Explorer Prime

Game Rules

2026

WORLD ROBOT OLYMPIAD™

WRO®

SOUTH AFRICA

Date: 1 February 2026

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PART ONE – GAME DESCRIPTION

1. Introduction

The Explorer Prime competition is for children from the ages of 11 years to 16 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 2026 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.

The Explorer mat for 2026 uses the Junior RoboMission game mat Heritage Heroes.

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

Game Story

You have been tasked with designing and building a robot to assist with tasks at a museum and paleontological dig site. Your robot must assist researchers with keeping the grounds clean, moving research material and setting up exhibits in the museum spaces. Your robot should not only be able to do these tasks quickly but also be able to interact with delicate materials without damaging them. Are you up for the challenge?

2. Game Field

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

If the table is larger than the game mat, place the mat on the wall with the start area side touching the table wall. The RoboMission Junior (Heritage Heroes) is used for the Explorer

Quick Summary of Tasks:

1. Use the Ultrasonic Sensor to start the robot moving.
2. Use the light sensor to follow any **BLACK** line.
3. Move the three (3) toolboxes (①) so each toolbox is touching a black square inside of the Dig Site.
4. Move the green and blue (②) exhibits into their exhibit areas.
5. Move the two art pieces (③) completely inside of the art museum, the art pieces must remain upright.
6. Collect the litter (④) and place it completely inside the recycler.
7. Collect the feedback box (⑤) and place it completely inside a water image on the game mat.
8. Place the bolt (⑥) into the waiting yellow crate.
9. Do not move or damage the ancient ruin elements (⑦).

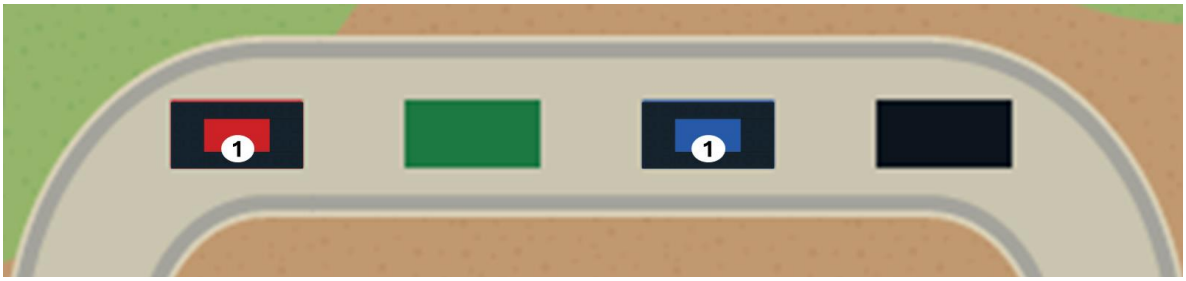
Notes:

- **If an element is damaged or broken no points can be scored for that element.**
- **The tasks may be completed in any order.**
- **It is advised to set your robot speed between 40% to 100%. Teams with robots running below 40% for long periods of time will be asked to speed up their robots.**
- **Failure to follow this instruction by judges will result in teams not being allowed to run until the speed is fixed.**

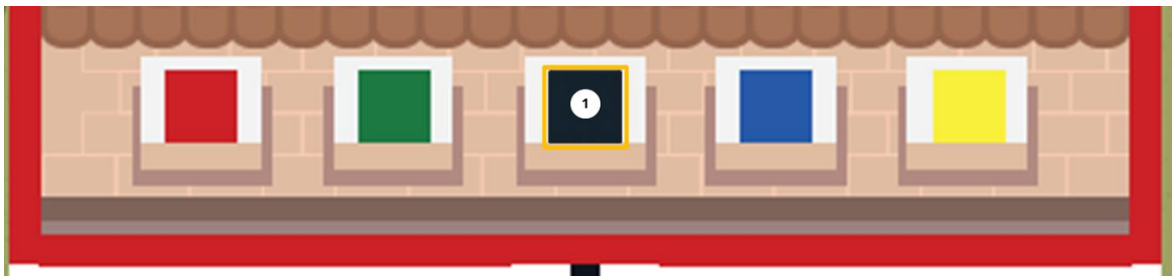
3. Game Objects, Positioning, Randomization

Toolboxes (x3)

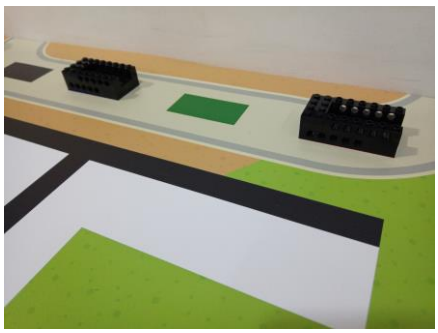
Three toolboxes are placed on the game mat in their starting positions. Two long toolboxes one on the red rectangle and one on the blue rectangle below the start area to the left of the dig site. One large square toolbox on the black square the opposite side of the game mat from the dig site.



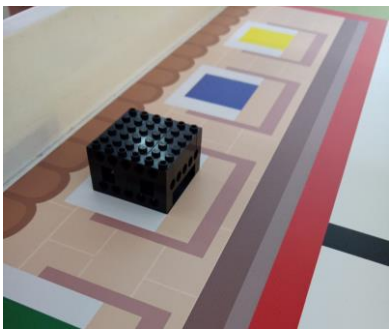
Starting position of the two long toolboxes on the game mat.



Starting position of the large toolbox, on the black square.



Starting orientation of the long toolboxes.

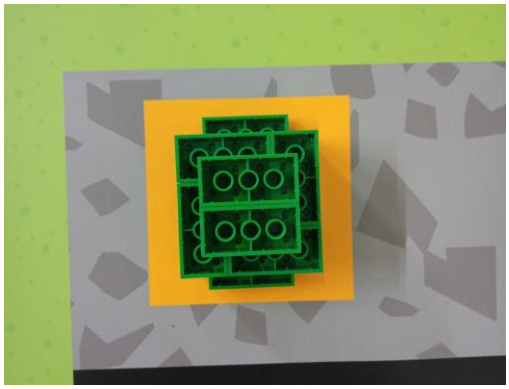


Starting orientation of the large toolbox.

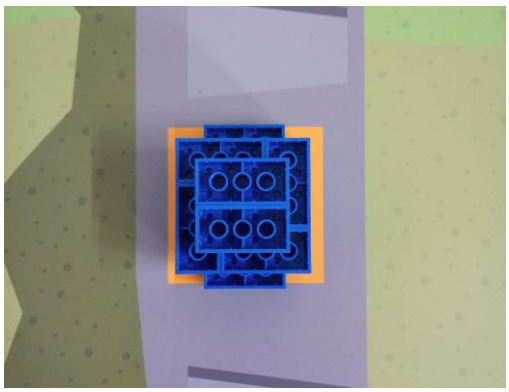
Green and Blue Exhibits (x2)

Two exhibit elements are placed on the game mat. A blue exhibit element is placed on the game mat in the yellow column image to the left of the blue exhibit area. A green exhibit element is placed on the red square to the left of the green exhibit area. NB: these elements are placed upside down and must remain that way for points to be scored.

Starting location of the green and blue exhibit elements. NB: these elements are placed with the round studs touching the game mat.



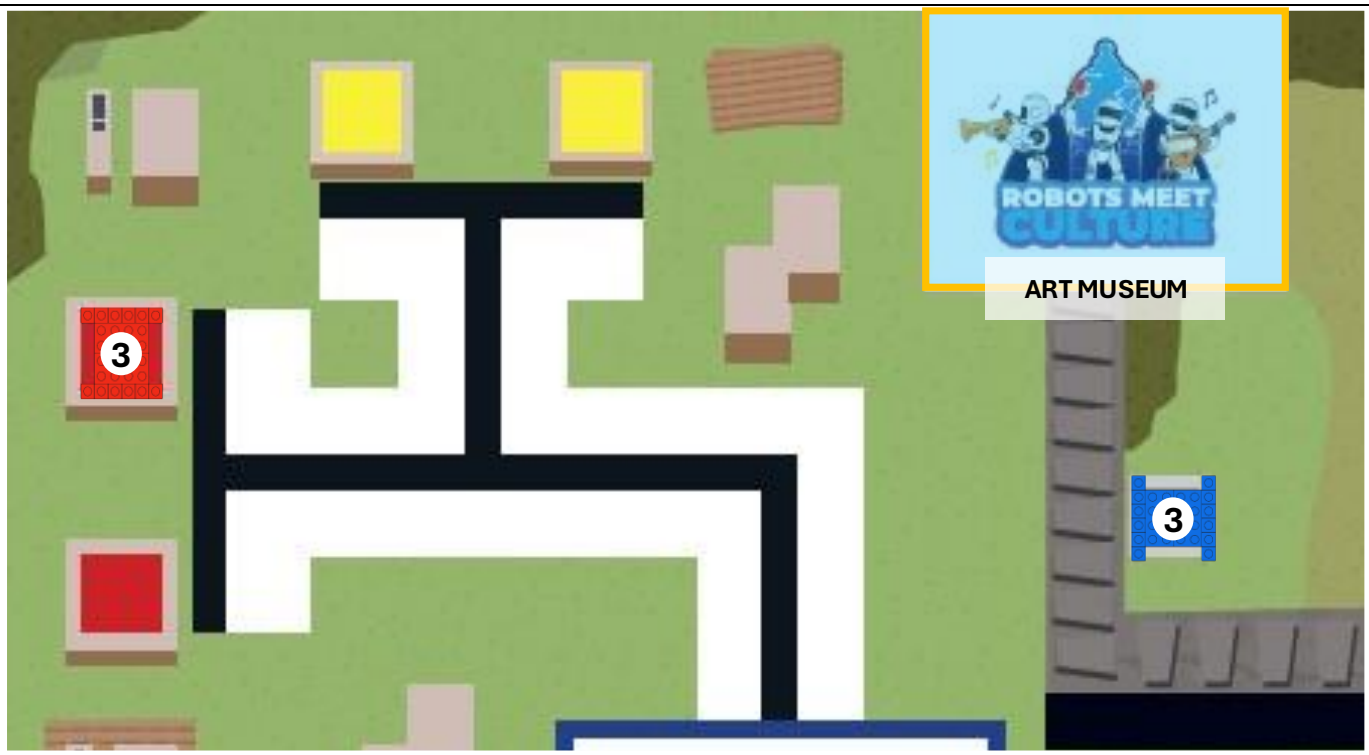
Placement of the green element.



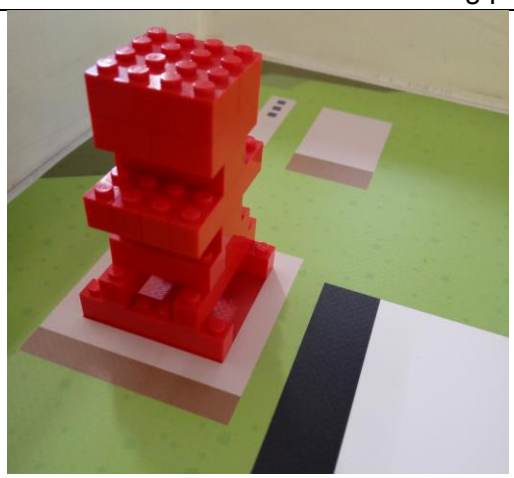
Placement of the blue element.

Red and Blue art pieces (x2)

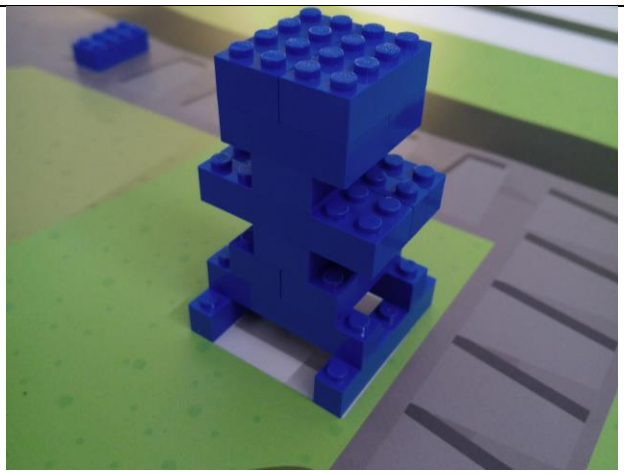
The red and blue art instillations are placed upright on the game mat. The red art piece starts on the red square to the top left of the start area. The blue art piece starts on the grey square below the art museum.



Starting positions of the red and blue art pieces.



Starting position of the red art piece.

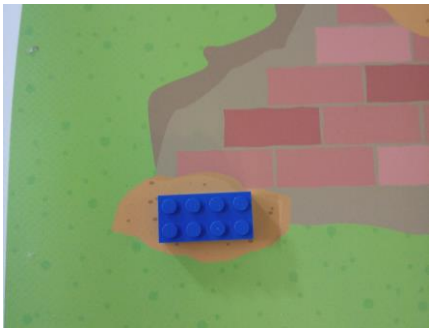


Starting position of the blue art piece.

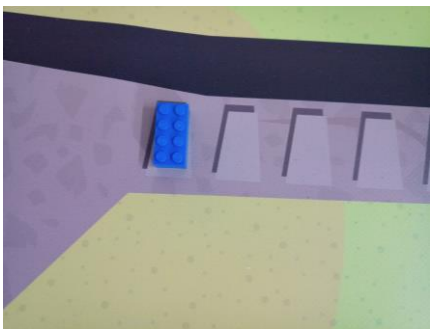
Litter Elements (x3)

Three (3) litter elements are placed on the game mat. One element in the smaller dirt pile near the brick floor image above the dig site. One litter element in the small dirt pile furthest above the dig site. One litter element on the first grey step leading to the are Museum.

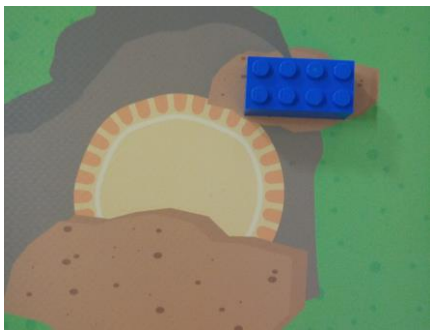
Starting position of the blue litter elements.



Starting position of the blue litter elements



Starting position of the litter element.



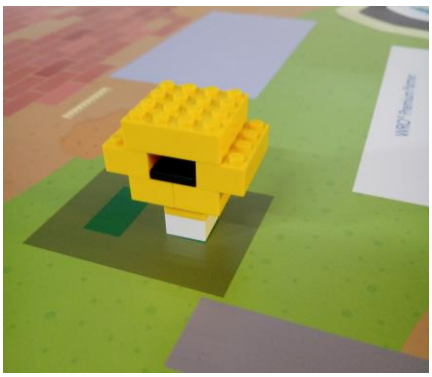
Starting position of the litter element.

Feedback Box (x1)

One feedback box is placed with the 2x4 base completely inside the small green square to the right of the dig site. The open part of the box is placed facing the dig site.

Starting position of the feedback box.

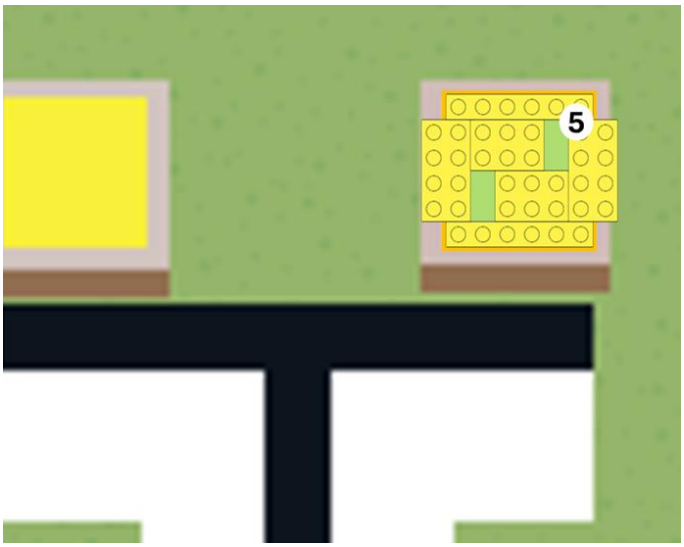
Starting placement of the feedback box.



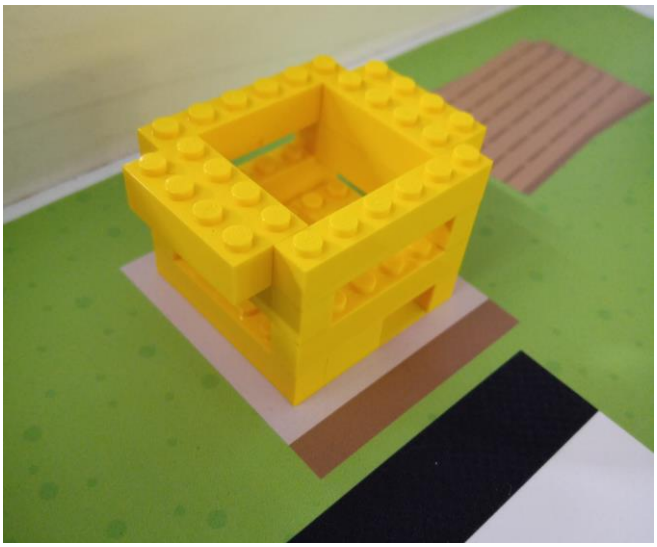
Starting position of the feedback box

Crate & Bolt (x1)

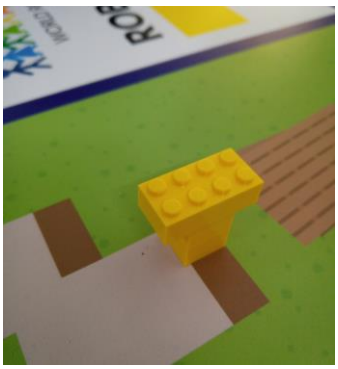
One yellow crate is placed on the game mat in the yellow square to the left of the art museum. The bolt starts on the brown line to the left of the start area. The long side of the bolt must be parallel to the short side of the game mat or game table.

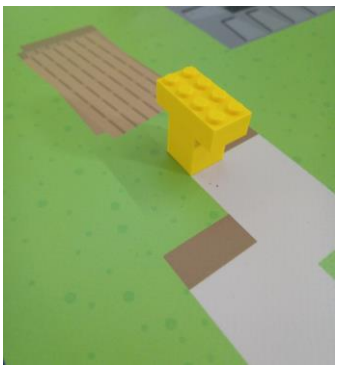


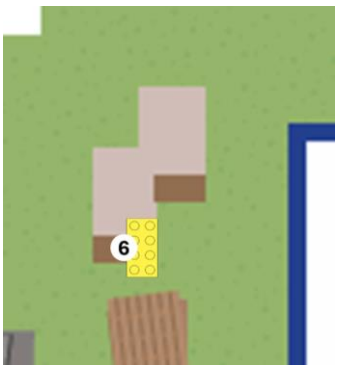
Placement of the yellow crate.

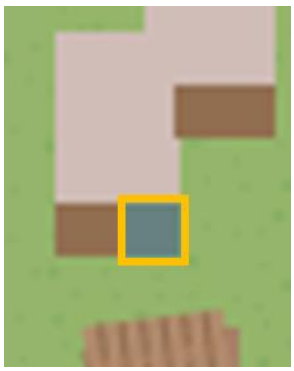


Placement of the yellow crate









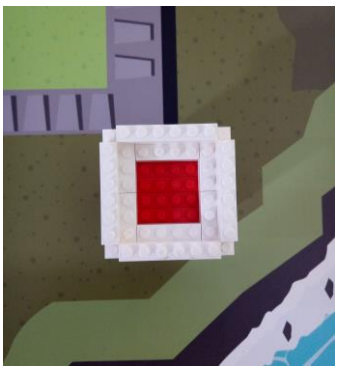
Starting position of the bolt element on the game mat.

Ancient Ruins (x4)

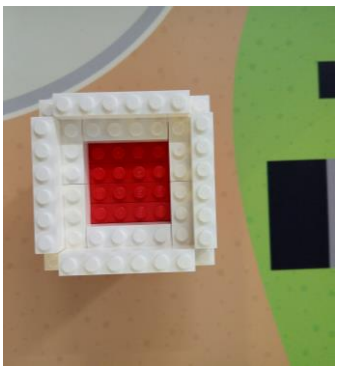
Four ancient ruin elements are placed on the game mat. Each element is placed with the black open area of the element facing the short ends of the game table. One element to the bottom left of the start area. One element on the red square to the right of the art museum. One element to the left of the dig site and one element on the red square with the orange border to the left of the blue exhibit area.

Positions of the ancient ruin elements.

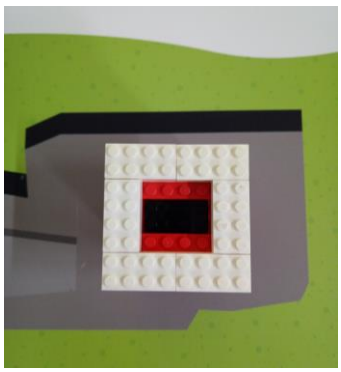
Posistion of the ancient ruin elements



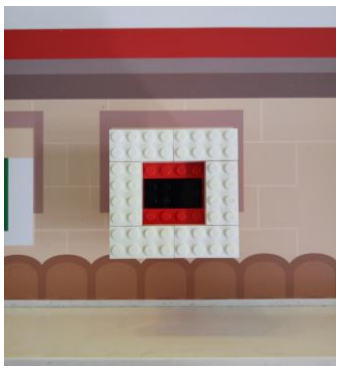
Starting position of the ruin closest to the start area.



Starting position of the ruin to the left of the dig site.



Starting position of the ruin furthest from the start area.



starting position of the ruin to the right of the art museum.

4. Robot Missions

4.1 Points for use of sensors

Teams should program their 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 team's program)

Teams should program the colour/light sensor, so the robot follows a black line anywhere on the game mat. (if a judge can't verify this on the game mat, they must check the team's program)

4.2 Deliver the toolboxes

Three black toolboxes are placed on the game mat. Your robot must collect the toolboxes and place them completely inside of the dig site. Each toolbox should touch a black square inside of the dig site. Only one (1) toolbox should be placed per black square. There are a total of four black squares in the dig site. The toolboxes may be placed on any three of the four black squares available.

4.3 Move the green and blue exhibits

A green and blue exhibit element are placed on the game mat. Each exhibit element must be moved so it is touching its corresponding area. The exhibit element must not be damaged or flipped over.

4.4 Deliver the Red and Blue art pieces

A red and blue art piece are placed on the game mat. These elements must be delivered to the art museum area (robots meet culture logo area). The element must be placed completely inside of the art museum. The art piece **must remain upright** (only the base of the art piece must touch the game mat).

4.5 Collect the Litter

Messy guests have left litter after their visit. Collect all three pieces of litter and deliver them to the recycler to be recycled. The litter elements must be **completely inside** of the recycler area for points to be scored.

4.6 Collect the Feedback box

Collect the guest feedback box and place it into a water source (water image on the game mat). The feedback box can be in any orientation but must not be broken. The feedback box **must be completely inside** of a water image for points to be scored. The black line around the water images is not part of the water image.

4.7 Finish sealing the crate

Collect the bolt to seal the crate. The bolt must be **completely inside** of the crate for full points to be scored. The crate must not be damaged. The crate must **still touch its yellow starting square**. The bolt may be placed onto your robot before the run. The bolt starts on the game mat to the left of the start area.

4.8 Don’t damage/move the ancient ruins

Four ancient ruin elements are on the game mat. These elements must not be moved completely outside of their starting areas. You will always score points for these elements as long as your robot is on the game mat and the scoring conditions for the ancient ruin elements are met. These elements must not be damaged for points to be scored.

4.9 Robot Finish

You must **touch the robot and end the program** and say STOP to indicate to the judge that your robot has finished its run and can be scored. This must be the last action you do during any scoring run.

Explorer Prime Scoring

For Explorer Prime game elements are awarded full points if the elements **is completely inside** the correct scoring area, if part of the element is outside of the scoring area and is touching the game mat the team may not be awarded points for the element, **unless stated otherwise** in the game rules and on the score sheet.

Completely inside means that no part of the element is touching outside of the scoring area.

5. Scoresheet

Tasks:	Points	Run 1		Run 2		Run 3		Run 4	
Ultrasonic Sensor Used to start the robot.	20	0 1		0 1		0 1		0 1	
Used a light sensor to follow black line.	20	0 1		0 1		0 1		0 1	
Toolbox inside the dig site area not touching a black square	10 each (Max 30)	0 1 2 3		0 1 2 3		0 1 2 3		0 1 2 3	
OR									
Toolbox completely inside the dig site and **touching** a black square. (1 toolbox per black square)	20 each (Max 60)	0 1 2 3		0 1 2 3		0 1 2 3		0 1 2 3	
Exhibit **touching** the correct exhibit area.	10 each (Max 20)	0 1 2		0 1 2		0 1 2		0 1 2	
Art piece **completely inside** the art museum area.	15 each (Max 30)	0 1 2		0 1 2		0 1 2		0 1 2	
Litter **completely inside** the recycler area.	10 each (Max 30)	0 1 2 3		0 1 2 3		0 1 2 3		0 1 2 3	
Feedback Box **completely inside** a water image.	30	0 1		0 1		0 1		0 1	
Bolt **completely inside** the crate.	50	0 1		0 1		0 1		0 1	
Touched the robot and ended program	20	0 1		0 1		0 1		0 1	
BONUS POINTS: Always awarded as long as robot is on the game mat and scoring conditions are met.									
Ancient ruins still **touching** their starting area and undamaged.	5 each (Max 20)	0 1 2 3 4		0 1 2 3 4		0 1 2 3 4		0 1 2 3 4	
Surprise Rule:	30	0 1		0 1		0 1		0 1	
	Max Score: 330	Run 1:		Run 2:		Run 3:		Run 4:	
		TIME:		TIME:		TIME:		TIME:	

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Highest Score:		Time:	:

NOTES:
Teams must score higher than their previous scoring run for the score to be recorded. Example team A scores 100 points for run 1 and then scores 30 points for run 2. Run 2 is not recorded until higher than 100 points.
Time refers to the time the robot started moving for its scoring run Eg. 14:08

Certificate levels:	Bronze 0-80 points	Silver 81 - 165 points	Gold 166 - 250 points	Diamond 251+ points

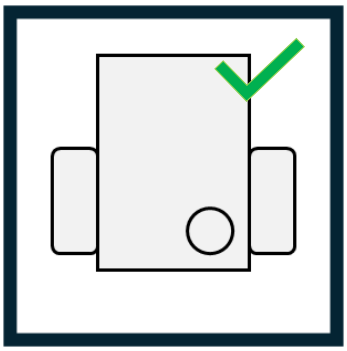
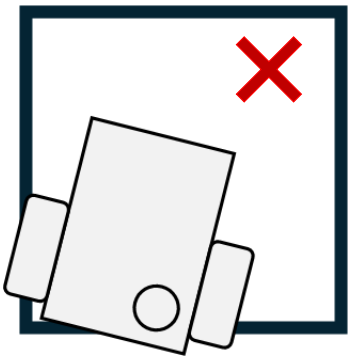
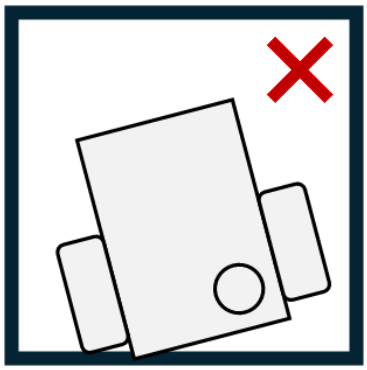
School/Club Name:	
Explorer Prime - Team Name:	

6. Scoring Interpretation

The images in this section will help to explain the scoring options available to teams. In cases where scoring is unsure the judge must bias their decision to the best possible outcome of the team.

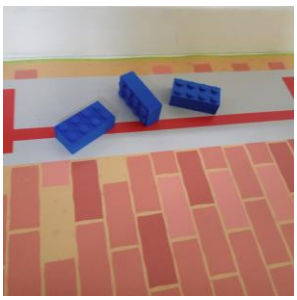
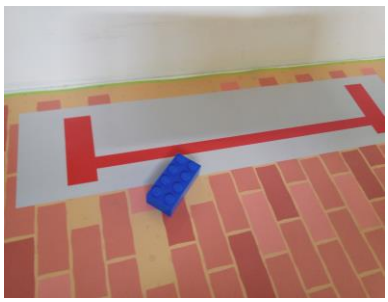
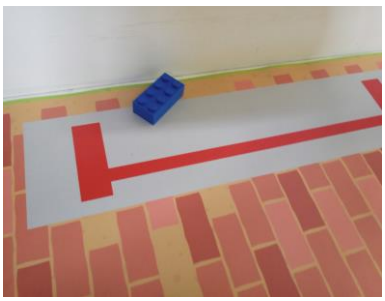
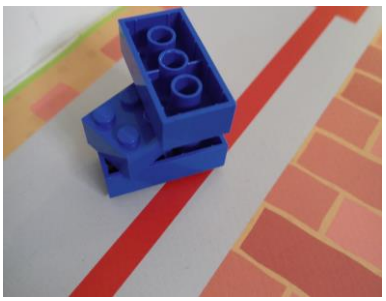
Robot start area

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 or into the surrounding line. The start/finish area is defined as the white area only and not the surrounding different colour line/square.

		
Robot completely inside the start/finish area. No part overhanging or touching the surrounding line.	Robot outside of the start/finish area. Robot will not be allowed to start.	Robot projecting out of the start/finish area. Robot will not be allowed to start

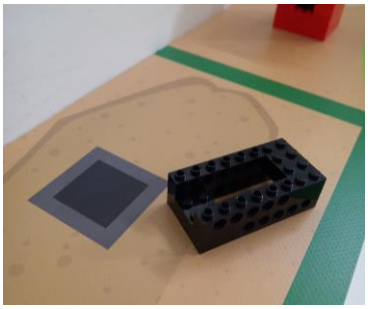
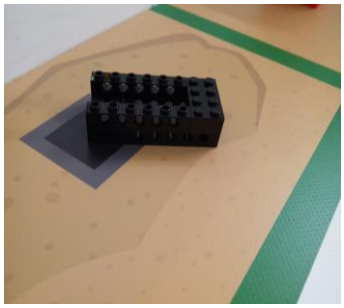
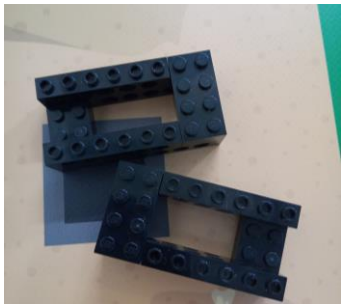
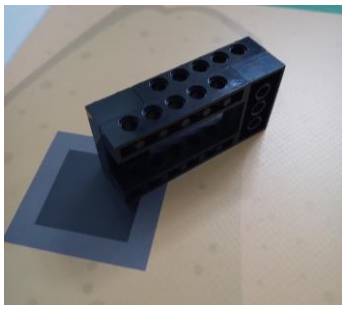
Litter in the recycler:

The below images apply to the titanium and gold ore deposits in the refinery area.

			
Litter completely inside the recycler 10 points each. 30 points	Litter touching the recycler. 0 points	Litter touching the recycler and table wall. 0 points	Litter stacked and completely inside the recycler. 10 points for 1 element touching the recycler. 10 points

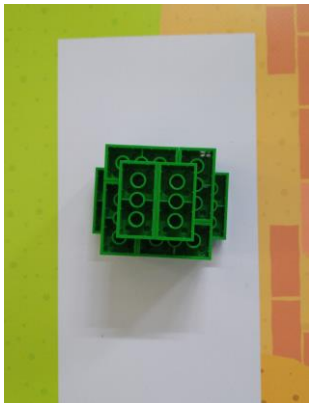
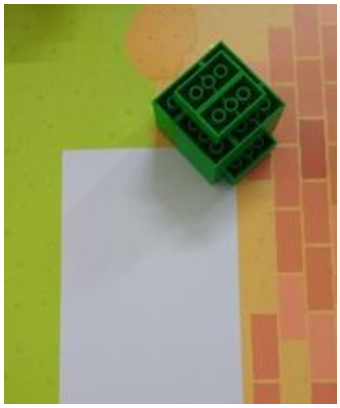
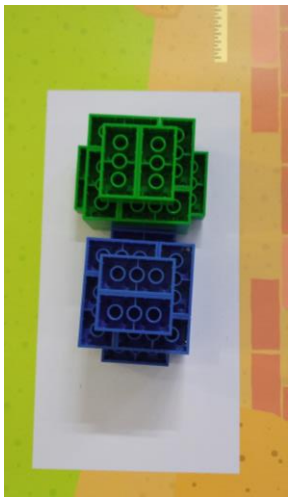
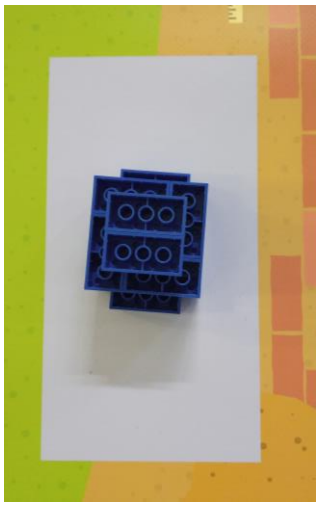
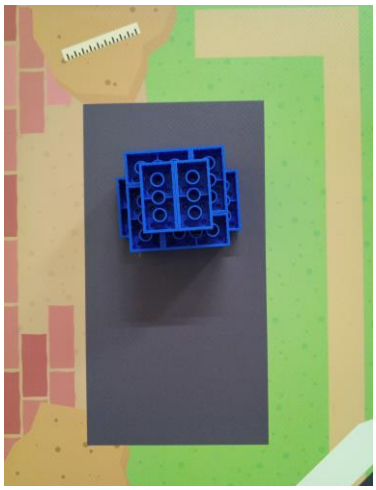
Toolboxes:

The below images apply to the toolboxes in the dig site area.

 Toolbox completely inside the dig site, not touching a black square. 10 points	 Toolbox completely inside the dig site touching a black square. 20 points	 More than one toolbox touching the same black square. 20 points for 1 toolbox and 10 points for the other for being inside the dig site area. 30 points
 Toolbox on its side touching a black square inside the dig site area. 20 points	 Toolbox not inside the dig site 0 points	

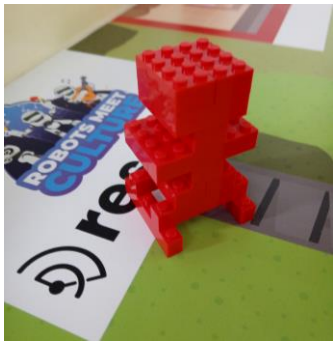
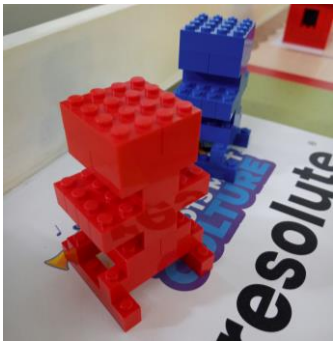
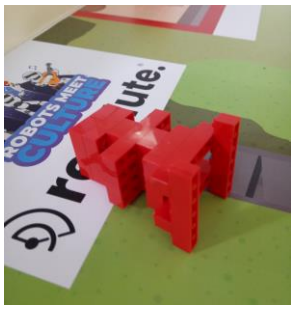
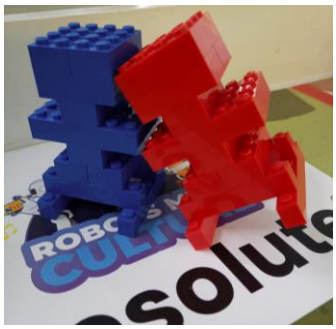
Exhibits:

The below images apply to the blue and green exhibits.

 Green exhibit completely inside the green exhibit area. 10 points	 Green exhibit touching the green exhibit area. 10 points	 Green exhibit completely inside the green exhibit area but on its side. 0 points	 Green exhibit not inside the green exhibit area 0 points
 Green and blue exhibit inside the green exhibit area. Full points for the green exhibit. 0 points for the blue exhibit. 10 points	 Blue exhibit completely inside the green exhibit area. 0 points	 Blue exhibit completely inside the blue exhibit area. 10 points	 Blue exhibit touching the blue exhibit area. 10 points

Art pieces

The below images apply to the art pieces and the art museum area.

<table>
<tr>
<td>
Red art piece completely inside the art museum and upright.
15 points</td>
<td> 
Red art piece touching the art museum and upright.
0 points</td>
<td> 
Red and Blue art piece completely inside the art museum and upright.
30 points</td>
</tr>
<tr>
<td> 
Red art piece touching the art museum but not upright.
0 points</td>
<td colspan="2"> 
Red and Blue art piece completely inside the art museum but the red art piece is not upright. 15 points for the blue art piece 0 for the red art piece.
15 points</td>
</tr>
</table>

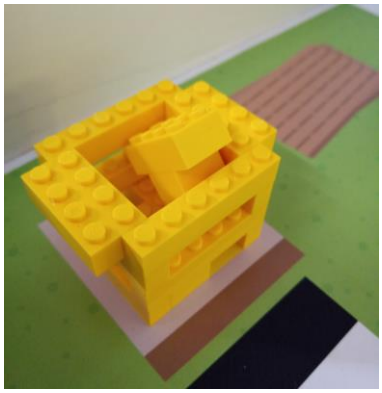
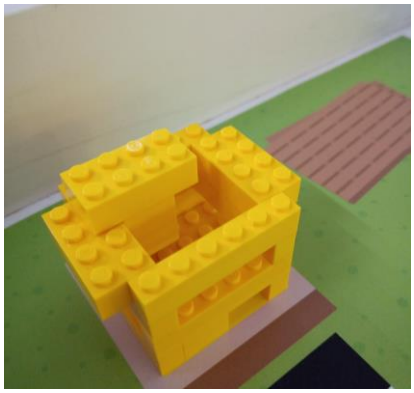
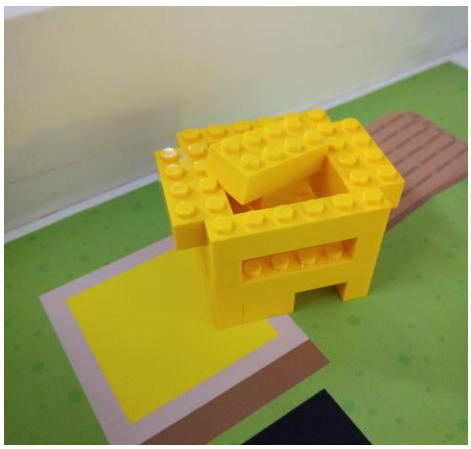
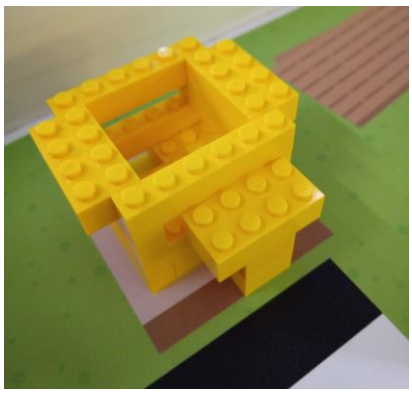
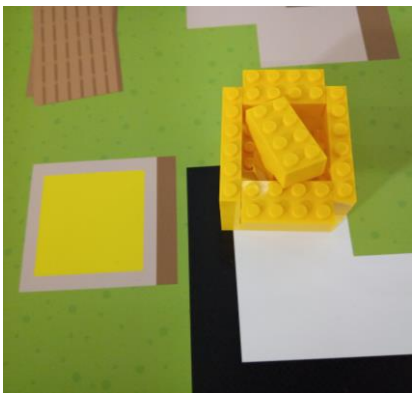
Feedback box in a water image:

The below images apply to the feedback box and a water image.

<table>
<tr>
<td>
Feedback box completely inside a water image.
30 points</td>
<td>
Feedback box upright and completely inside a water image.
30 points</td>
<td>
Feedback box touching a water image, not completely inside.
0 points</td>
<td>
Feedback box not completely inside a water image.
0 points</td>
</tr>
</table>

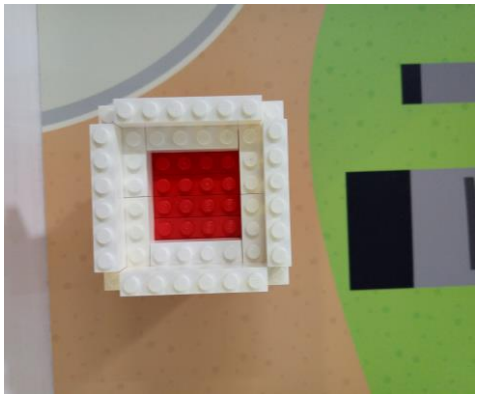
Bolt & Crate

The below images apply to the bolt and crate.

 Bolt completely inside the crate 50 points	 Part of the bolt inside of the crate. 50 points	 Bolt on top of the crate. 0 points
 Bolt completely inside the crate and the crate has been moved but still touching its starting yellow square. 50 points	 Bolt touching the crate and the game mat. 0 points	 Bolt completely inside the crate but the crate is not touching its starting yellow square. 0 points

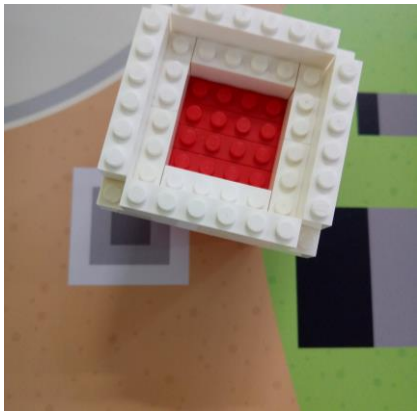
Ancient Ruins

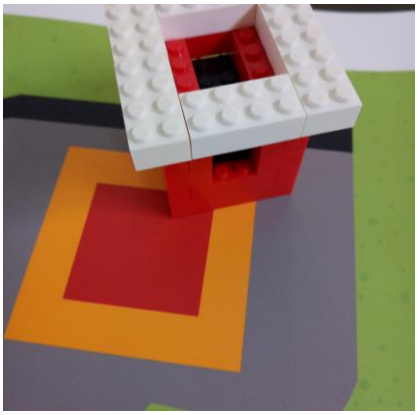
The below images apply to the four constructed habitats on the game mat.



Ancient ruin not moved.

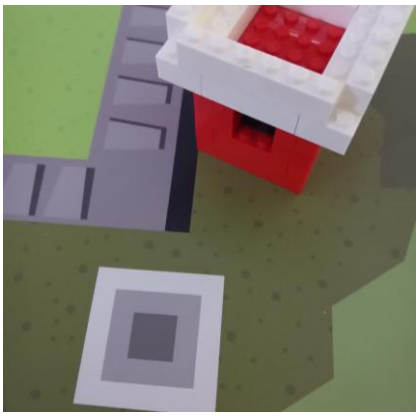
5 points each





Ancient ruin moved but still touching its starting area.

5 points each



Ancient ruin moved and not touching its starting area.

0 points each

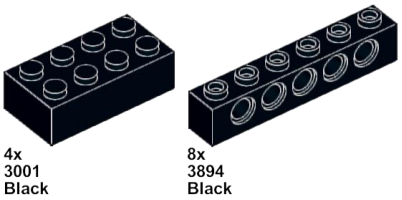
Robot finishing points

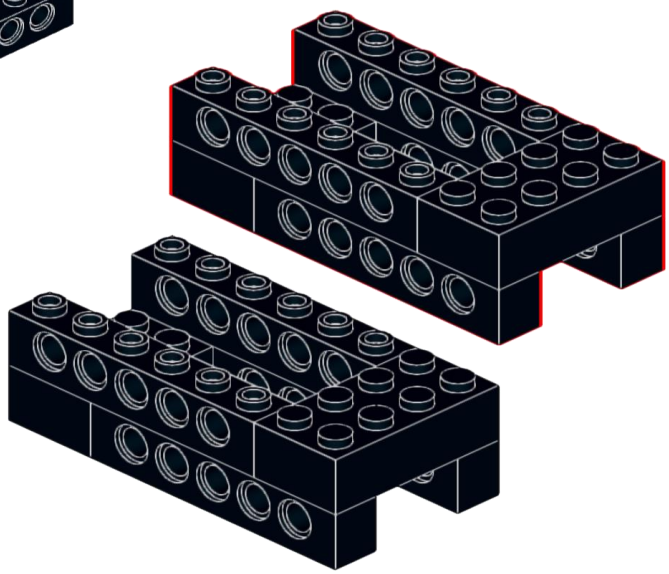
The team must touch and end the program of the robot to score these points. A team does not need to wait for their robot to stop moving and can end their run at anytime. The robot must remain on the game mat so judges may begin judging.

Explorer game & rules designed and compiled by Duncan Beaton for WRO SA.

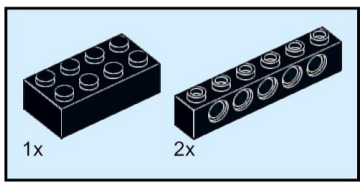
PART TWO – ASSEMBLY OF GAME OBJECTS

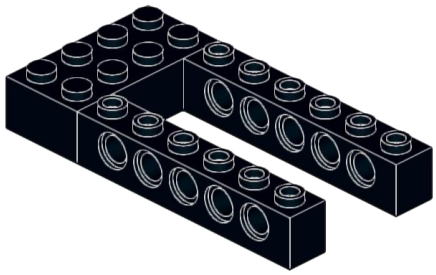
Long Toolboxes



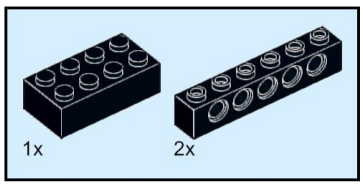


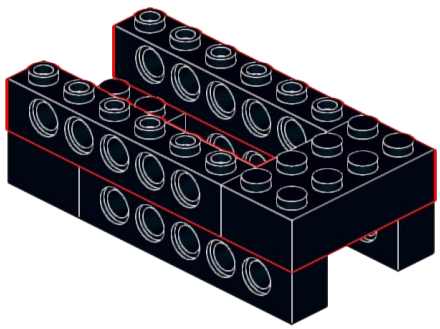
1



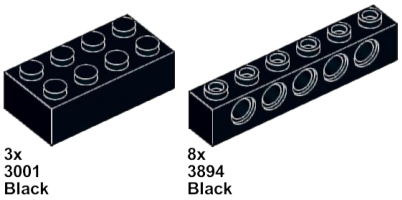


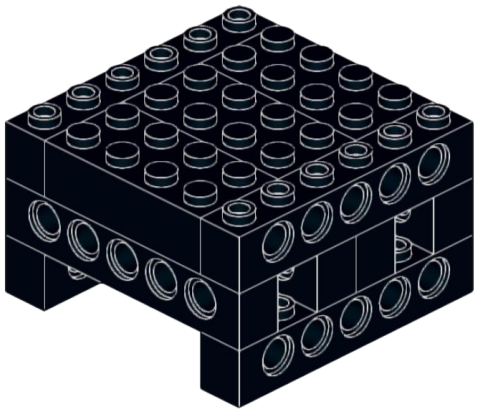
2



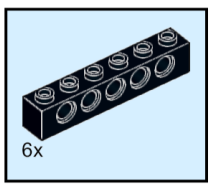


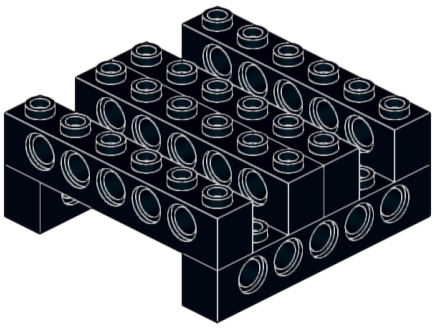
Large Toolbox



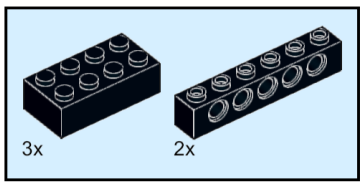


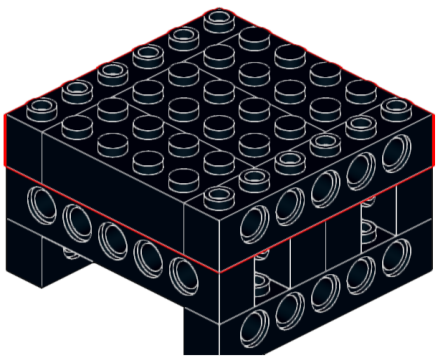
1



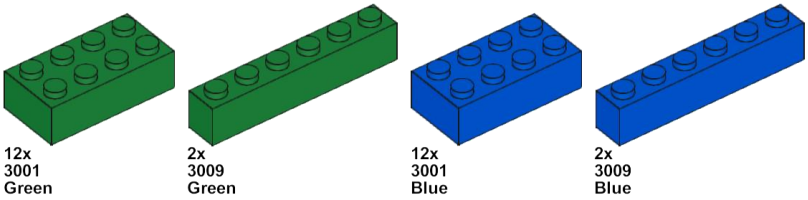


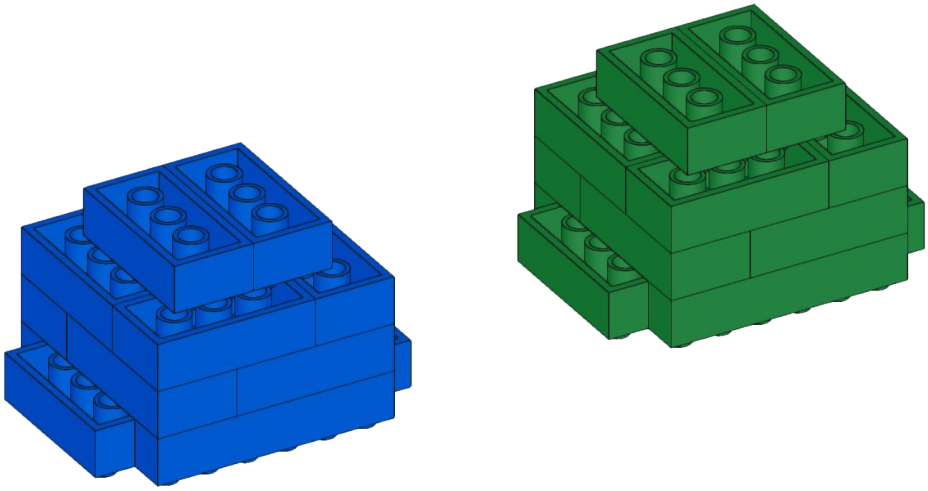
2



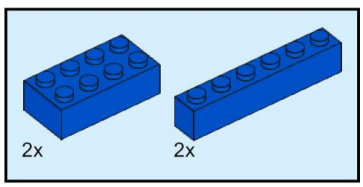


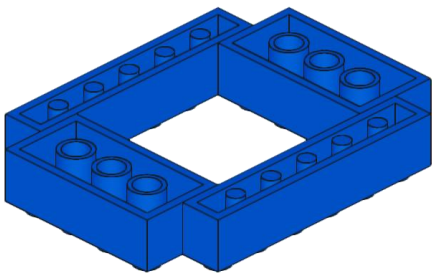
Green & Blue Artifacts



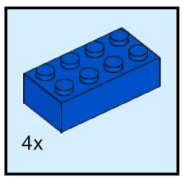


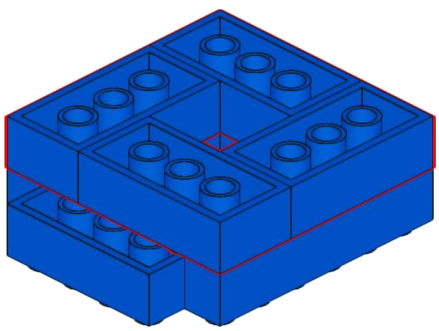
1

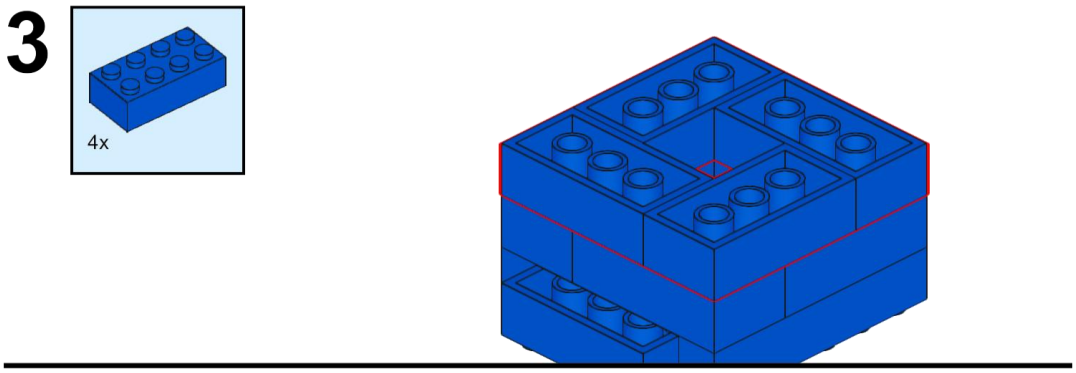


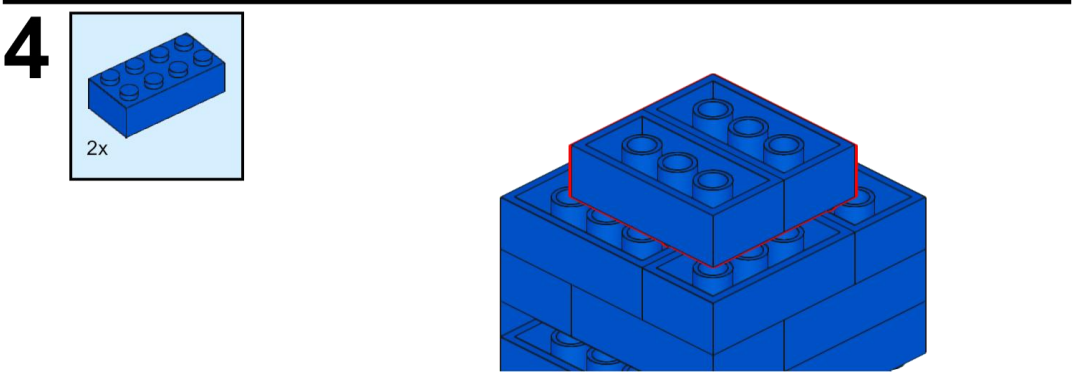


2

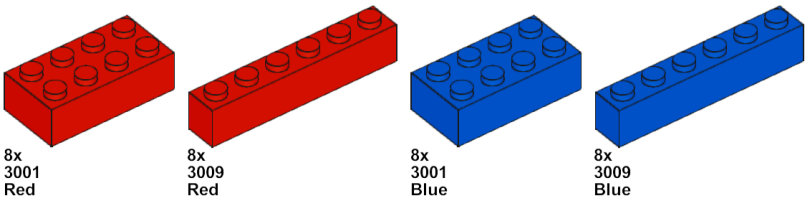


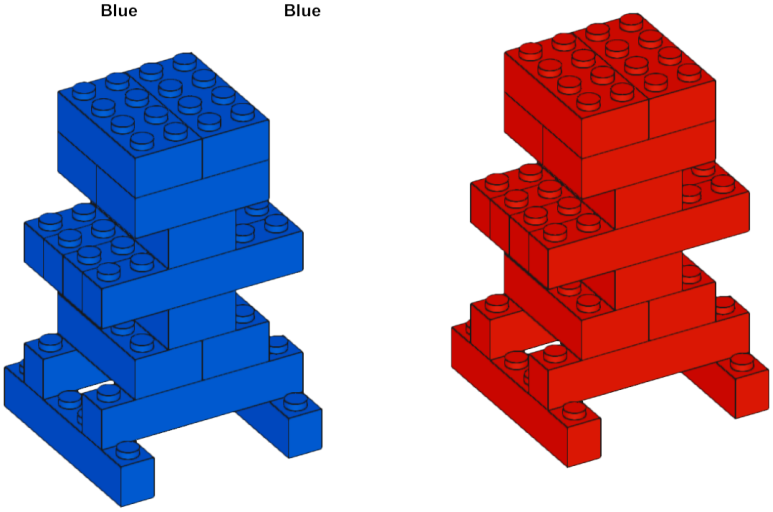


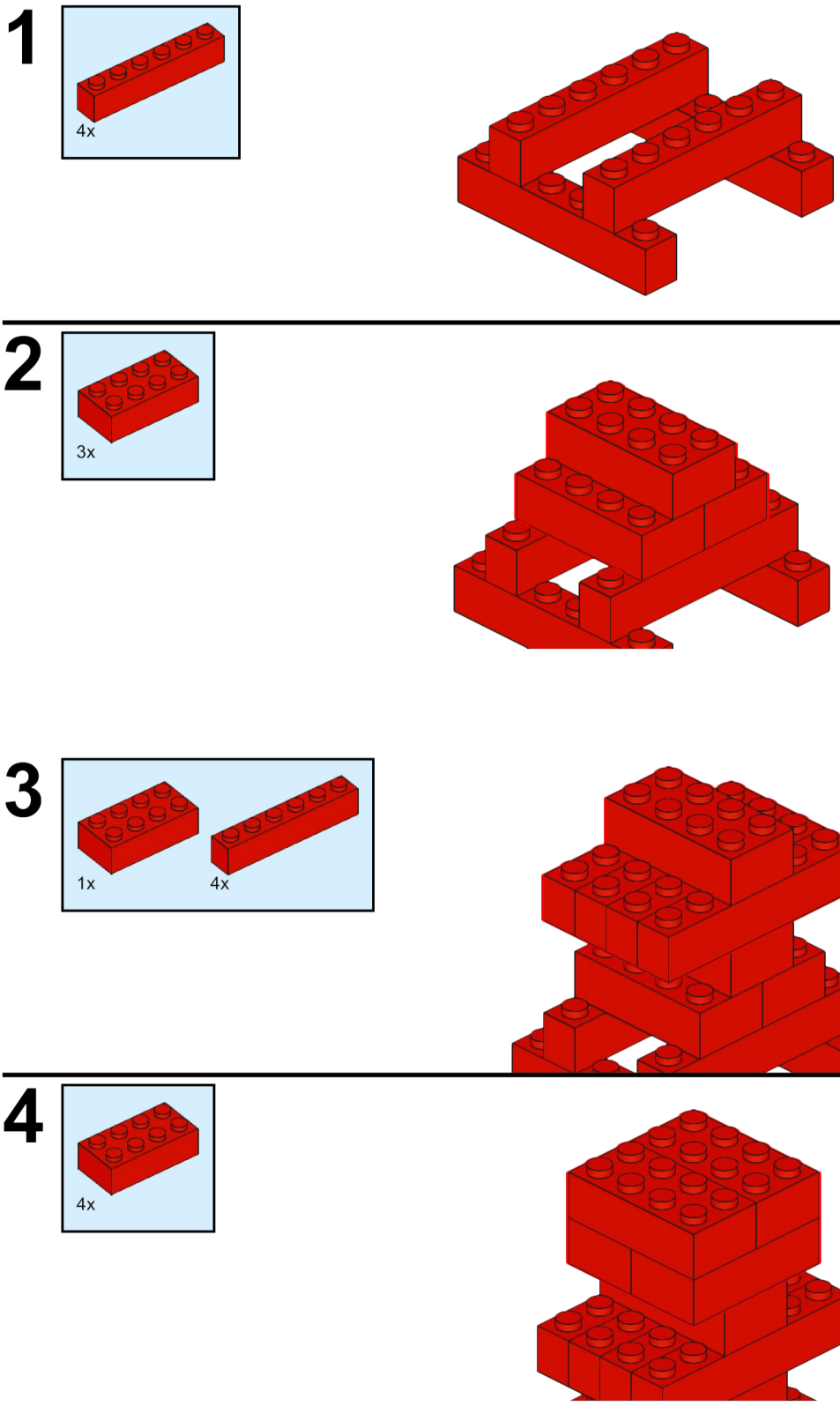




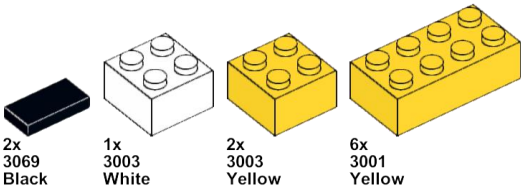
Red & Blue Art Pieces

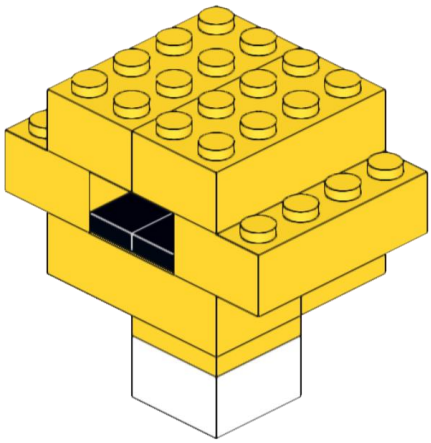




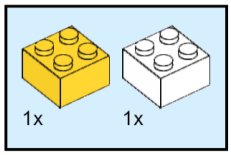

1
4x
2
3x
3
1x
4x
4
4x

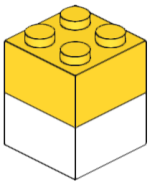
Feedback Box



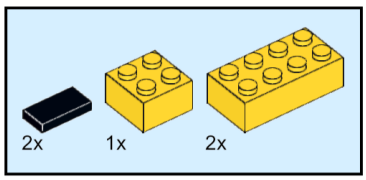


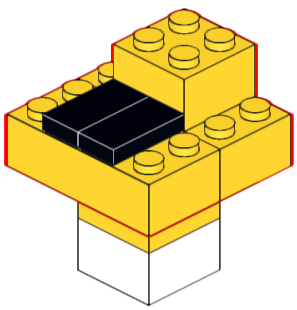
1

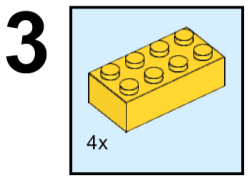


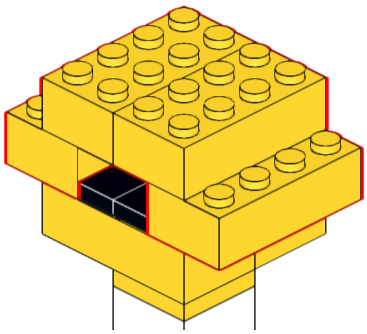


2

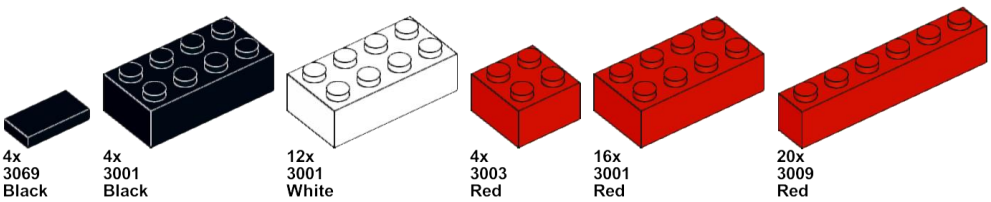


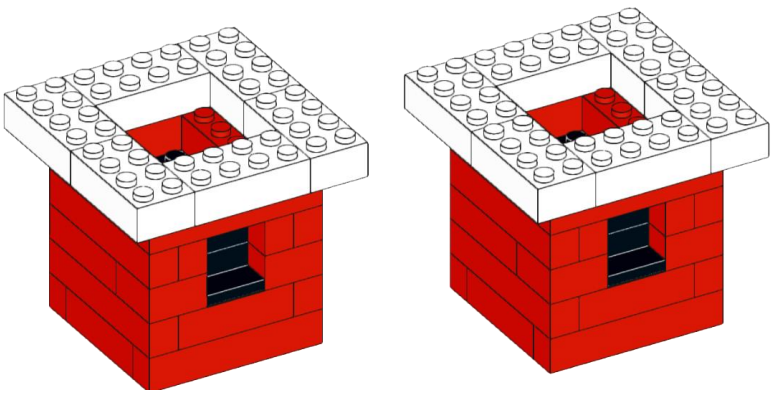


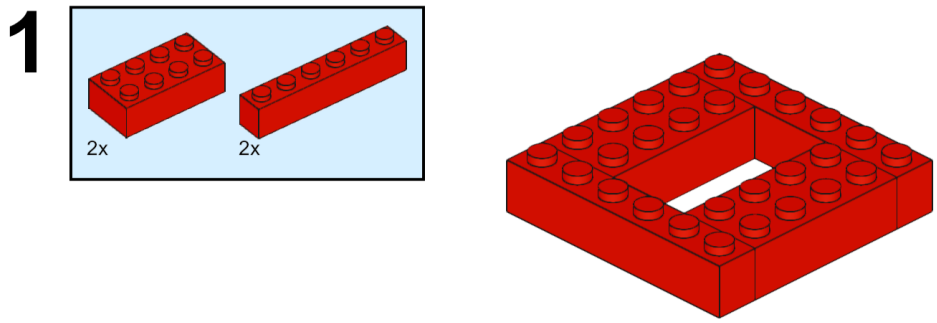




Ancient Ruins Build A (x2)



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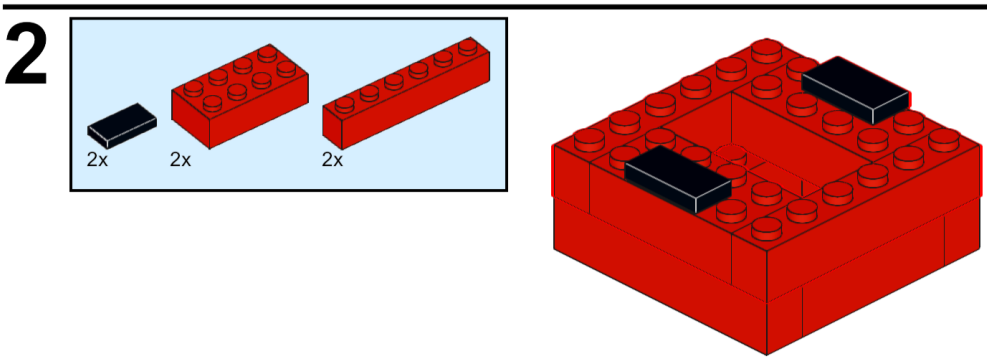
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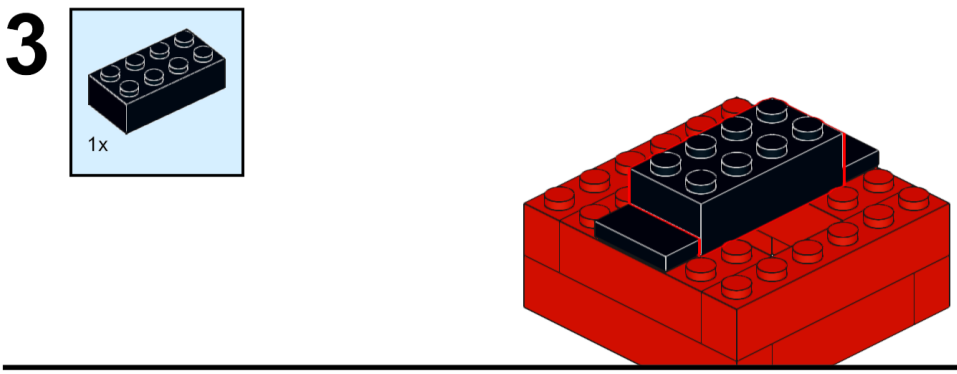
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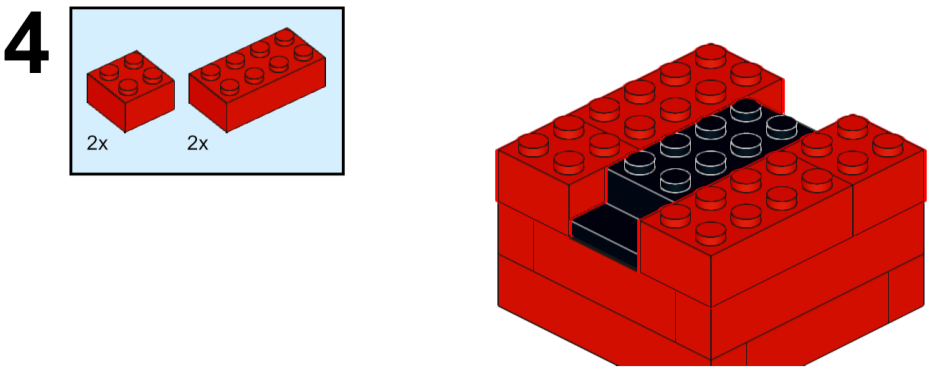
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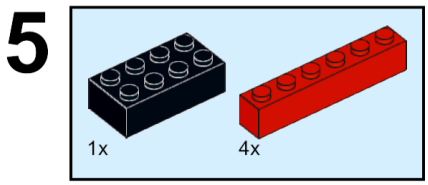
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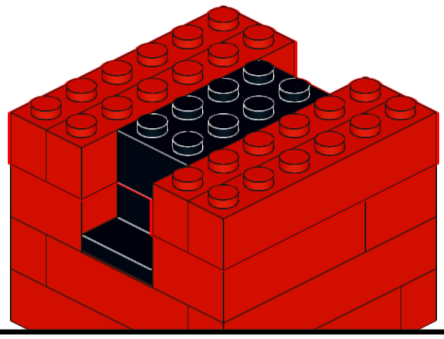

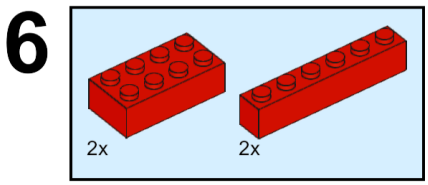
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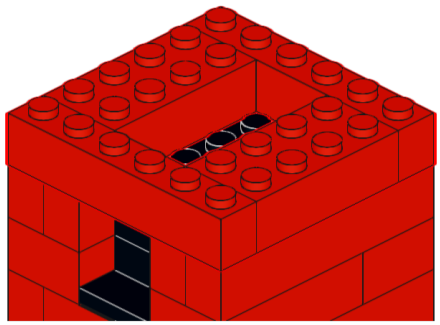
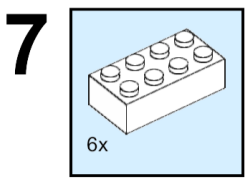
2x

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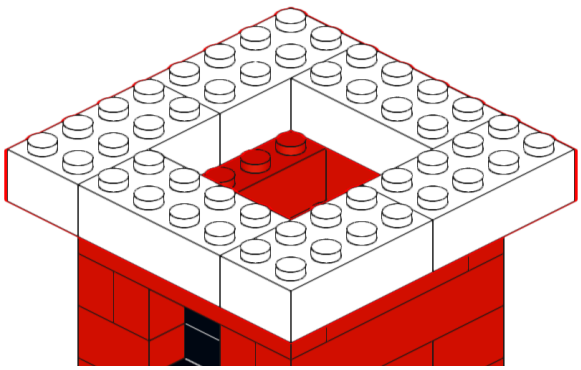
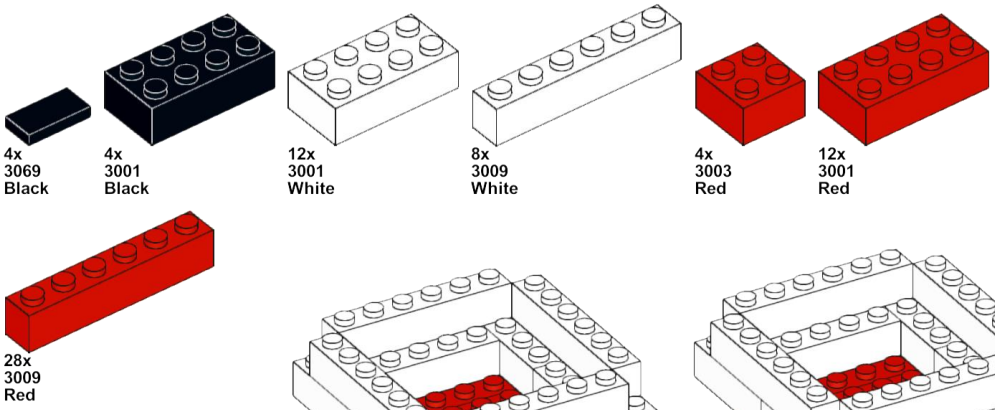
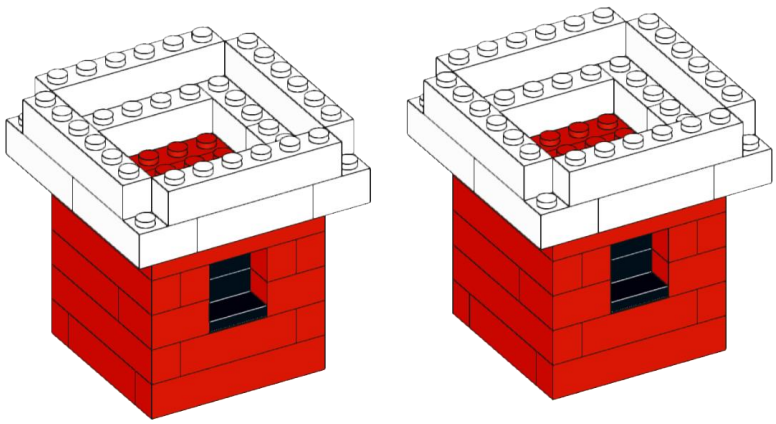


Ancinet Ruins Build B (x2)





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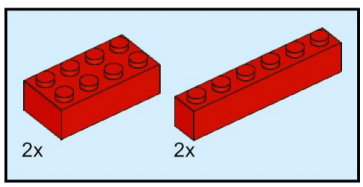

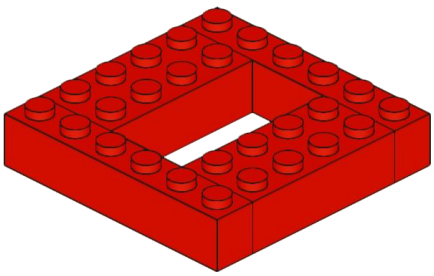

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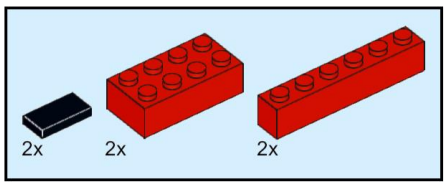

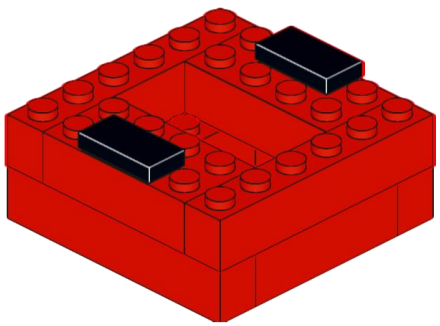

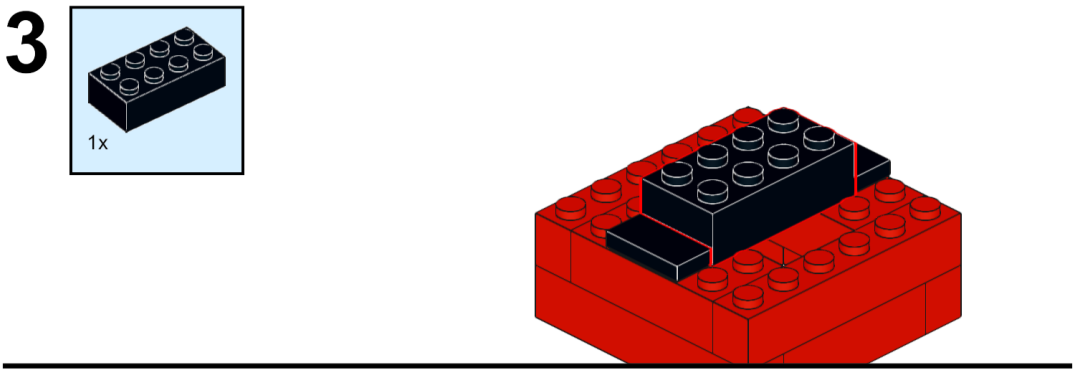
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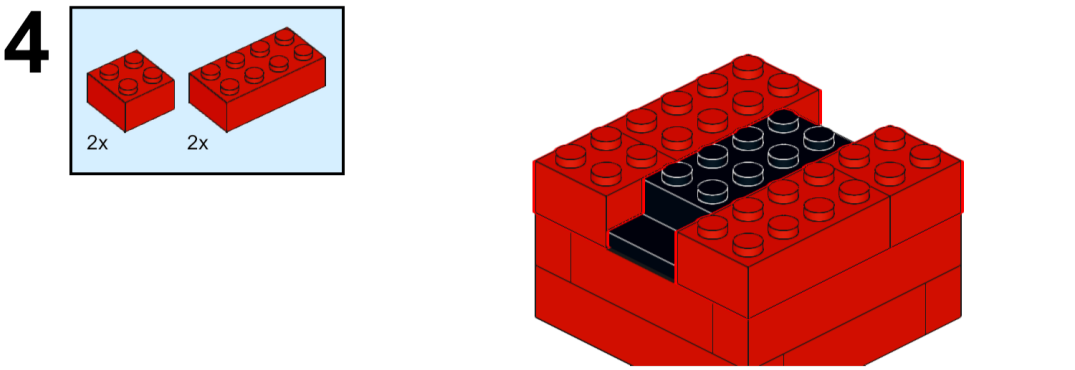
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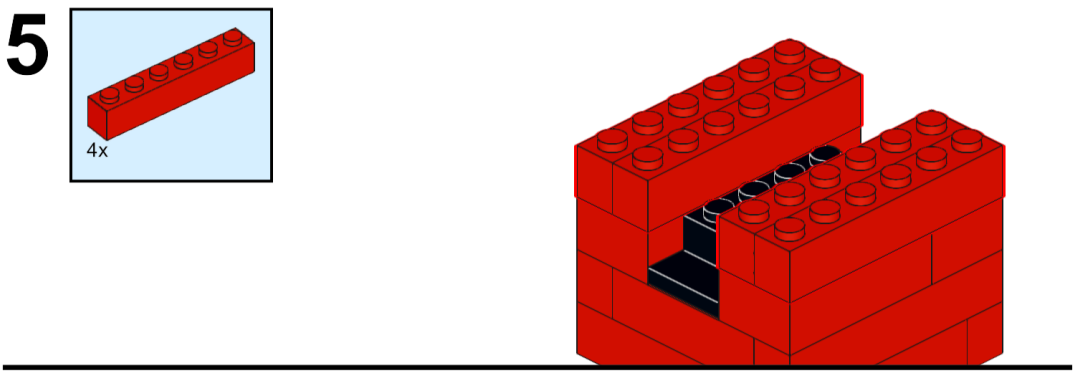
2x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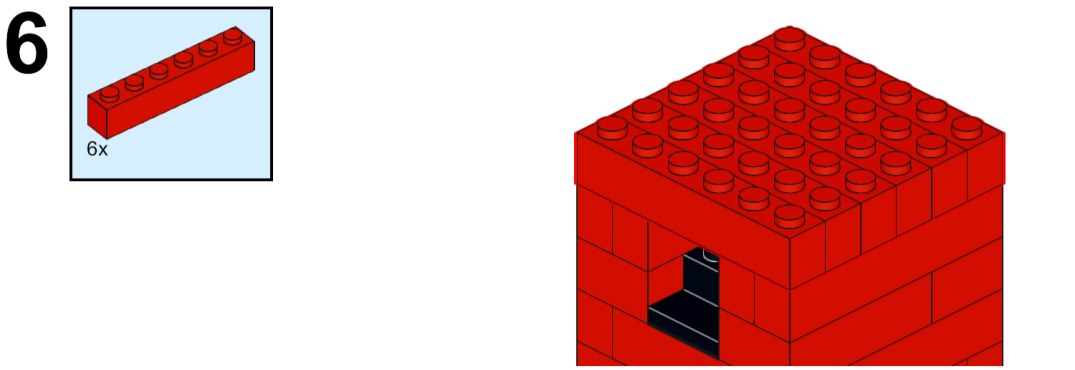
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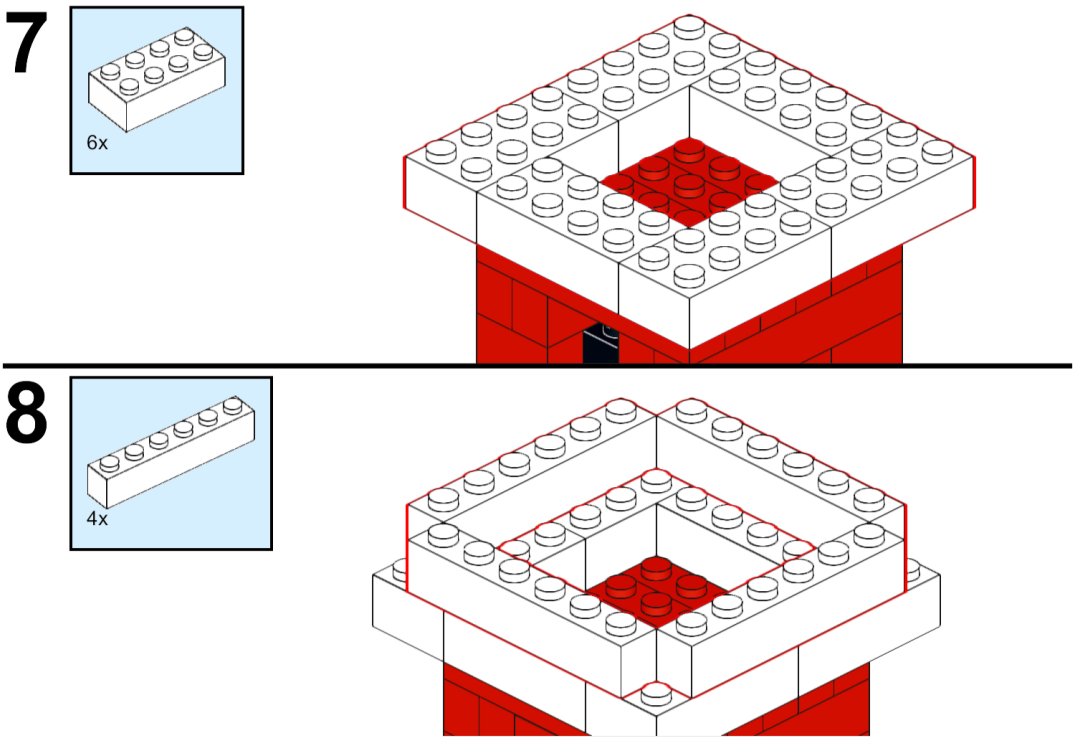
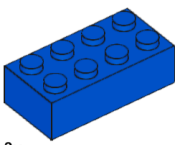
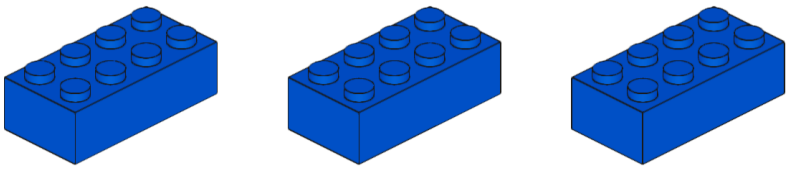


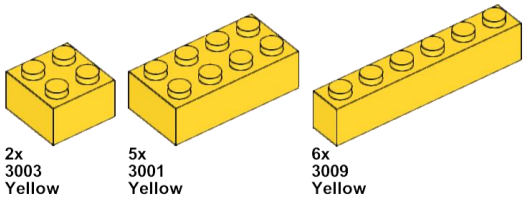


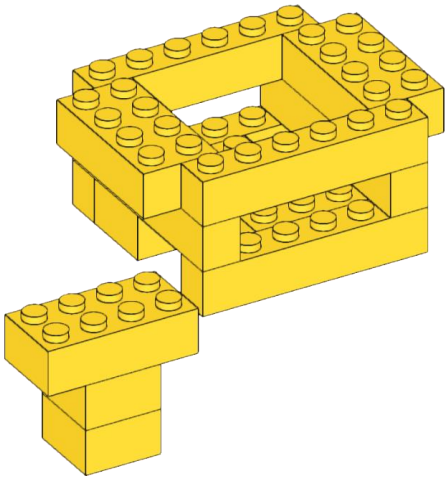
3x
3001
Blue

Litter (x3)



Crate & Bolt





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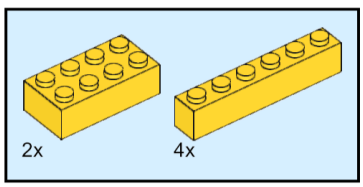

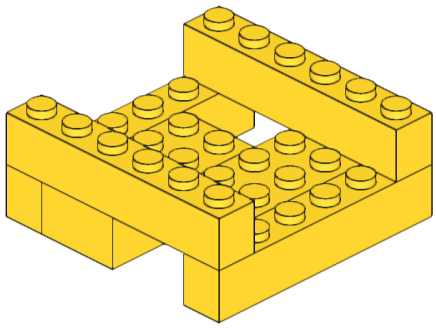

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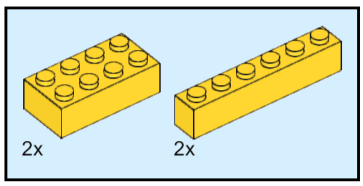

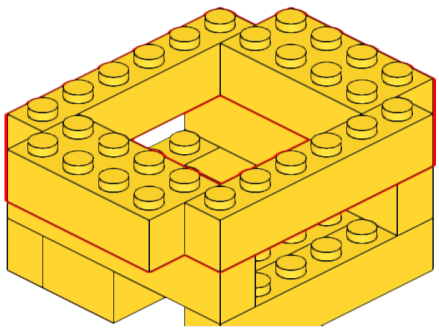
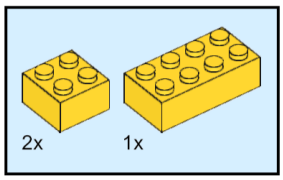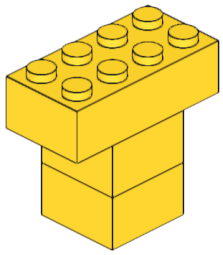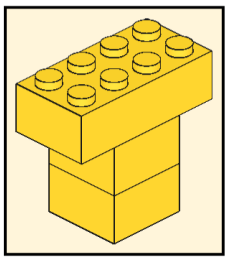
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