

Explorer Lite

Game Rules

2023



SOUTH AFRICA

Date: 24 February 2023

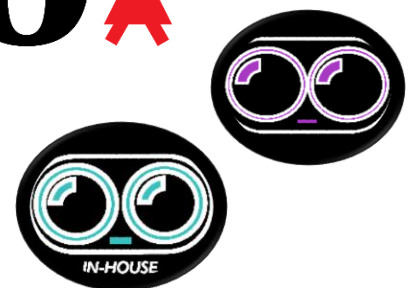


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PART ONE – GAME DESCRIPTION

1. Introduction

The Explorer Lite competition is for children from the ages of 8 years to 12 years in the year of the competition and not the child's age at the time of the competition. The Explorer Competition is developed in South Africa and has no international component. In some years depending on national organiser decisions, there will be official provincial and national events.

For the 2023 Explorer season, provincial organisers have been given the choice to run a physical WRO Explorer event depending on demand from registrations in the province. The WRO National Organising Committee will later in the year make a decision as to the likelihood of a physical Explorer National Event.

Teams may also enter an inhouse competition (competition run by coaches in their own school or club) and submit their scores on the WRO SA website during the scheduled event period 11th October – 20th October. Coaches run their own competition using the Explorer rules and submit their team scores to the website scoring system during this October period. 1 week before the online competition special rules for the event will be released and may incorporate a surprise rule for the scoring week. Once teams have completed their runs their highest score for the competition must be submitted before the close of the scoring system at midnight on the 20th of October.

No late scores and submissions will be allowed.

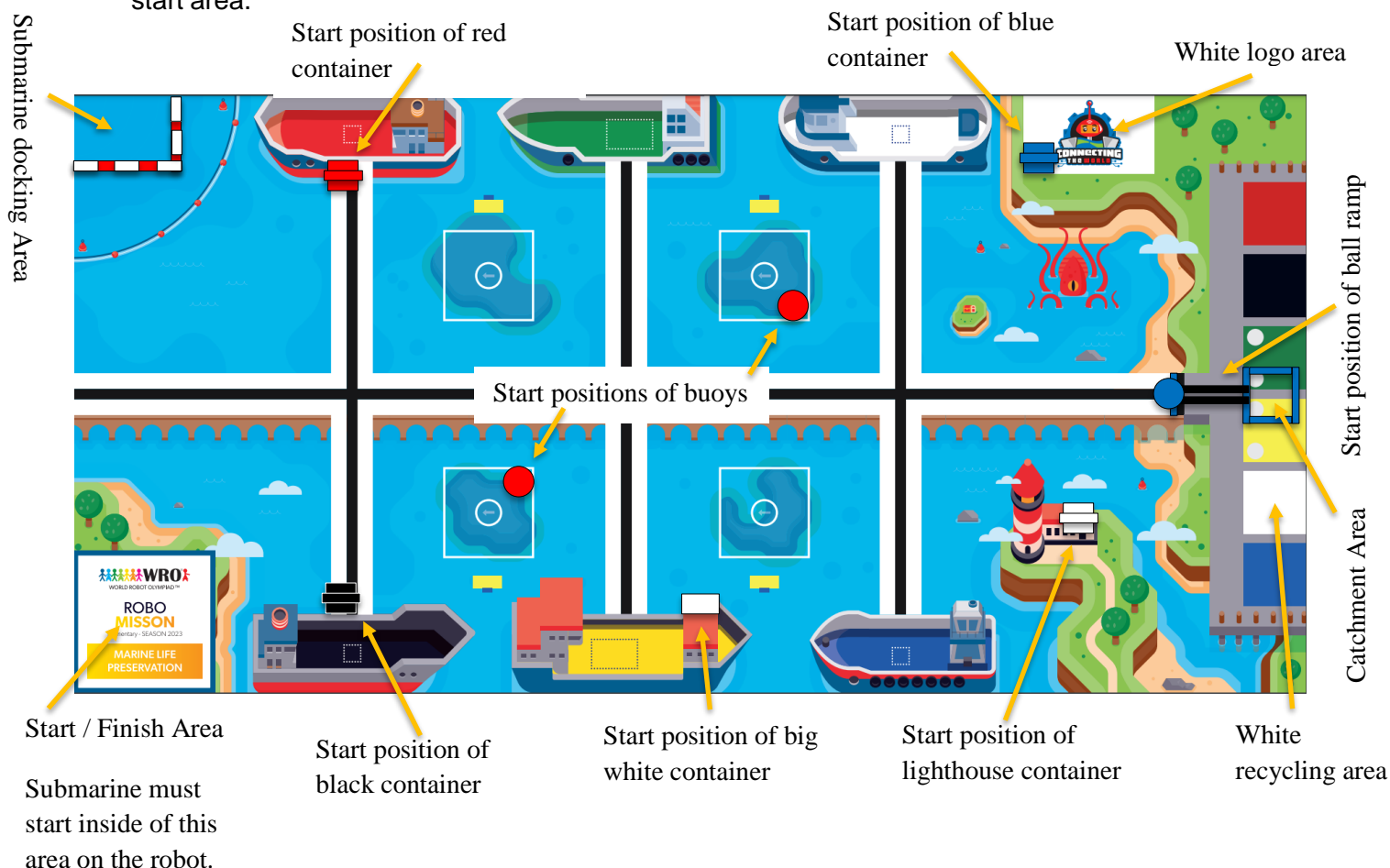
Teams entering an online event are not eligible for the physical national event. To qualify for a national event teams must compete in the official physical provincial events and receive an invitation to the national event from the WRO SA organiser.

Please check the website www.wrosa.co.za for the latest event updates.

2. Game Field

The following graphic shows the game field with the different areas.

If the table is larger than the game mat, place the mat on the wall with the two sides of the start area.

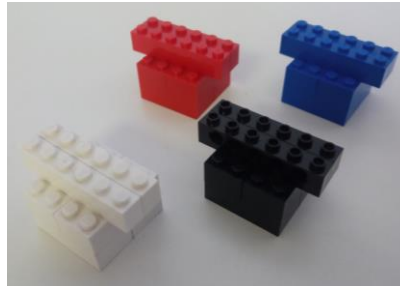


1. Use the Ultrasonic Sensor to start the robot moving.
2. Use a third motor to deliver the submarine to the submarine docking area.
 - a. The motor must move to place the submarine in the area.
 - b. Submarines placed without using a third motor will score 10 points.
3. Move the Red and Black containers onto their ships. The container only needs to touch the ships deck for points to be scored.
4. Move the blue container from the white logo area to the blue ship. The container only needs to touch the ships deck for points to be scored.
5. Move the lighthouse container into the white recycling area. The container needs to be completely inside the white recycling area for points to be scored.
6. Move the big white container to the white ship. The container only needs to touch the ships deck for points to be scored.
7. Push the blue ball down the ramp and into the catchment area. The ball must be touching the game mat inside the catchment area for points to be scored.
8. Finish with your robot touching the start/finish area.
9. The red balls must remain on their buoy stands. Points scored per ball remaining on its Buoy stand.
10. Use a light sensor to follow any line on the game mat. Your line follower must be made clear to the judges.

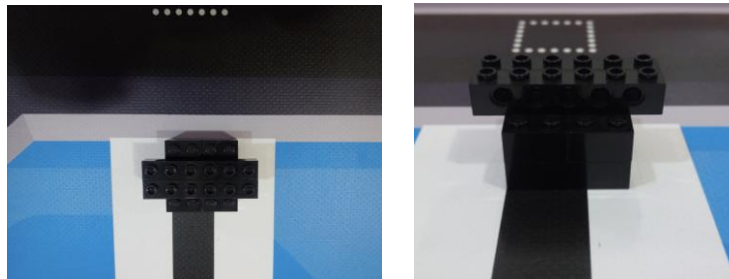
3. Game Objects, Positioning, Randomization

Container Elements (4x)

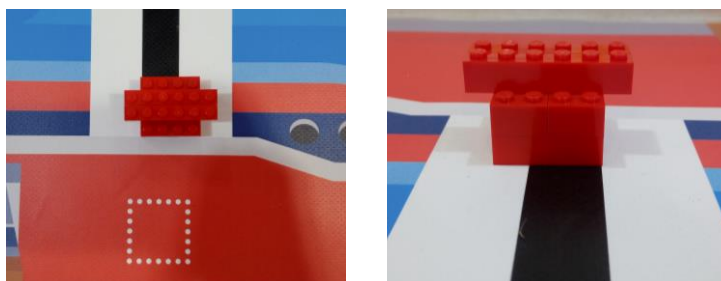
There are four (4) container elements placed in different starting positions on the game mat. A red, black, blue and white element.



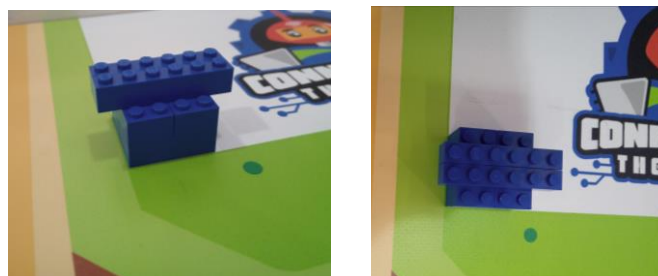
Container elements, blue, black, red and white.



Starting position of the black container. Positioned on the black line outside the black boat area.



Starting Position of the red container. Positioned on the black line outside of the red boat area.



Starting Position of the blue container. Positioned on lower left of the Connecting the World logo square.



Starting Position of the white container. Positioned on the top right of the light house roof.

Starting positions of the container elements.

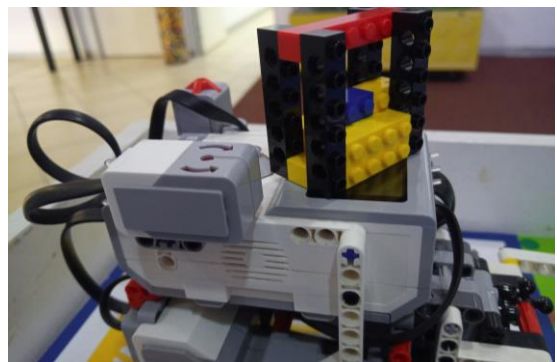


Submarine

The submarine starts positioned on the robot or held by the robots third motor. In the start/finish area.



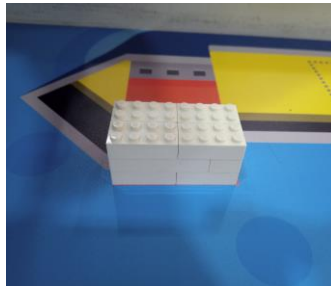
An example of the submarine being held by the robots third motor in the start/finish area.



An example of the submarine placed on top of the robot in the start/finish area.

Big White Container

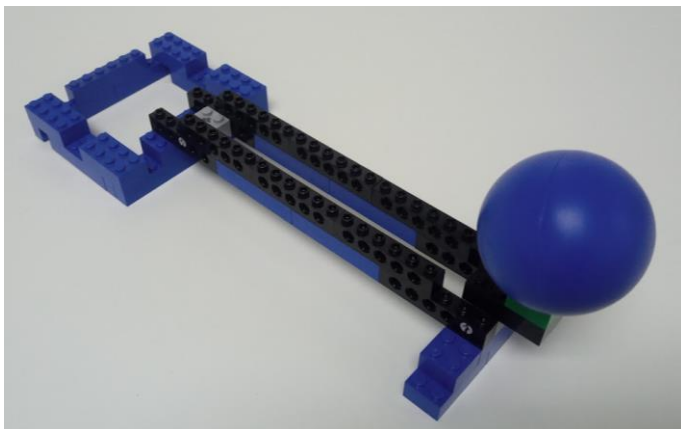
There is one (1) big white container on the game mat positioned on the red area on the right side of the yellow boat.



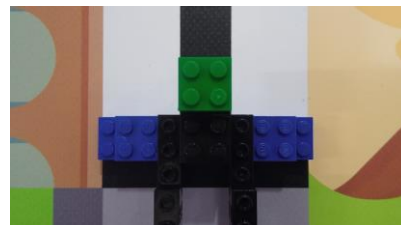
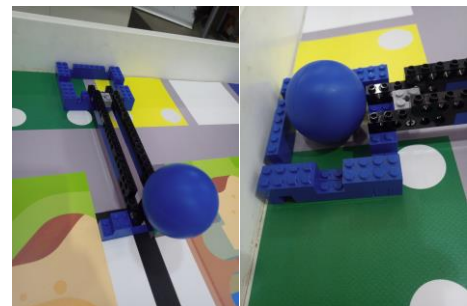
The big white container is positioned in the rectangular red area of the yellow boat. The big container should be positioned as close to the water side as possible.

Ball Ramp

There is one ball ramp on the game mat. Place the ramp with the green brick facing the inside of the mat away from the border walls. The ramp is positioned so as the first pedestal touching the mat is almost touching the white area with the black line.

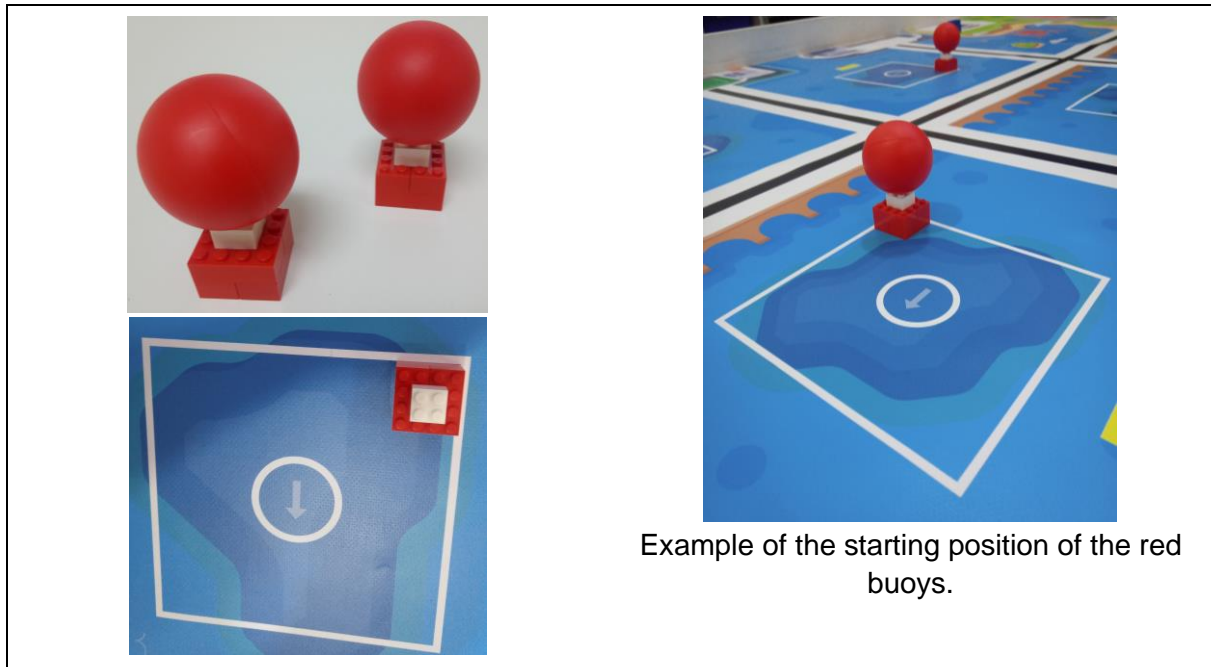


A blue ball is placed on the green 2x2 brick.



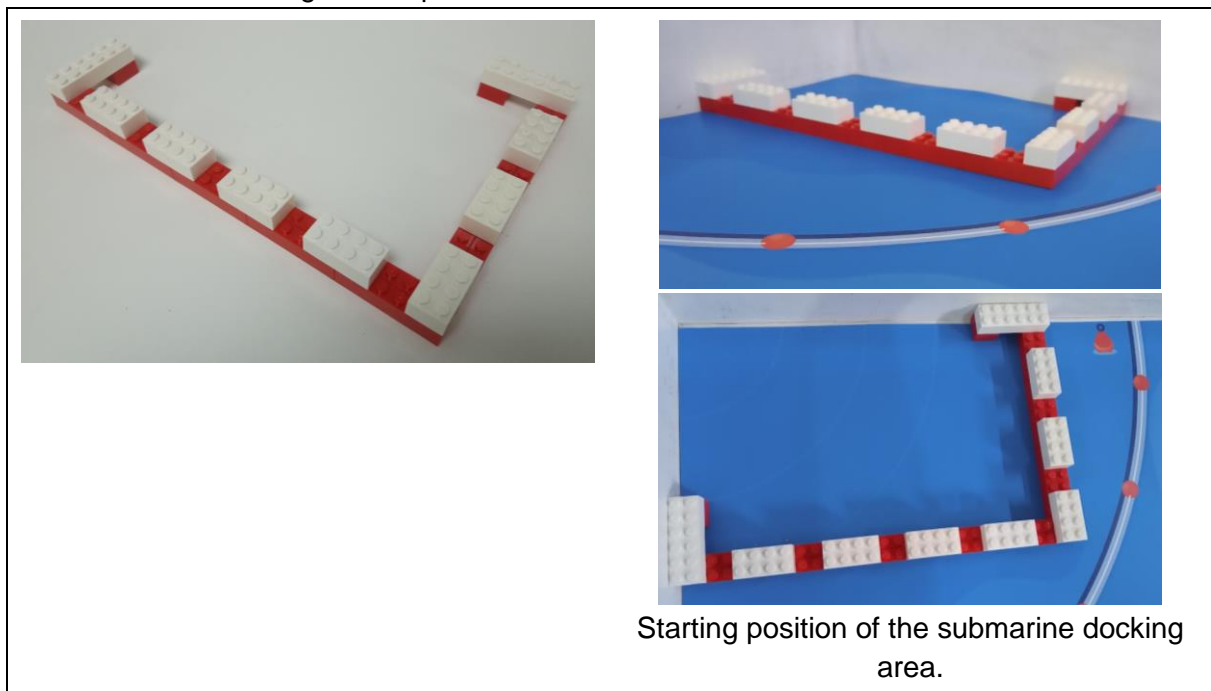
Buoys (2x)

Two buoys with red balls are placed on the game mat. One in the white ocean square closest to the start area and one in the ocean square furthest away from the start area.



Submarine Docking Area (1x)

One submarine docking area is placed in the corner across from the start/finish area.



4. Robot Missions

4.1 Points for use of sensors

Teams should program the robot so that when a team member or judge breaks the ultrasonic sensors beam the robot waits for 1 second and then begins moving out of the start area before completing any of the missions on the game table. (if a judge can't verify this on the game mat they must check the teams program)

Teams should program the colour sensor so the robot follows a line of any colour anywhere on the game mat. (if a judge can't verify this on the game mat, they must check the teams program)

4.2 Place the submarine in the submarine docking area.

The submarine starts on the robot in the start/finish area. The robot must place the submarine completely inside of the submarine docking area. The submarine can be placed in any orientation and does not need to be upright. To score the most points the submarine must be placed into the submarine docking area using a third motor. For not using a third motor to place the submarine into the submarine docking area a team will score less points.

4.3 Load the red and black containers.

The robot must move the red and black containers onto their ships. Red container to red ship and black container onto the black ship. The containers must remain upright. The container only needs to touch the matching-coloured deck area on the ship for points to be scored.

4.4 Load the blue container.

The robot must collect the blue container from the white logo area and load it onto the blue ship deck. The container must remain upright. The container only needs to touch the coloured blue ship deck area.

4.5 Move the lighthouse container to the white recycling area.

The robot must collect the white container from the lighthouse area and take it to the white recycling area. The container does not need to be upright and only needs to touch the white recycling area for points to be scored.

4.6 Load the big white container.

The robot must collect the big white container from the yellow ship and load it onto the white ship. The container does not need to be upright. The container only needs to touch the coloured area of the white ship deck.

4.7 Push the blue ball down the ramp.

The robot must push the blue ball down the ramp and into the catchment area. The ball must fall completely inside the catchment area and touch the game mat for points to be scored.

4.8 Robot Finish

The robot must finish inside the start/finish area. The robot only needs to touch this area for points to be scored. The robot does not need to have attempted all mission tasks for these points to be scored. Some positive points (not the buoys) must be scored in order for these points to be awarded.

4.9 Red Buoys

There are two red balls placed on the game mat on top of the buoys base. Points are awarded per red ball that remains on the buoy base at the end of the robot run.

Explorer Lite Scoring

For Explorer Lite game elements are awarded full points if the elements **touch** the correct scoring area, if part of the element is outside of the scoring area and is touching the game mat the team can scores full points for the game element, unless stated otherwise in the game rules and on the score sheet.

5. Scoresheet

Explorer - Lite

	Team Name:	
	Team Member 1:	
	Team Member 2:	
	Team Member 3:	

Task	Each	Points	1st Score	2nd Score	3rd Score	4th Score
Ultrasonic Sensor Used to start the robot.	Yes / No	20				
Used a light sensor to follow a line	Yes / No	30				
Submarine placed <u>completely inside</u> the submarine dock area using a 3rd motor. Motor must move to place the submarine.	Yes / No	30				
Submarine dropped into the submarine dock without using the third motor.	Yes / No	10				
Red container <u>touching</u> inside red ships deck area.	Yes / No	10				
Black container <u>touching</u> inside black ships deck area.	Yes / No	10				
Large white container <u>touching</u> inside white ships deck area.	Yes / No	40				
Blue container <u>touching</u> inside blue ships deck area.	Yes / No	30				
Lighthouse container (white) <u>completely inside</u> of the white recycling area.	Yes / No	30				
Blue ball pushed into catchment area. Touching the game mat.	Yes / No	40				
Robot finished touching the start / finish area. (points must be scored)	Yes / No	30				
Red balls <u>not</u> moved off of their buoys pedestals.	0 1 2	15 each Max 30				
Time is the time the score was recorded. For example 14:37	Total:	300 Max:				
		Time:				

Diamond
300
points

Gold
230 - 295
points

Silver
160 - 225
points

Bronze
90 - 155
points




Team Member Signature: _____

Judge Signature: _____

6. Scoring Interpretation

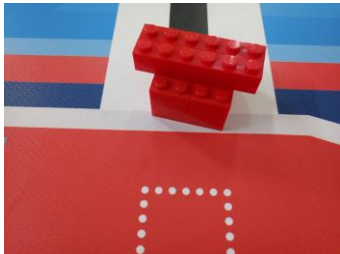


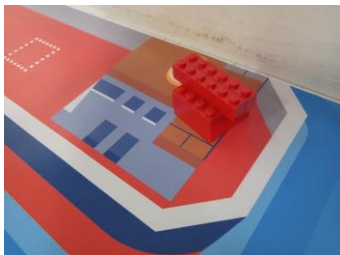
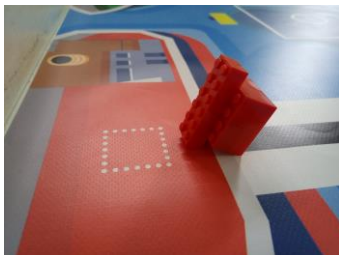
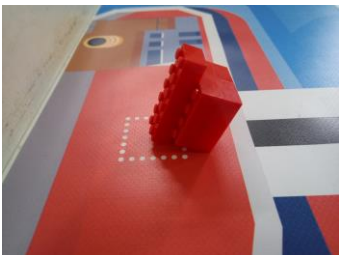
Robot start

The robot must start completely inside the start/finish area. All parts of the robot must fit into this area including robot cables. No part of the robot is allowed to project outside of the start/finish area.

 <p>Robot completely inside the start/finish area. Holding the submarine.</p>	 <p>Robot completely inside the start/finish area. Holding the submarine.</p>	 <p>Robot projecting out of the start/finish area. Robot will not be allowed to start</p>
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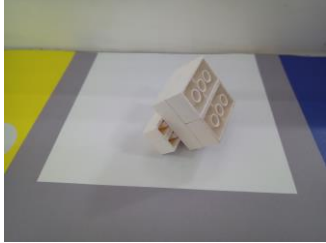

Containers – red, black, and blue:

The below images for the containers apply to the red, black and blue container. All these containers must be upright with their bases touching the game mat.

 <p>Container not touching the ship deck. (coloured ship area) 0 points</p>	 <p>Container touching the ship deck but not completely inside. Full points</p>	 <p>Container inside the ship deck, touching the table wall. Full points</p>
 <p>Container completely inside the ship deck Full points</p>	 <p>Container fallen over, touching the ship deck. 0 points</p>	 <p>Container fallen over, completely inside ship deck. 0 points</p>

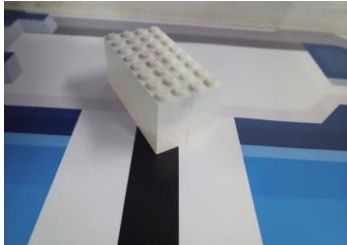
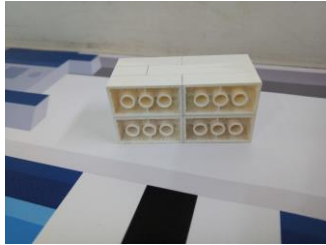

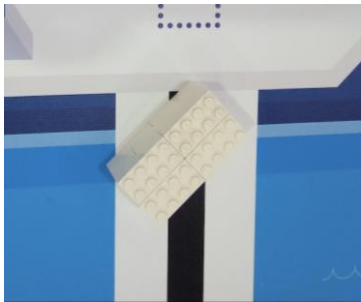
White Lighthouse Container

The white container must be placed completely inside of the white recycling area.
The container does not need to be upright.


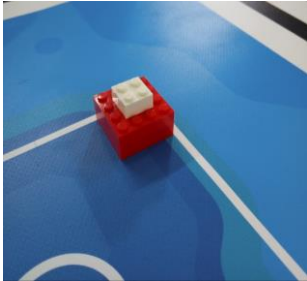

 <p>White container touching the white recycle area. 0 points</p>	 <p>White container fallen over, completely inside white recycling area. Full points</p>	 <p>White container upright, completely inside white recycling area. Full points</p>
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Big White Container

The big white container must touch the deck of the white ship area.

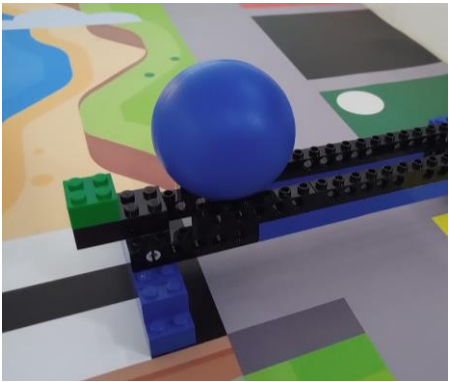
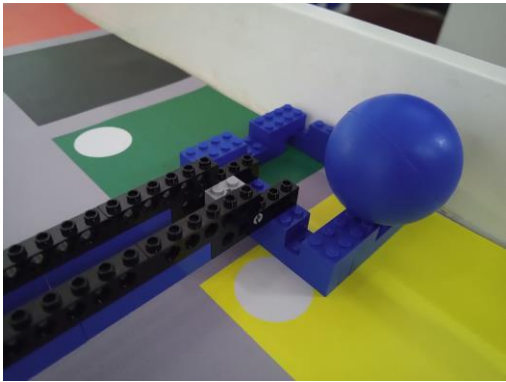
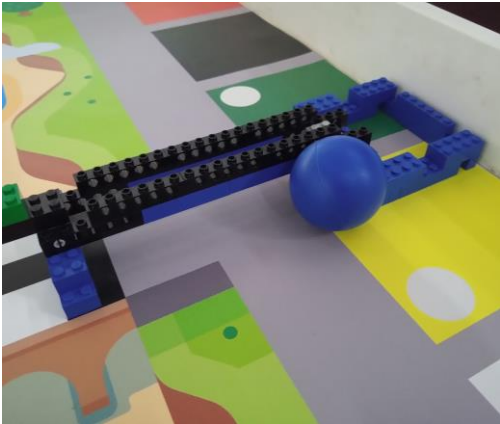
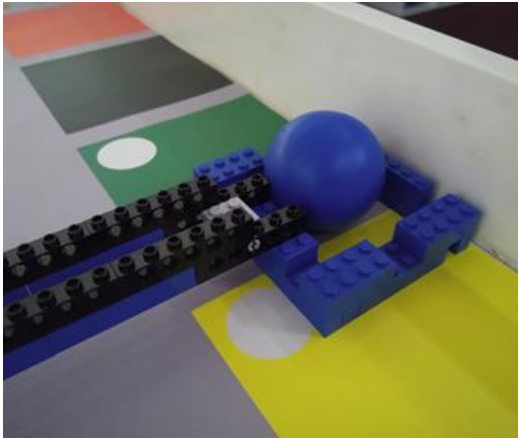
 <p>Big white container touching the white ship deck. Full points</p>	 <p>Big white container fallen over, completely inside white ship deck. 0 points</p>
 <p>Big white container upright, completely inside white ship deck. Full points</p>	 <p>Big white container not touching the white ship deck area. 0 points</p>

Buoys

 <p>Red ball not moved from buoy base.</p> <p>Full points</p>	 <p>Red ball not on buoy base.</p> <p>0 points</p>	 <p>Red ball touching the buoy base but not on top.</p> <p>0 points</p>
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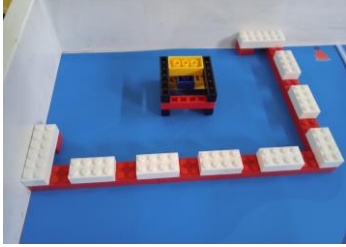

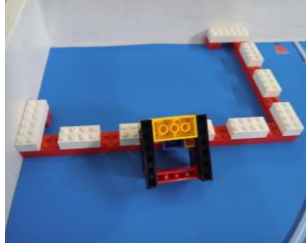
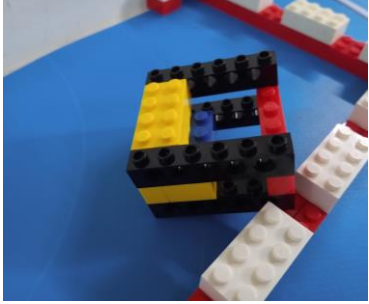
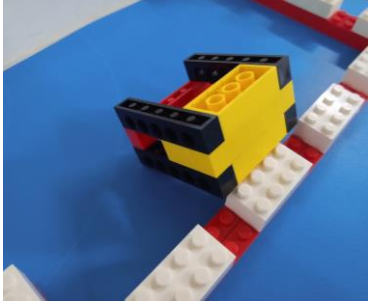


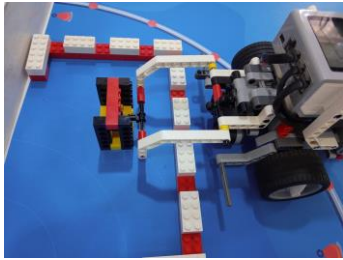
Ball ramp

The blue ball must be pushed by the robot into the catchment area at the end of the ramp. The ball must touch the game mat for points to be scored.

 <p>Ball not inside catchment area.</p> <p>0 points</p>	 <p>Ball not inside catchment area.</p> <p>0 points</p>
 <p>Ball off ramp not inside the catchment area.</p> <p>0 points</p>	 <p>Ball completely inside the catchment area. Touching the game mat</p> <p>Full points</p>




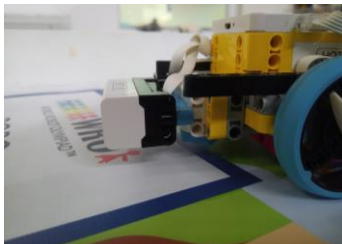

Submarine

The submarine must be placed completely inside of the submarine docking area.
The submarine can be in any orientation.

 <p>Submarine completely inside the submarine area, not upright. Full points</p>	 <p>Submarine completely inside the submarine area, upright. Full points</p>	 <p>Submarine not inside the submarine area. 0 points</p>
 <p>Submarine not completely inside the submarine area, resting on docking area 0 points</p>	 <p>Submarine not completely inside the submarine area, resting on docking area. 0 points</p>	 <p>Submarine starting on top of the robot not using a third motor. 10 points maximum can be awarded if submarine is completely inside the submarine docking area.</p>
<div style="display: flex; justify-content: space-around;">   </div> <p>Submarine starting on a third motor and placed completely inside of the submarine docking area. Maximum number of points (30) can be awarded if the submarine is completely inside of the submarine docking area.</p>		

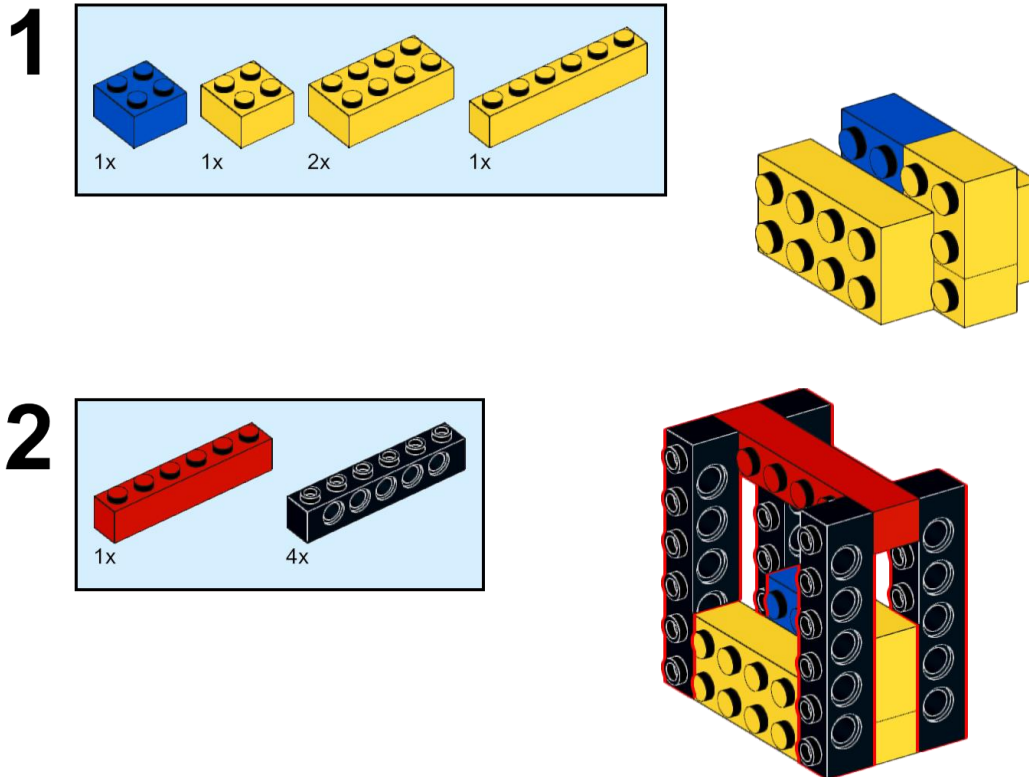
Robot finishing points.

The robot must finish in the start/finish area. The robot only needs to touch the area for points to be scored.

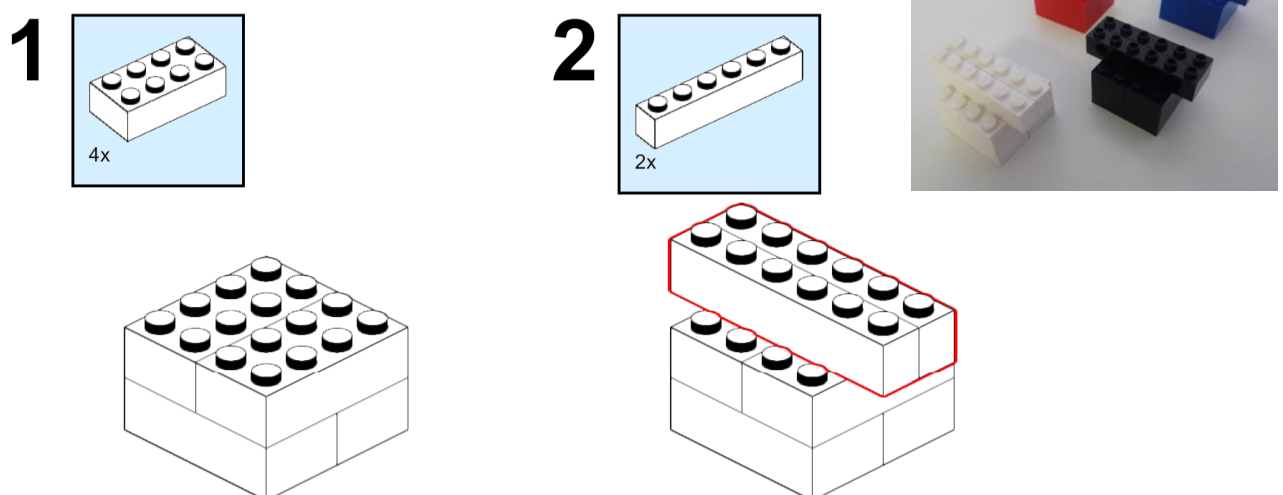
 <p>Robot completely inside the start/finish area.</p> <p>Full points</p>	 <p>Robot touching the start/finish area.</p> <p>Full points</p>	 <p>Robot touching the start/finish area.</p> <p>Full points</p>
 <p>Robot overhanging the start/finish area. Not touching the area.</p> <p>0 points</p>	 <p>Robot touching the border line around the start/finish area.</p> <p>0 points</p>	

PART TWO – ASSEMBLY OF GAME OBJECTS

Submarine x1

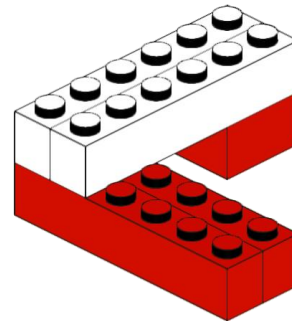
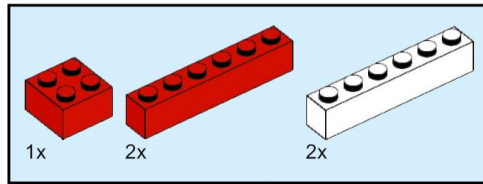


Containers x4 (white, blue, black, red)

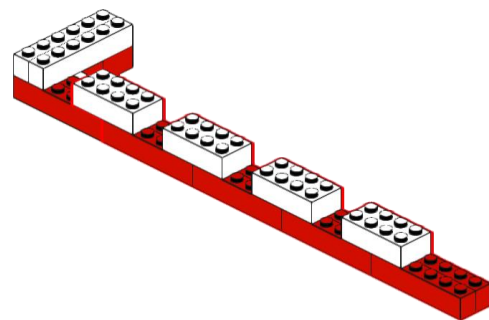
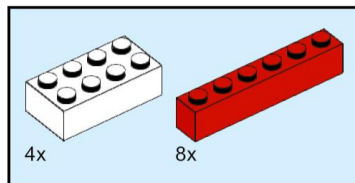


Submarine Dock Wall x1

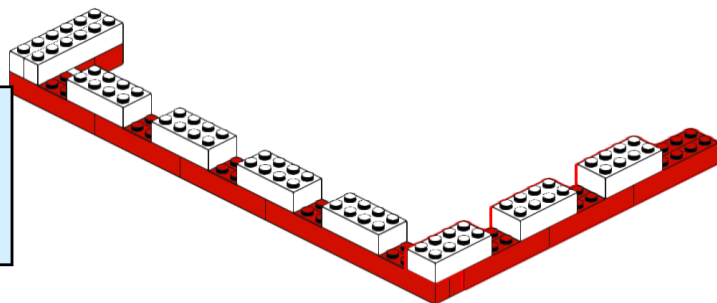
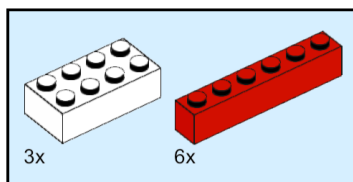
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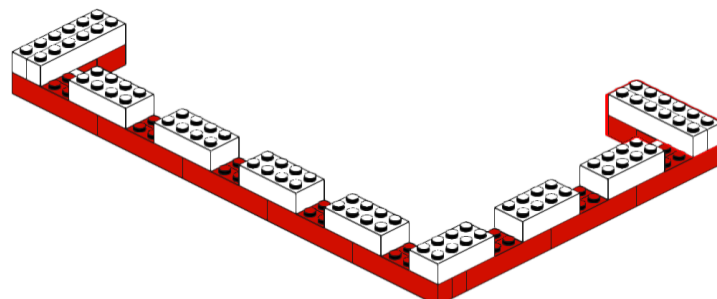
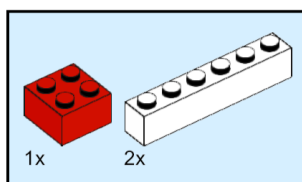
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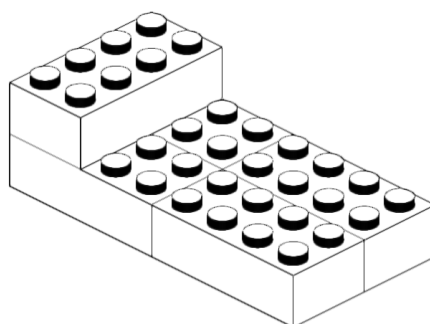
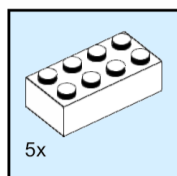


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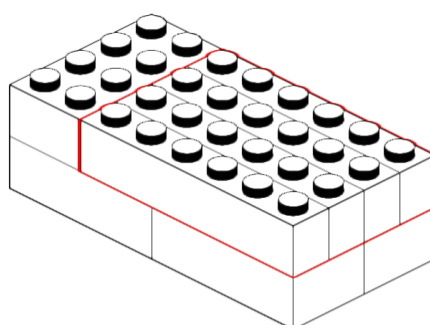
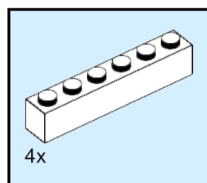


Big white container x1

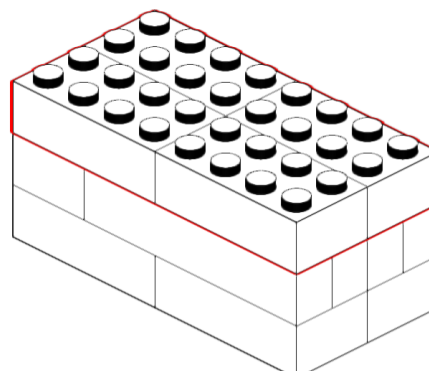
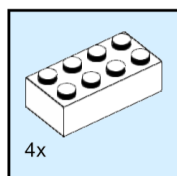
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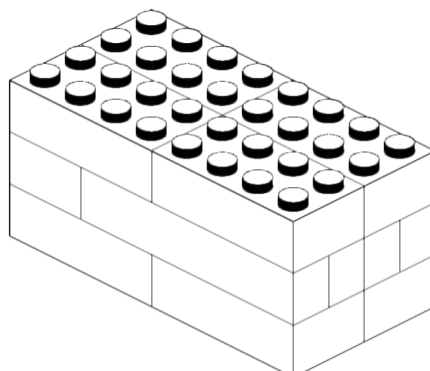
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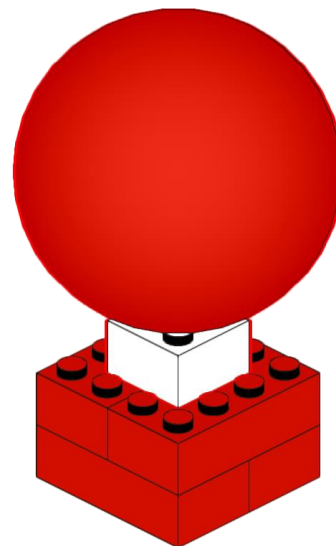
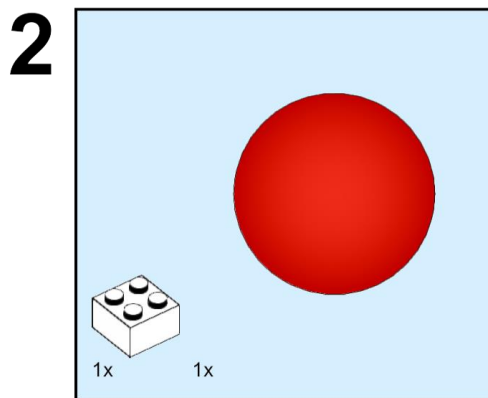
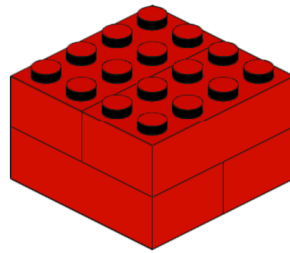
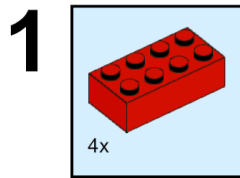
3



4

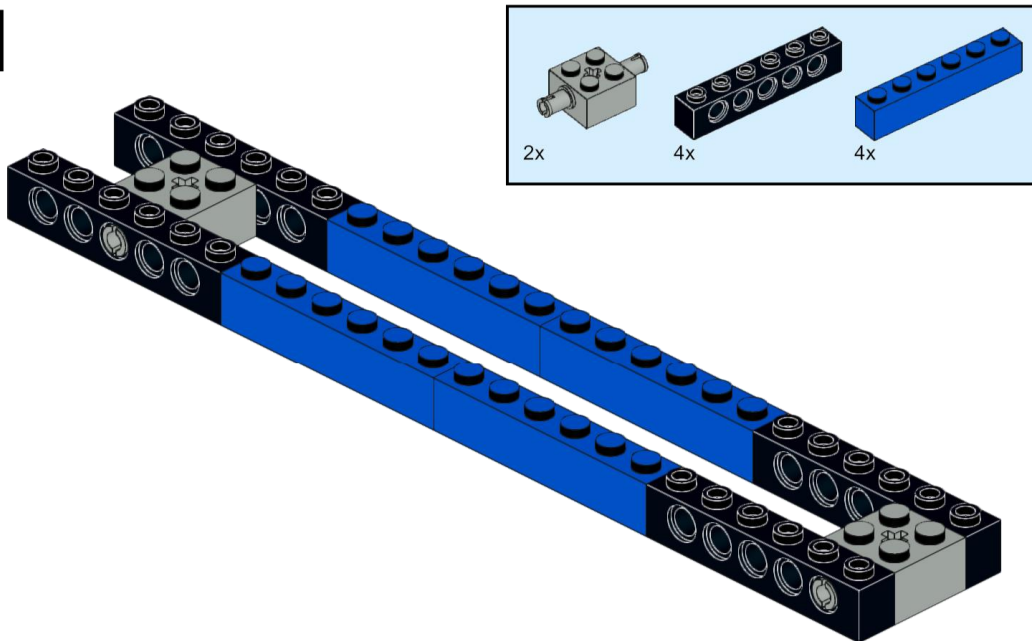


Buoys x2

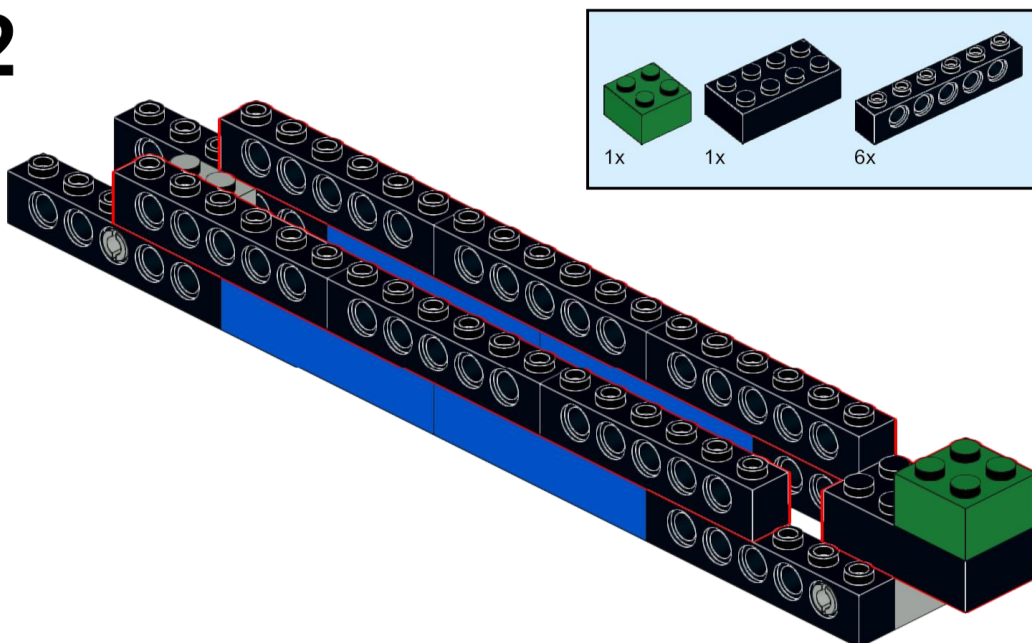


Ball ramp x1

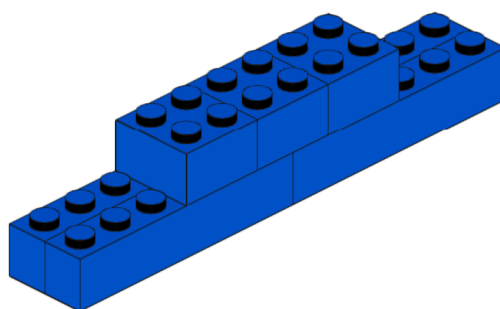
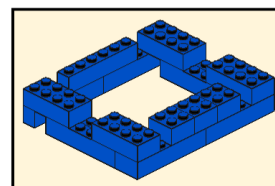
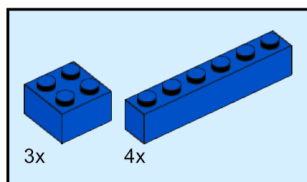
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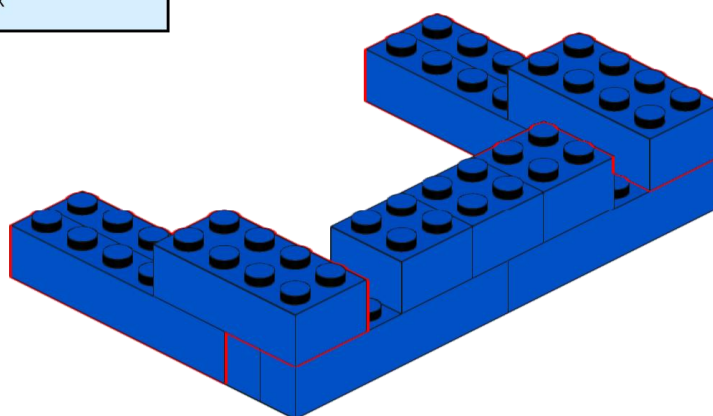
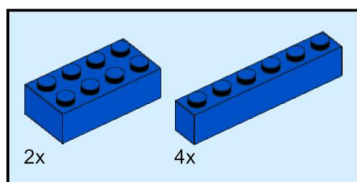
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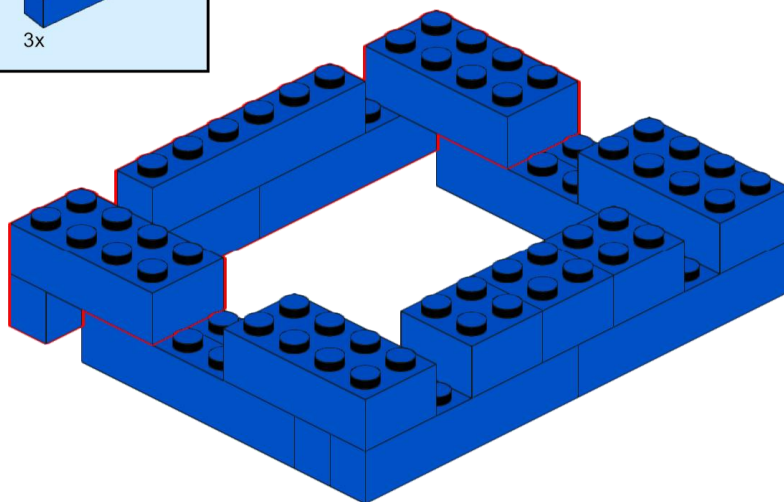
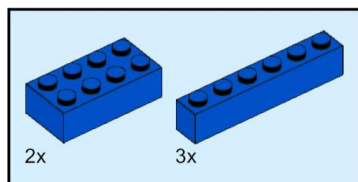
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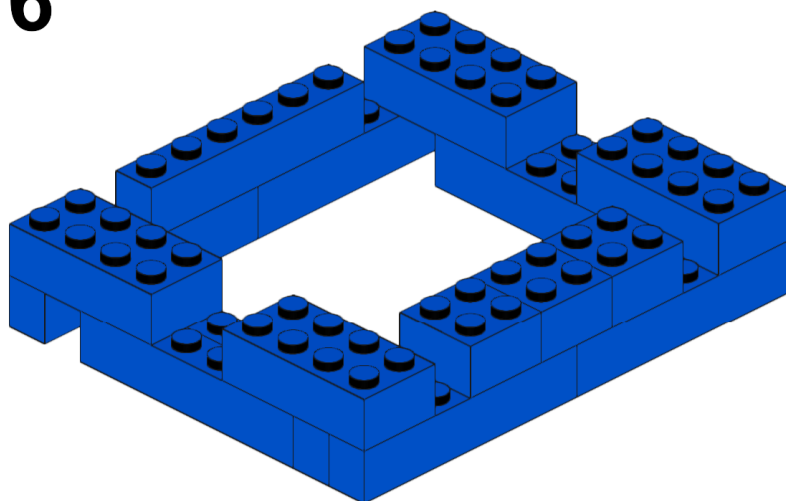
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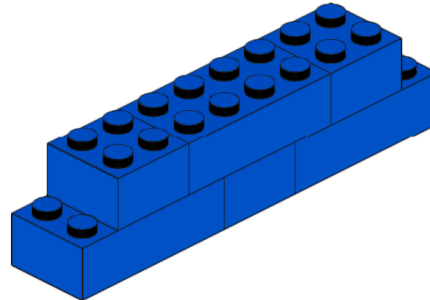
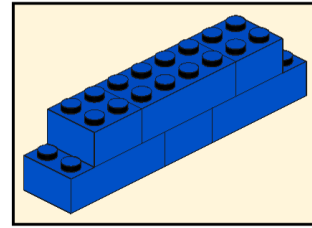
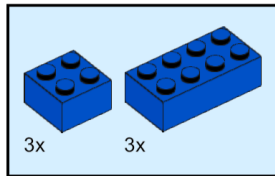
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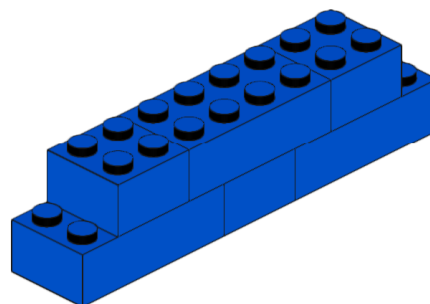
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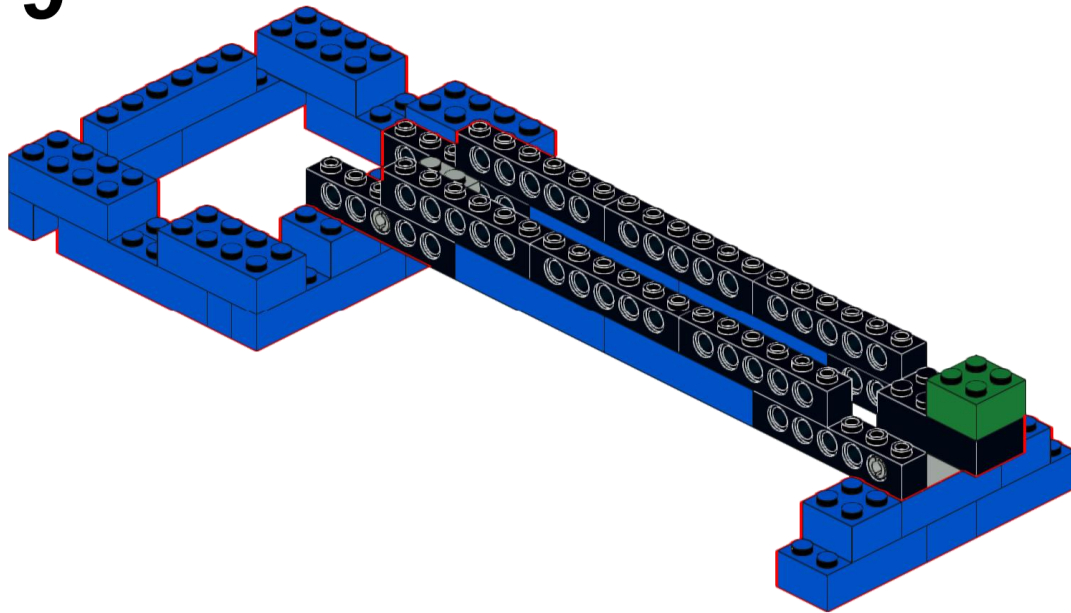
7



8



9



10

