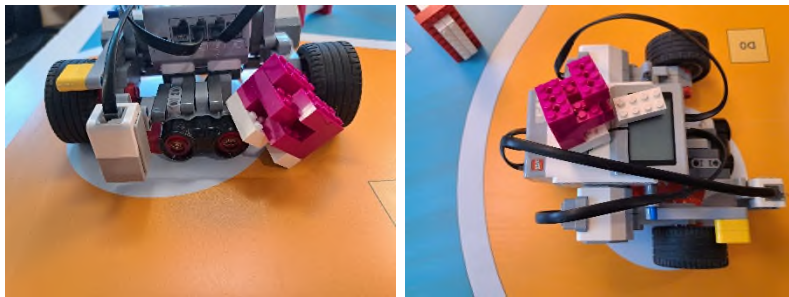


Aquatic keso conservation

Aquatic Keso on the robot = 21 points



Aquatic keso damaged or touching the ground = 0 points

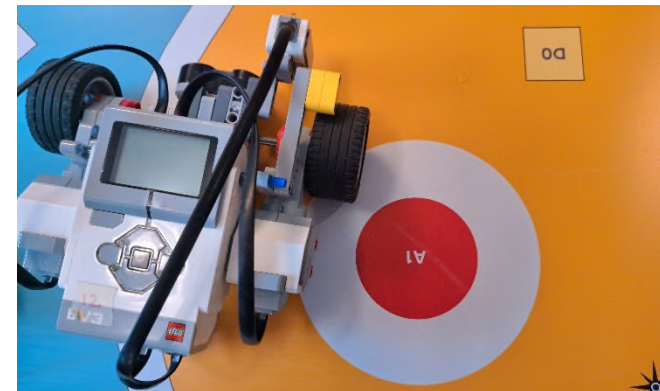


Finish area

The robot is partially in the finish area = 7 points



Robot not in the finish area = 0 points

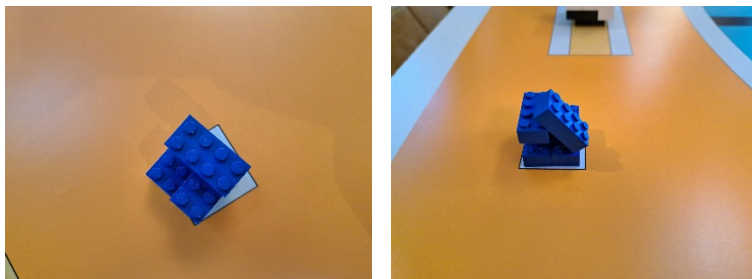


Blue pompons moved

Pompon completely in its square = 3 points

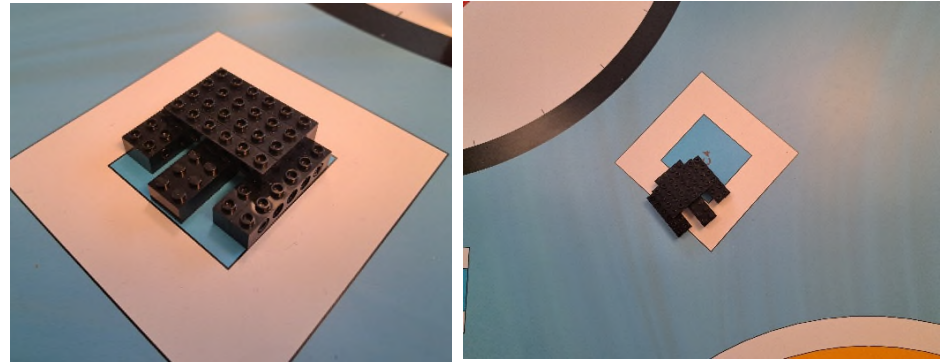


Pompon partially inside its square or damaged = 0 points



Preserved footprints

Footprint partially in blue square = 2 points

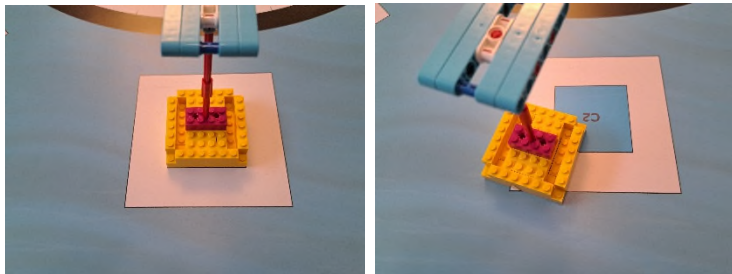


Footprint outside the blue square or damaged = 0 points

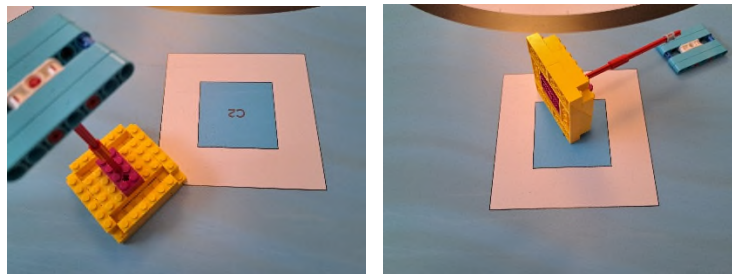


Aquarine moved

Aquarine partially in its blue square = OK

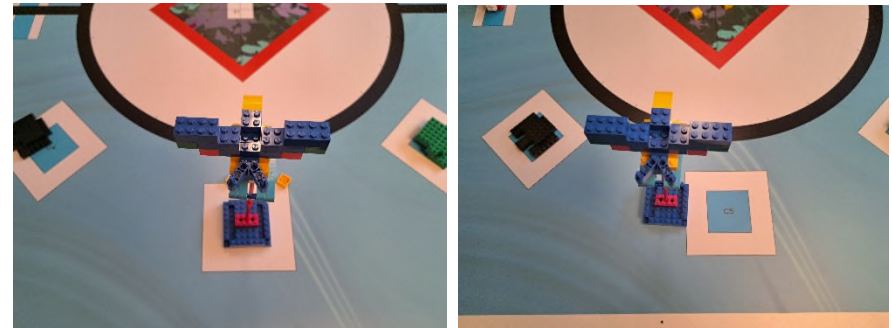


Out of the blue square, damaged or fell = -4 points

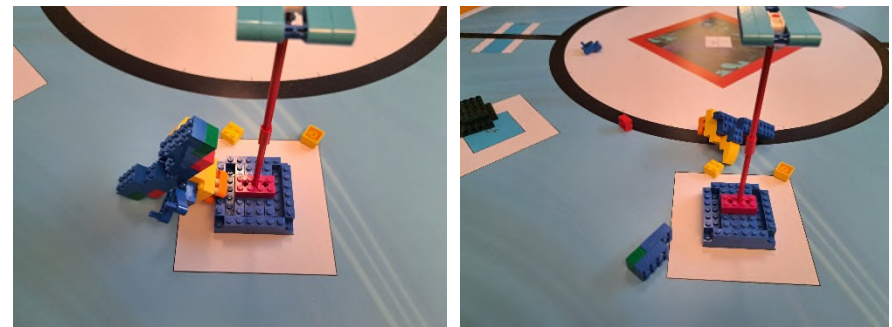


Diego injured

Diego is on the aquarine and intact = OK



Diego fell or is injured = -7 points



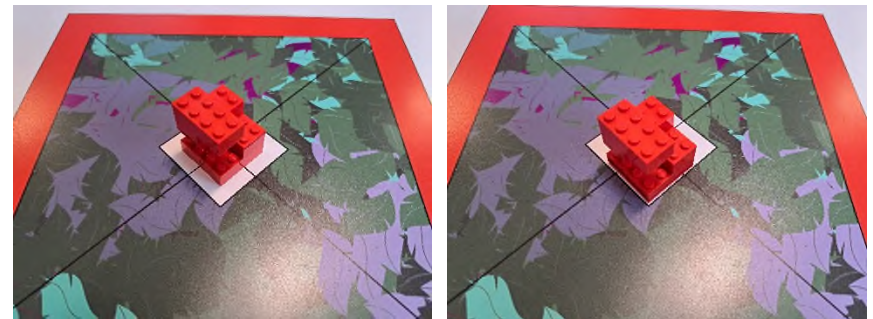
Moved intact egg

Egg standing and partially inside its red circle = OK



Red pompom moved

Pompon completely in its white square = OK



Egg is completely outside its red circle = not OK

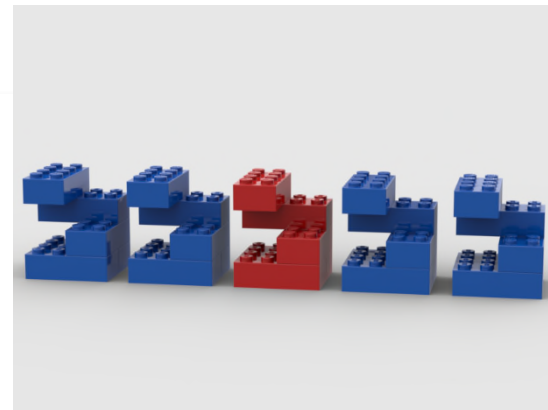
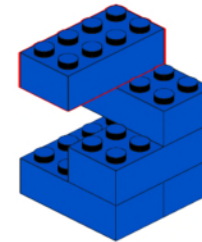
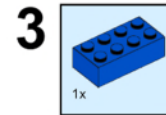
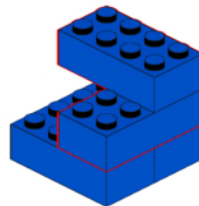
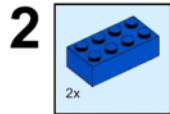
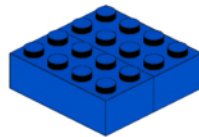
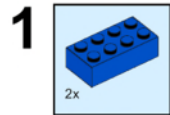


Pompon damaged or partially outside its white square = -11

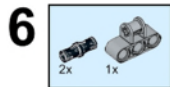
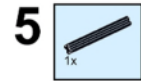
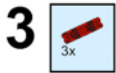
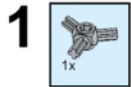


Building Instructions

Blue pompons (4) and red (1)

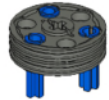
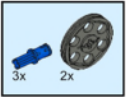


Camera



(Camera (aternative))

1



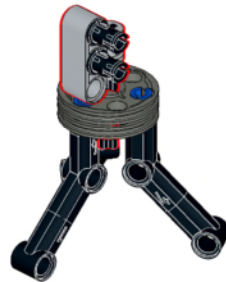
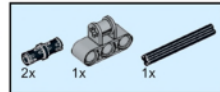
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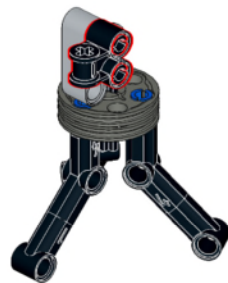
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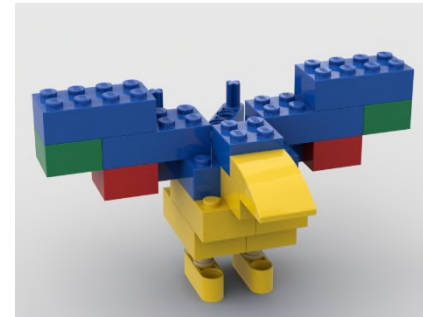
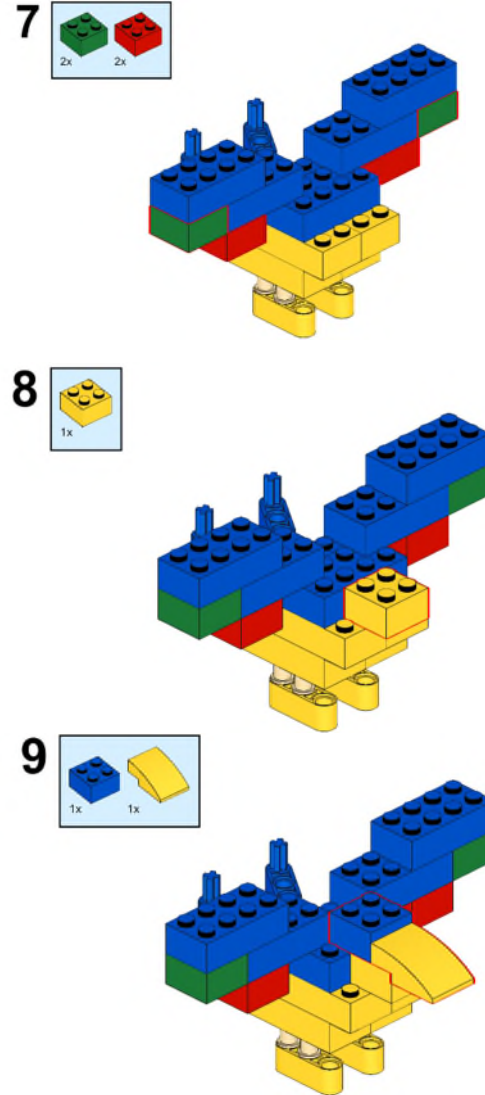
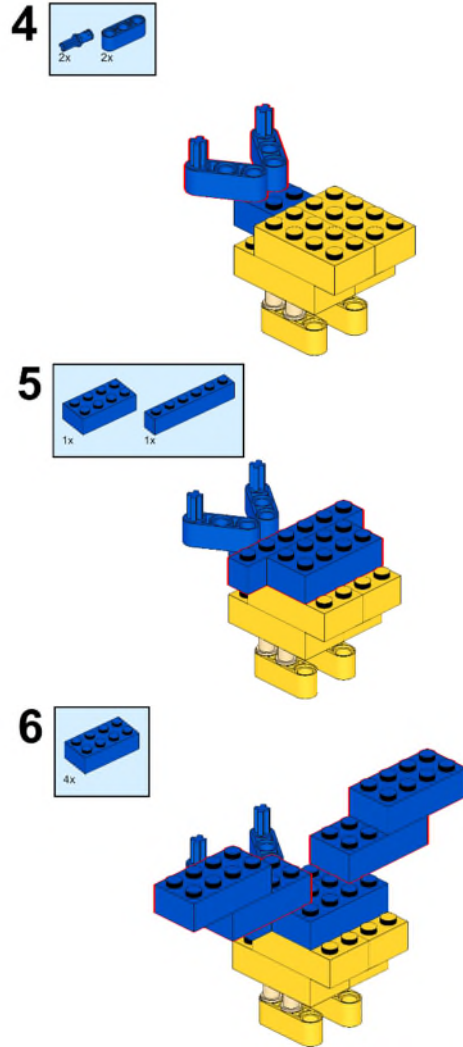
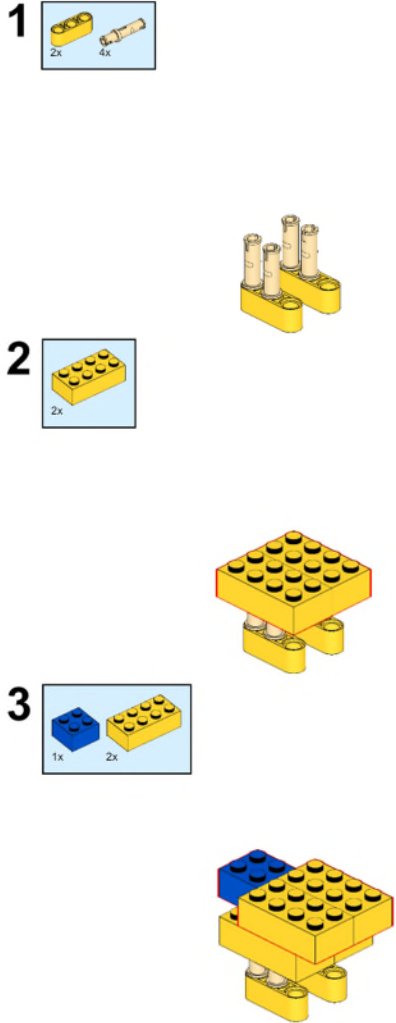
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5

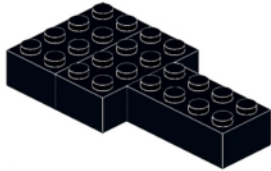
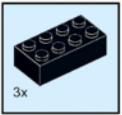


Diego

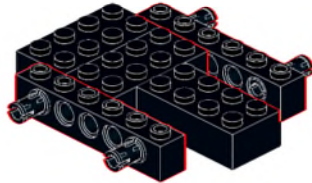
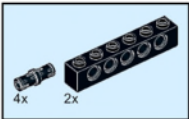


Footprints

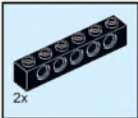
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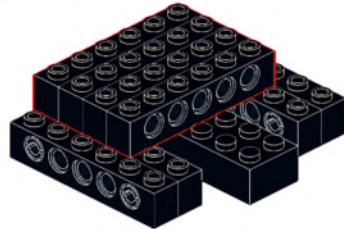
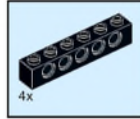
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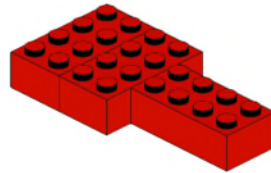
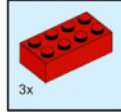
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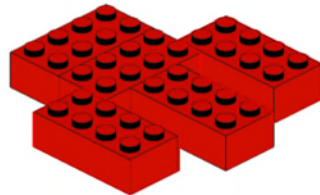
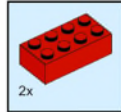
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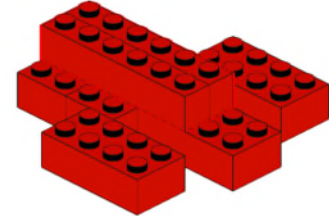
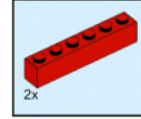
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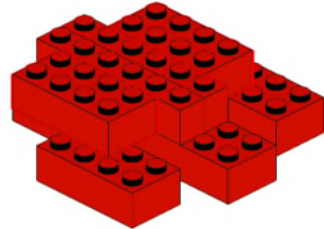
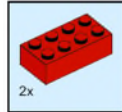
2



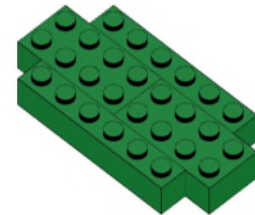
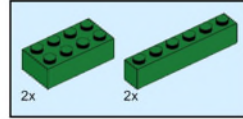
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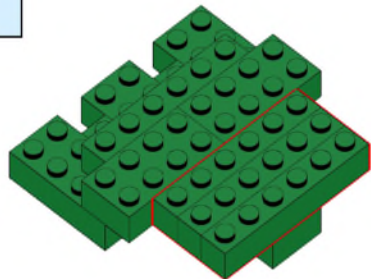
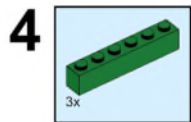
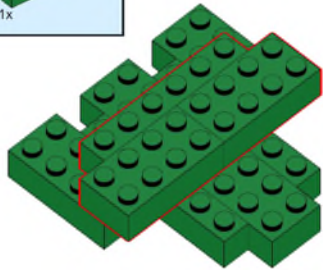
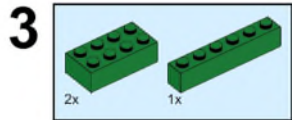
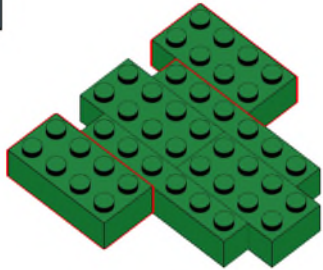
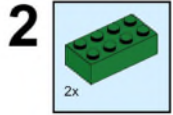


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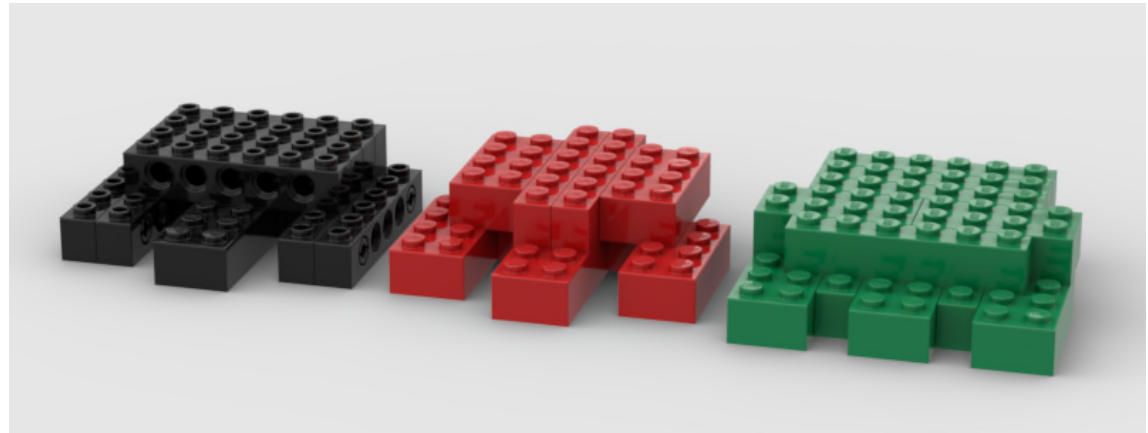
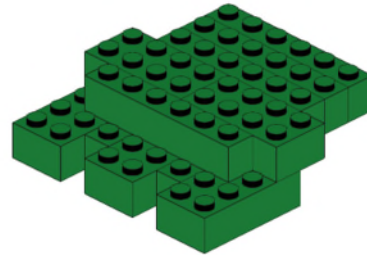


1

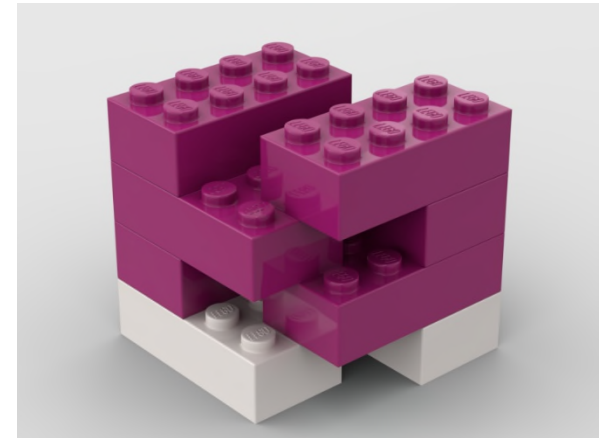
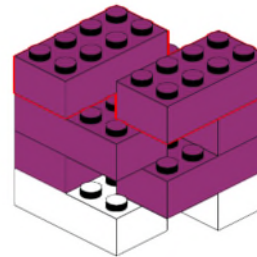
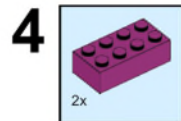
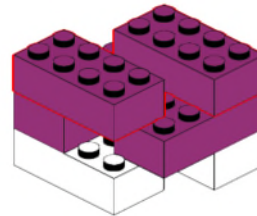
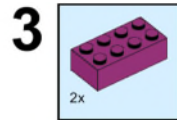
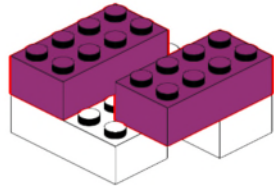
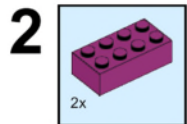
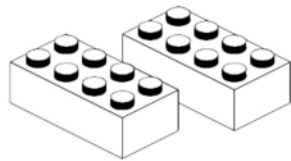
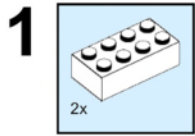




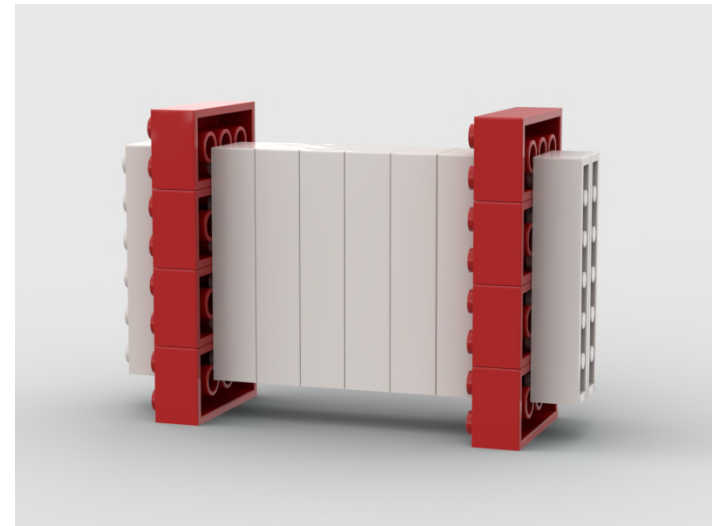
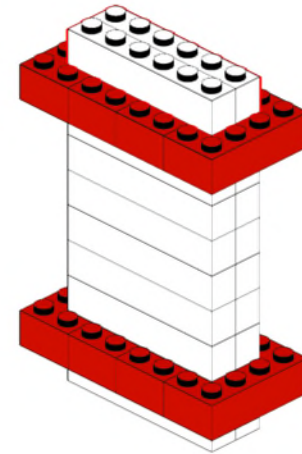
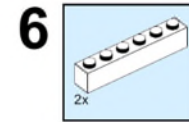
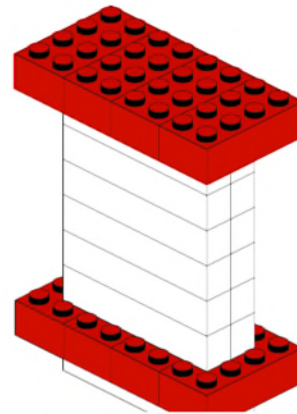
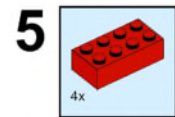
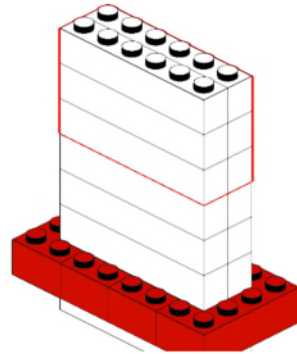
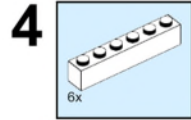
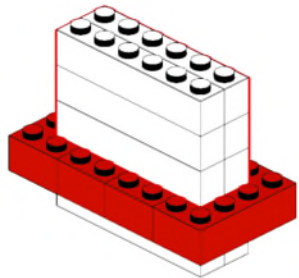
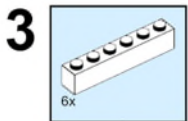
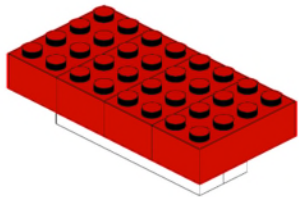
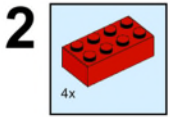
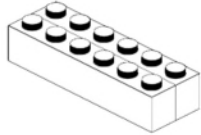
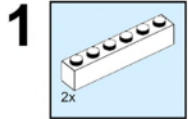
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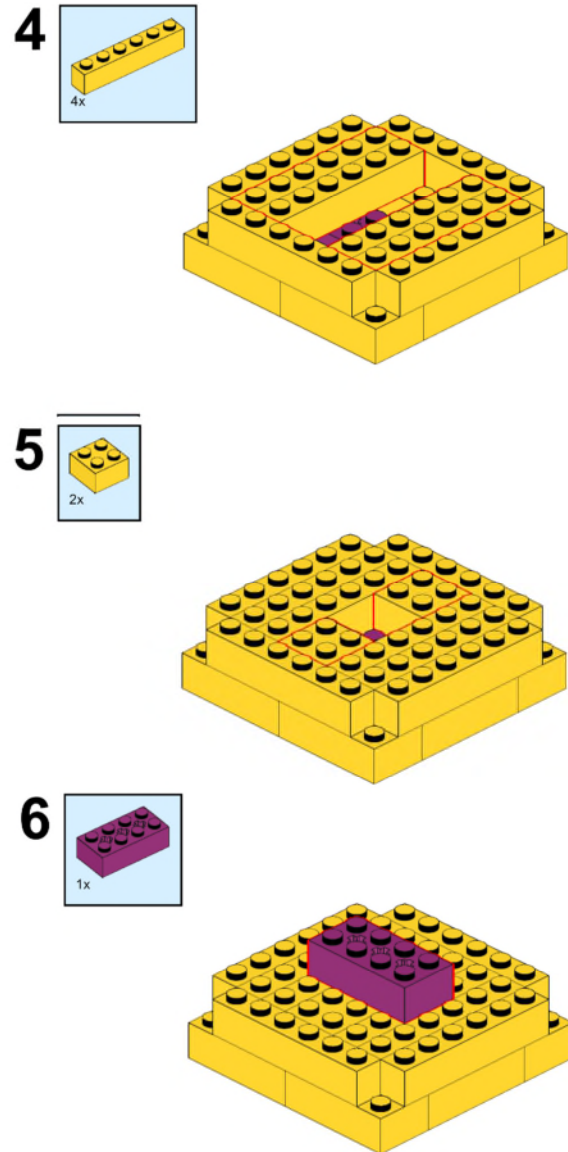
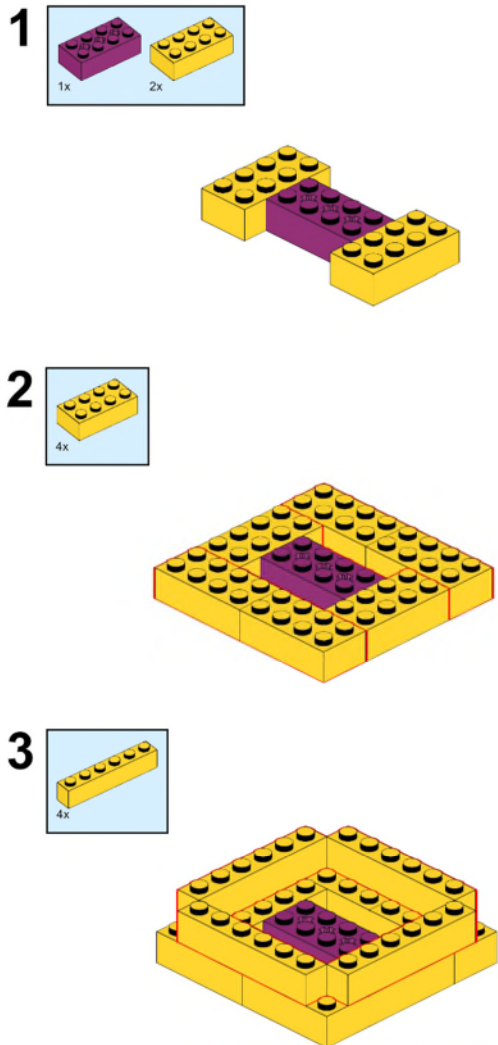
Aquatic keso



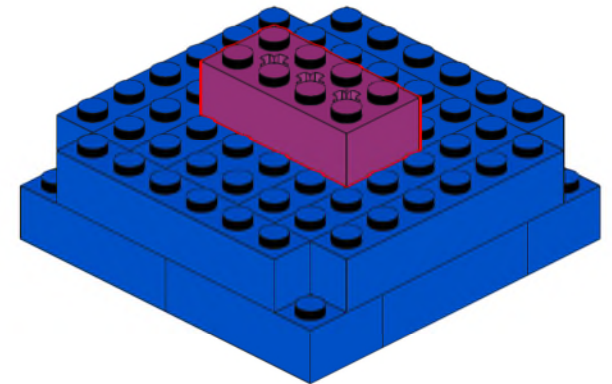
Barrier



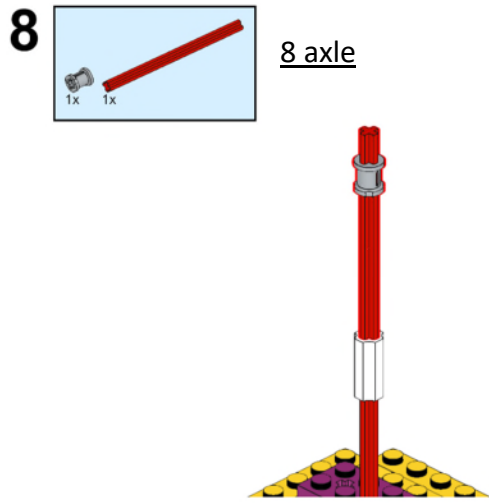
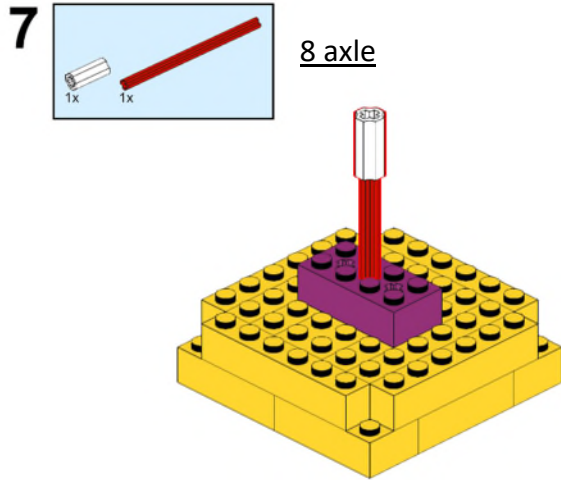
Aquarines



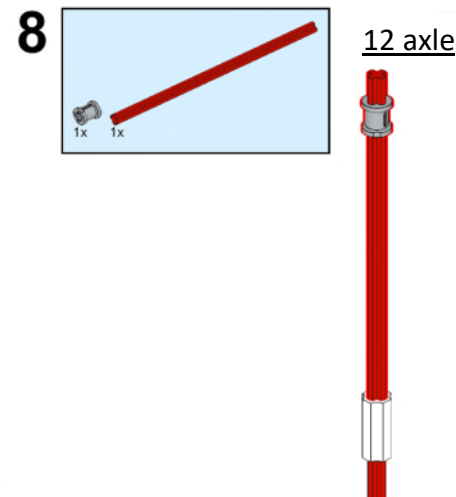
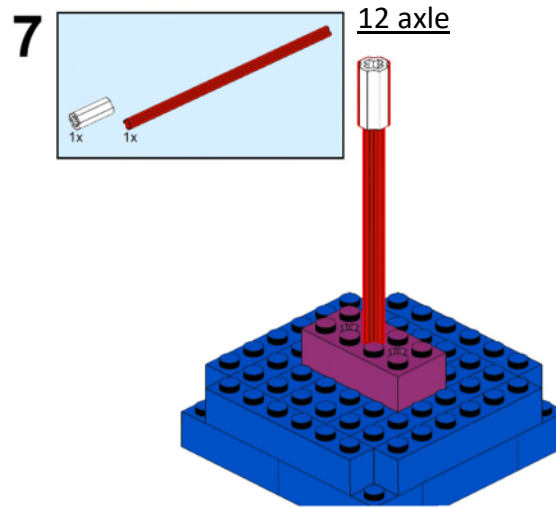
Repeat steps 1 through 6 with blue bricks



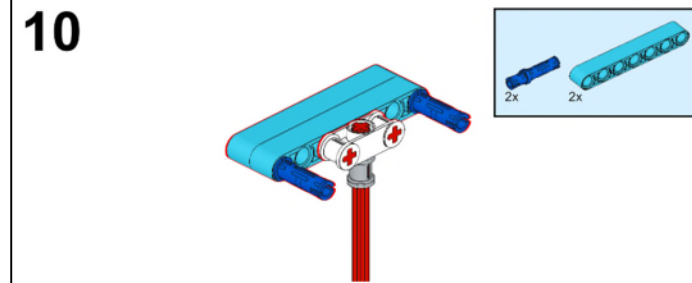
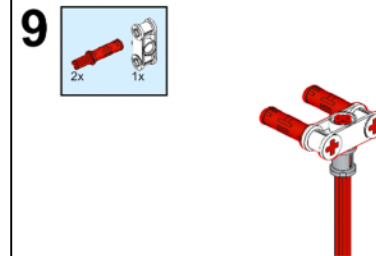
For the small aquarine



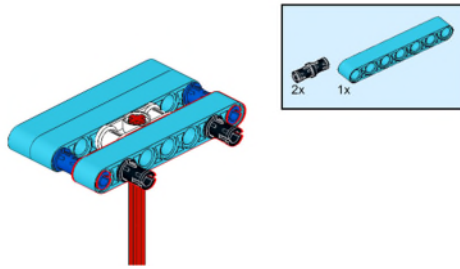
For the tall aquarine



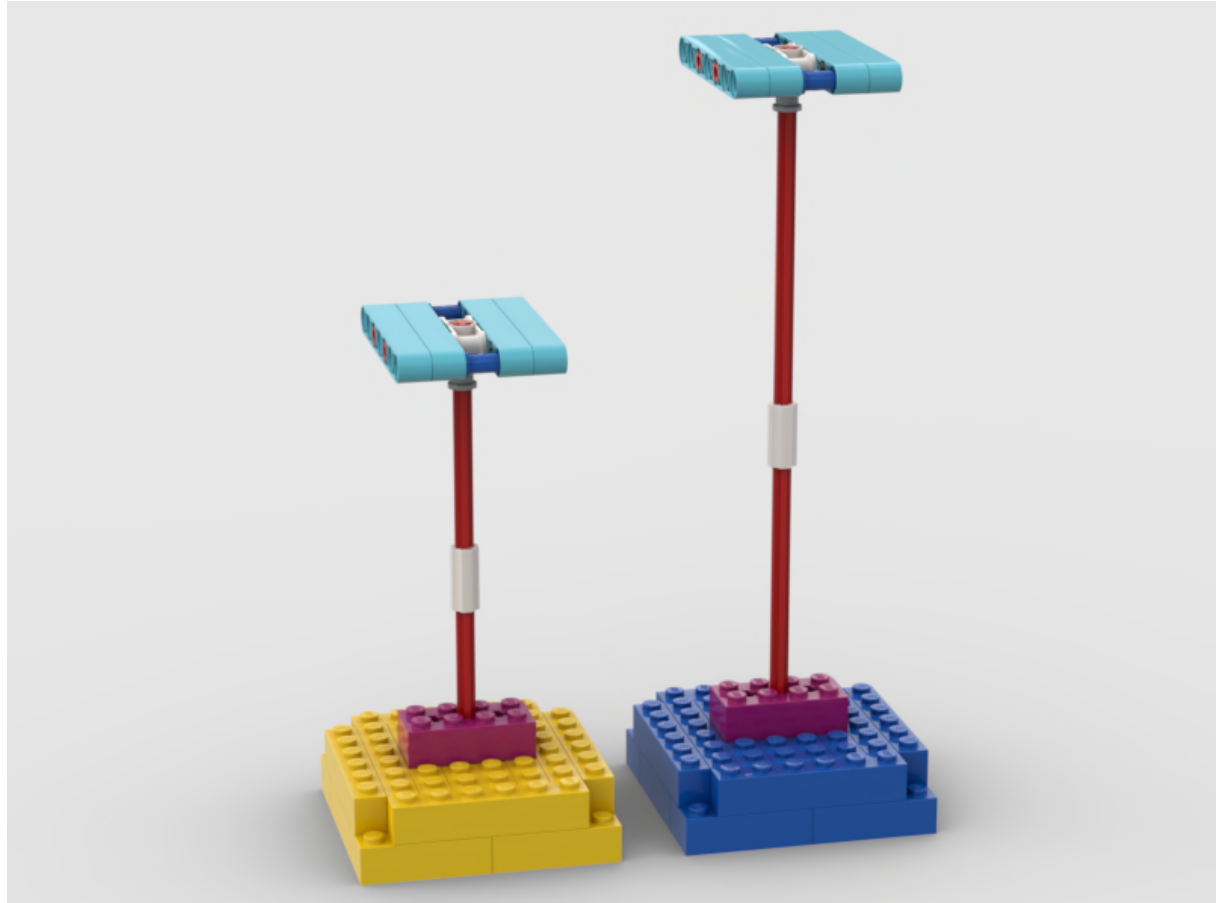
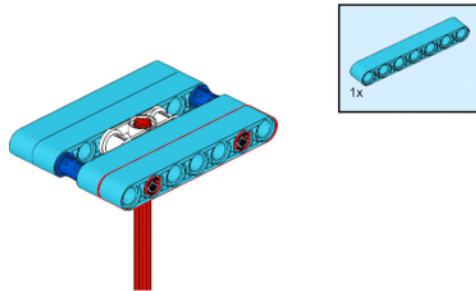
Platform (x2)



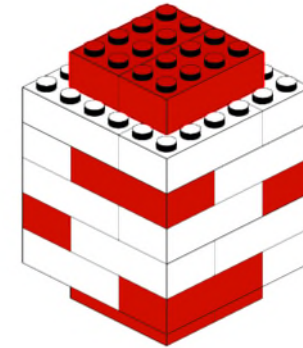
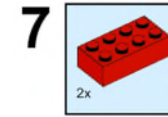
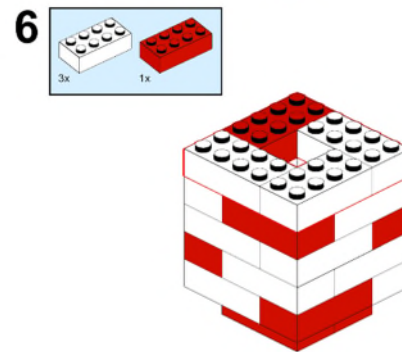
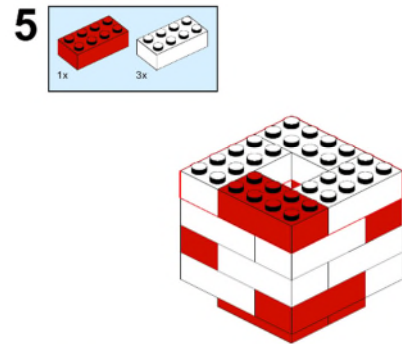
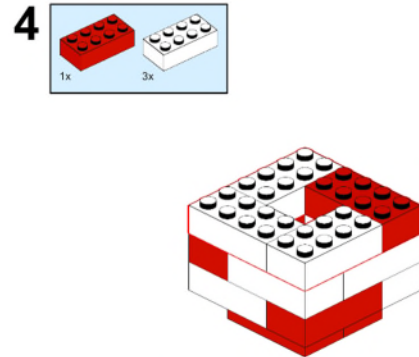
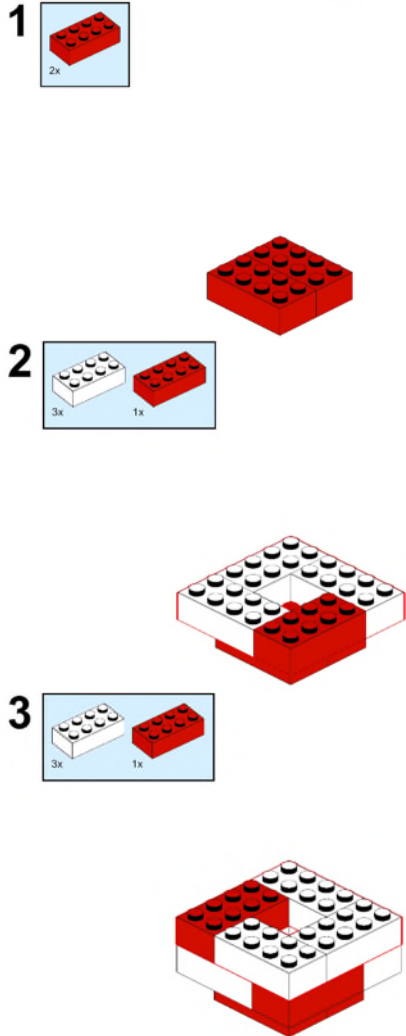
11



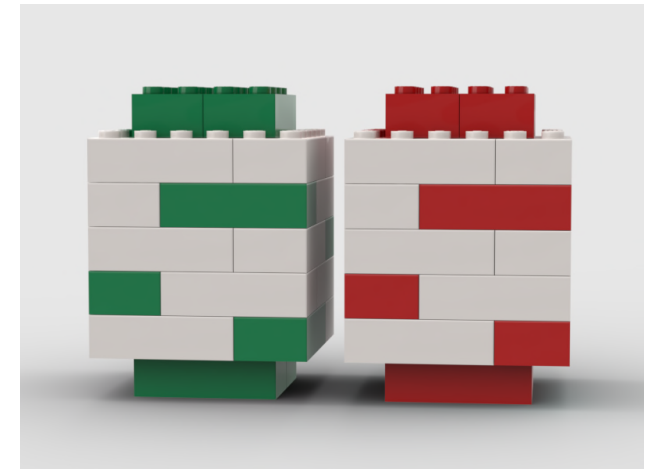
12



Intact eggs



Repeat steps 1 through 7 using green bricks instead of red.



Broken egg

