

# SURVIVAL MODE 生存模式

## Educational Challenge

Image from Mike L, Unsplash

## 背景

科学家发现了一个新的神秘传送门。作为一个知名探险家，你被选中参加这次的探险任务。

通过传送介质，你被带到了平行宇宙中。你降落在一个岛屿上，这里的植物不是绿色，而是蓝色。

你不能在这里久留，要尽快开启生存模式。

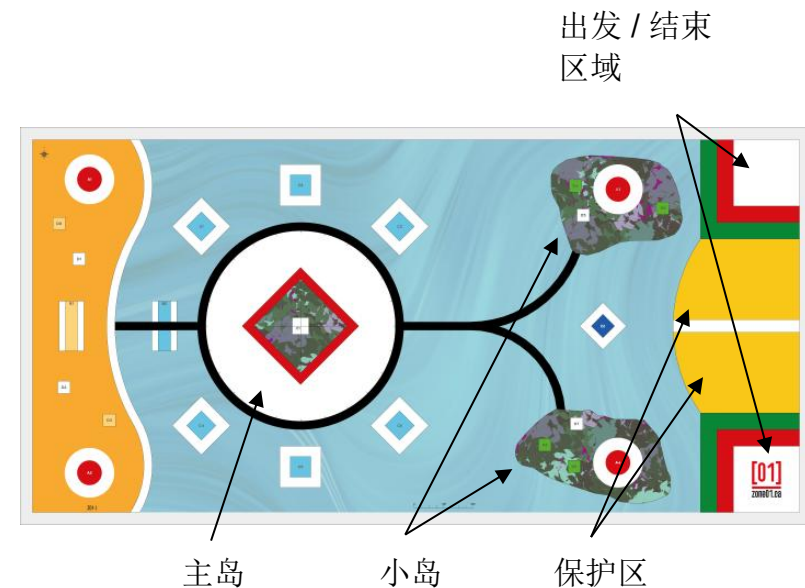
## 参赛机器人要求

1. 初始状态最大尺寸：30cmX30cm，高度不限
2. 机器人电池电压不超过 9V，电机/舵机总数不超过4个，传感器数量不做限制但只能使用单路传感器，只能使用一个可编程处理器。
3. 比赛器材必须为教育类型器材，如发现涉及商业、工业且违背比赛精神与公平性的器材，组委会裁判有权取消该队伍的比赛资格。对于使用器材是否符合标准，请提前咨询组委会，在赛前完成参赛器材的备案，以避免在器材检录中出现问题。
4. 如果在比赛中发现器材违规，裁判有权视具体情况给与处罚，处罚包括但不限于扣除任务得分、取消参赛成绩等。

## 场地描述

使用地垫: Z01-J mat

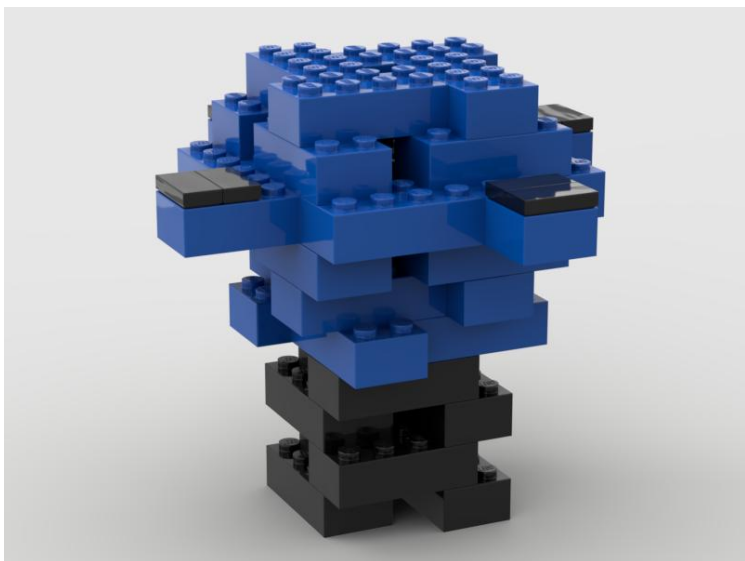
### 2-D 视图



## 场地元素描述

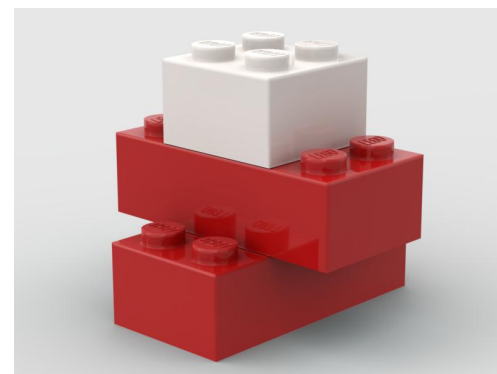
### 生命之树

生命之树为岛上所有的生命提供能源。使用 2x4 黑色 和蓝色积木以及 1x2 黑色平面积木制成。



### 塔基斯

塔基斯是一种长在生命之树上的果子。请注意如果你在同一棵生命之树摘走超过该树一半以上的塔基斯，生命之树就要开始凋零并且岛上的生态链也将被破坏。使用红色 2x4 积木和白色 2x2 积木制成，一共有四个塔基斯。

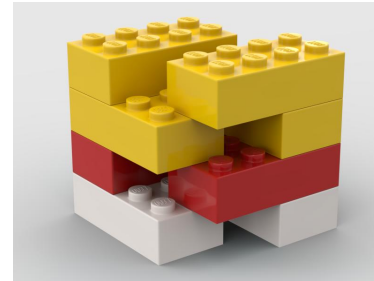
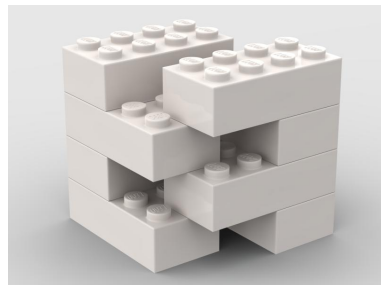
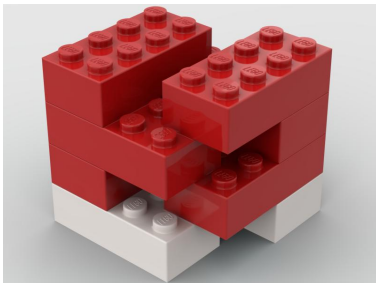


## 奇索

奇索是长在这个岛上可以食用的植物。这也是你在这里最主要的食物来源。

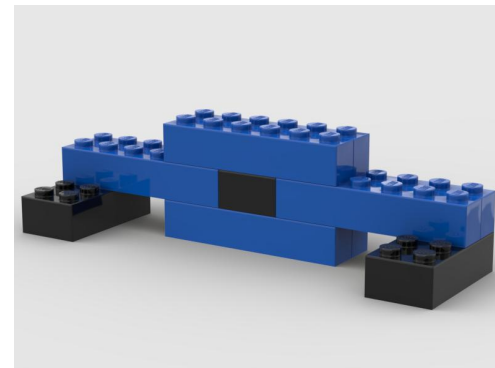
奇索长在一种“茧”内，你可以找到各种颜色的奇索。红色的是成熟的，白色的是还未成熟的。黄色的奇索有毒。

奇索是由 2x4 积木制成。共有 3 个红色奇索，2 个白色奇索和一个黄色奇索



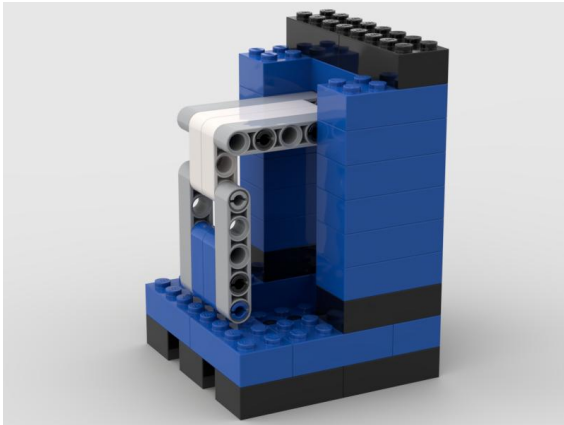
## “茧”

“茧”是生长奇索唯一的地方。因此在采摘的时候一定不能破坏 “茧” 由 2x4 和 1x6 积木制成。共有六个“茧”。



## 瀑布

瀑布是你在这里唯一的可饮用水源。瀑布用 2x4 积木和 积木梁制成



两个 2x2 蓝色乐高积木将会被摆在瀑布上代表饮用水  
(图中未显示)

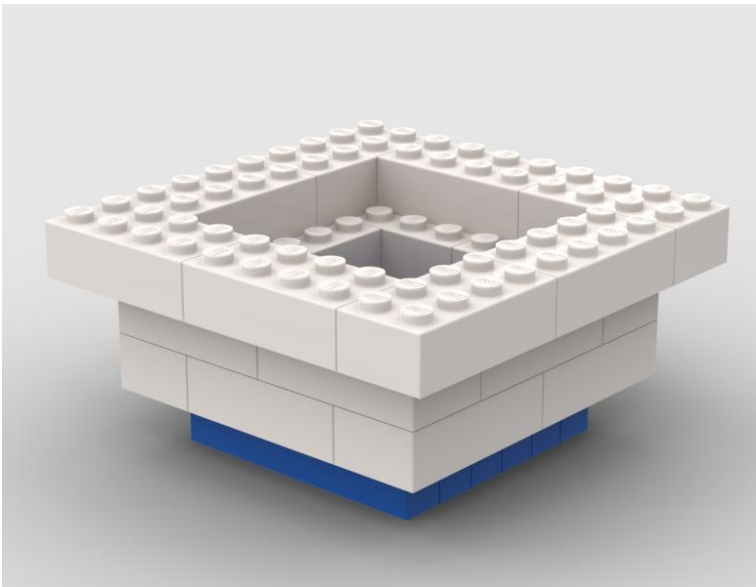
## 塔

需要建一座高塔来作为这里的地标。高塔使用 2X4, 1x6 积木制成。在这个任务中塔的颜色与任务无关。



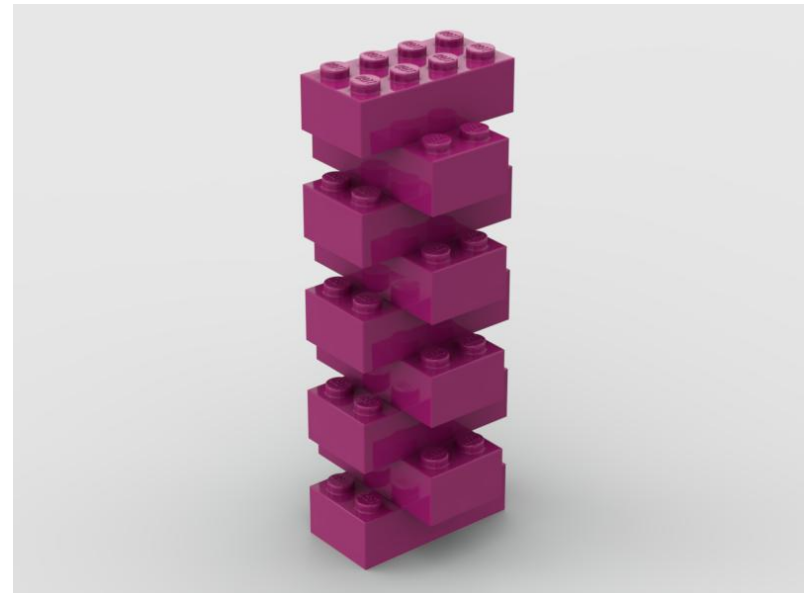
## 水桶

水桶是从瀑布取水的工具。由白色 2X4 积木和 1X6 蓝色积木制成。



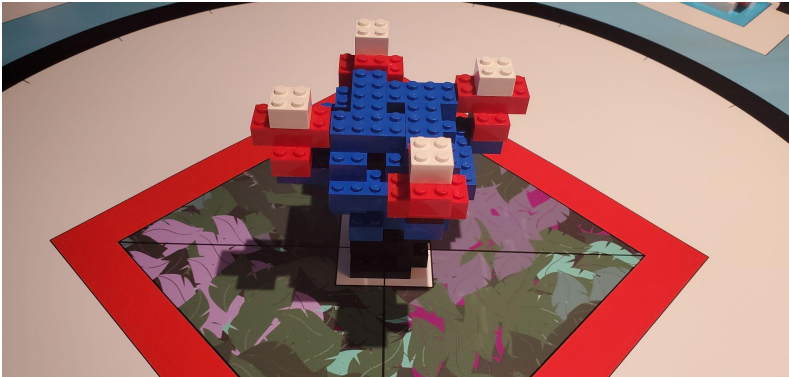
## 螺旋树

螺旋树是长在岛上的一种攀爬植物。螺旋树是 Z 星球生态系统的重要一环。它们的栖息地不能够被破坏。螺旋树由 2x4 积木制成。积木可以由任何颜色积木制成。

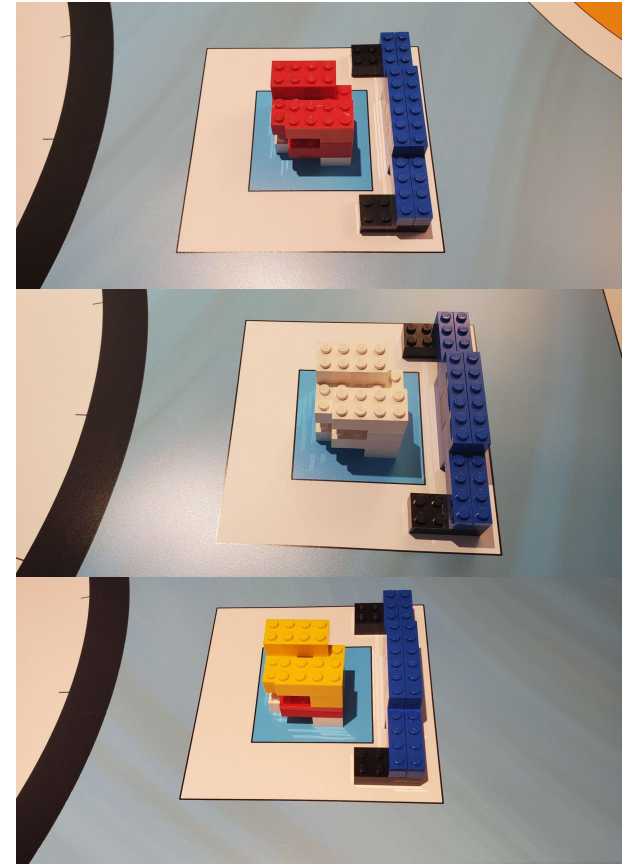


## 场地元素摆放

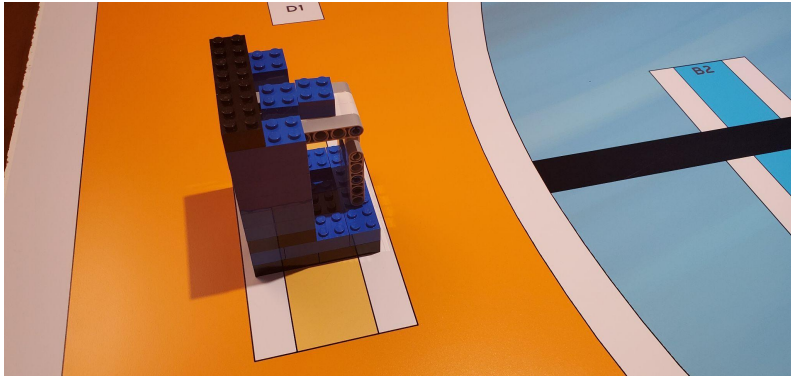
- 生命之树位于主岛中心白色方框 E1 位置。塔基斯被放置在生命之树的树枝上。



- 奇索被放置在中心岛周围 C1 到 C6 六个方框内。
- 茧被放置在奇索旁边 C1 到 C6 方框的白色部分。



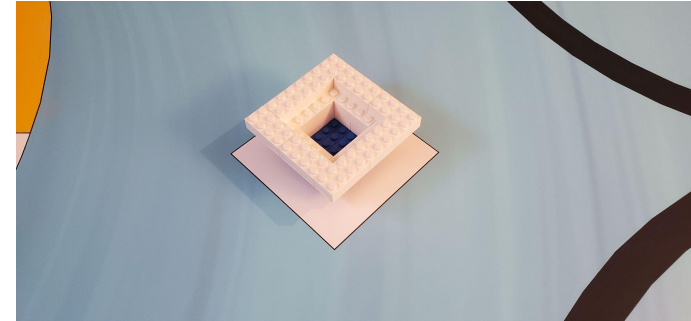
- 瀑布被放置在 B1 方格中心，朝向中心主岛。



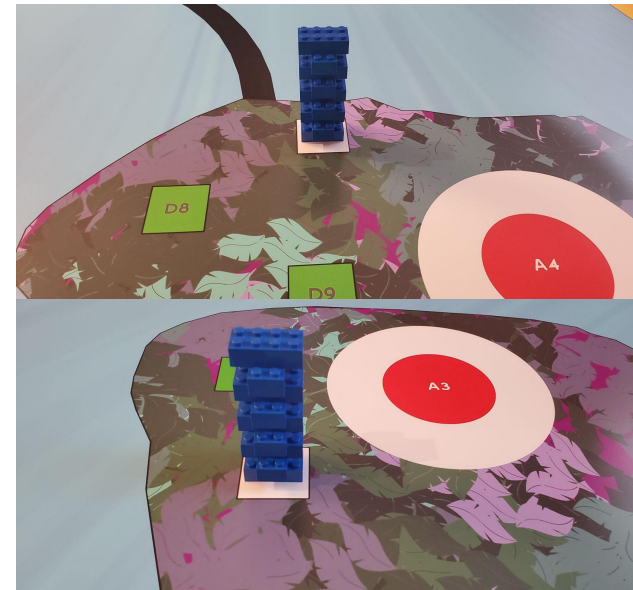
- 塔可以由参赛队摆放在出发区边缘绿色边条的任意位置。



- 水桶被放置在蓝色方框 E2 内。



- 螺旋树被放置在白色小岛 D5 和 D7 方框上。每个小岛仅放置一棵树。





## 比赛描述

- 1、比赛分设幼儿组（中、大班在读）、小低组（一至三年级在读）、小高组（四至六年级在读）、初中组（初中在读）、高中组（高中在读）五个组别，每支参赛队伍由2名参赛选手及1名教练组成；
- 2、幼儿、小低组允许参赛选手遥控控制机器人；小高、初中、高中组，参赛机器人必须自主运行；
- 3、在开始时，参赛队可以选择其中一个出发区放置机器人开始比赛，垂直投影必须完全处于出发区内；
- 4、机器人出发后直至比赛结束，参赛选手全程不可用手触碰机器人、场地、场地道具，否则会面临被取消本轮比赛成绩的严厉处罚；
- 5、在比赛的调试阶段开始前，通过随机抽签的方式，现场公布六个奇索摆放位置，初中及以上组别还会公布一条“惊喜规则”作为附加题出现；
- 6、场地任务没有先后顺序，选手自行选择合适的路线完成比赛；
- 7、比赛开始后没有重启机会。
- 8、比赛成绩先比得分，得分相同比较完赛时间。

## 任务:

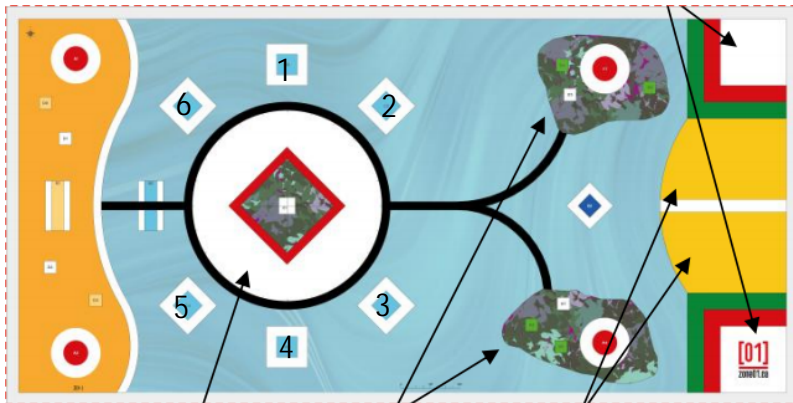
1. 从生命之树上采摘一半的塔基斯，并将其送至其中一个保护区
2. 采摘成熟奇索（红色）并送至其中一个保护区
3. 把有毒奇索完全推至水中
4. 取两升水放入水桶中
5. 把取过水的水桶送至其中一个保护区内
6. 将塔放置在远离出发区的小岛白色圆圈内
7. 结束任务返回并机器人完全处于出发区内

### 此轮结束标志为:

- 1、机器人完全返回出发区
- 2、选手喊“申请结束比赛”
- 3、120秒用时耗尽
- 4、生命之树完全离开白色区域
- 5、选手严重犯规

## 随机抽签

- 1、本场参赛学员全部进场后，裁判随即现场开始进行本场奇索位置的随机抽签（在调试开始前）；
- 2、抽签袋中有3颗红球，2颗白球，一颗黄球，以代表对应颜色的奇索；
- 3、裁判依次将所有球抽出，按照抽出的顺序，从地图正上方的位置开始按照顺时针顺序，依次摆放奇索。



## 惊喜规则

- 1、惊喜规则只有初中、高中组别有；
- 2、惊喜规则在完成随机抽签之后公布；
- 3、机器人需要在原任务时间内完成惊喜规则，不会额外增加时间；
- 4、惊喜规则的道具会放在地图上尚未使用的空白任务点上；
- 5、无论参赛队伍是否选择去完成惊喜规则，其道具都将放置在场地上，不会撤除。

## 计分

任务	最高得分
从生命之树上摘下塔基斯(6)	12
将塔基斯送至保护区(5)	10
采摘成熟奇索并送至保护区(12)	36
将有毒奇索推到水中(10)	10
用水桶取 2 升水 (7)	14
将水放入水桶并送至保护区(4)	8
将塔送至正确的圆圈内(8)	8
完全回到出发区(6)	6
完成惊喜规则	20

奖励	最高得分
茧没有被移动(2)	12
螺旋树没有被移动(2)	4

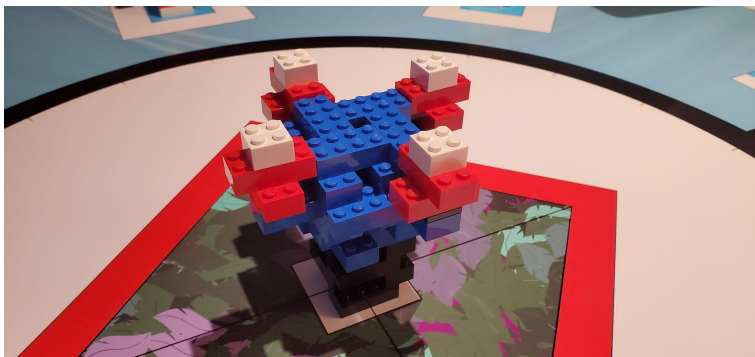
扣分	最高扣分
破坏水源, 瀑布被推出所在白框 (-5)	-5
移出未成熟奇索 (-7)	-14
过度采摘塔基斯 (-3)	-6
将生命之树完全移出白框 (-15)	-15

<b>Total points</b>	<b>140</b>
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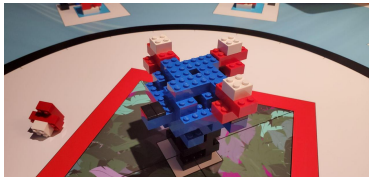
所有计分只看比赛结束后任务道具的最终静止状态

## 计分图示

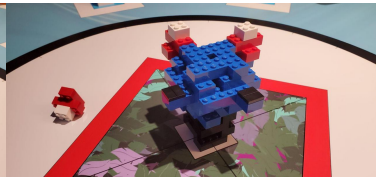
- 采摘塔基斯



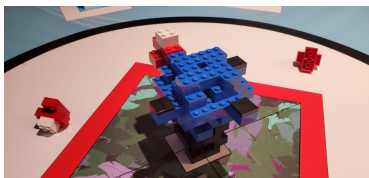
没有采摘= 0 point



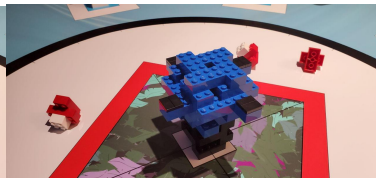
采摘 1 个= 6 points



采摘 2 个 = 12 points

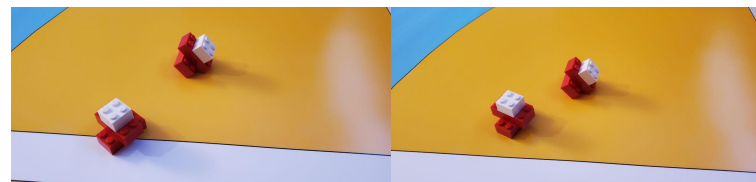


采摘三个= 9 points



采摘四个= 6 points

- 塔基斯送至保护区



1 个= 5 points

2 个= 10 points

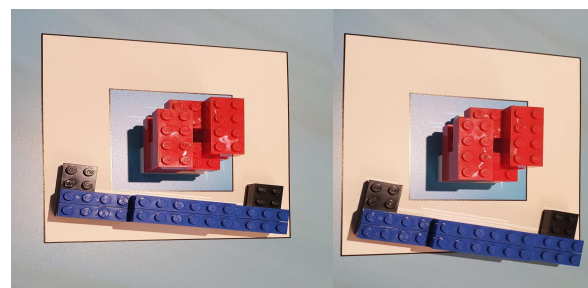
- 生命之树被移动出所在白框



未被移出= Ok

移动出= -15 points

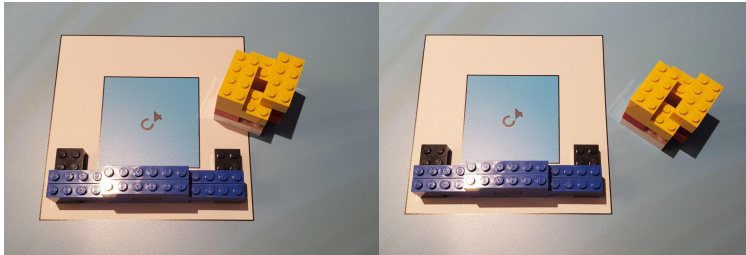
- 茧被移动



未被移动出白框= 2 points

被移动出 = 0 point

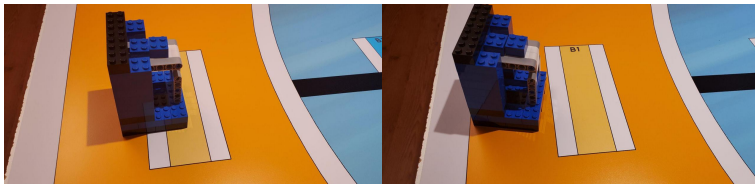
- 将有毒奇索推入水中



部分推入 = 0 point

完全推入 = 10 points

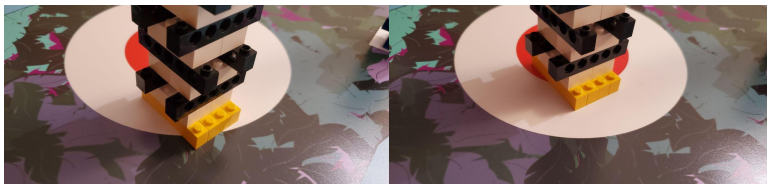
- 瀑布被移动出白框



OK

-5 points

- 塔被放置在正确位置



部分 = 0 point

完全进入 = 8 points

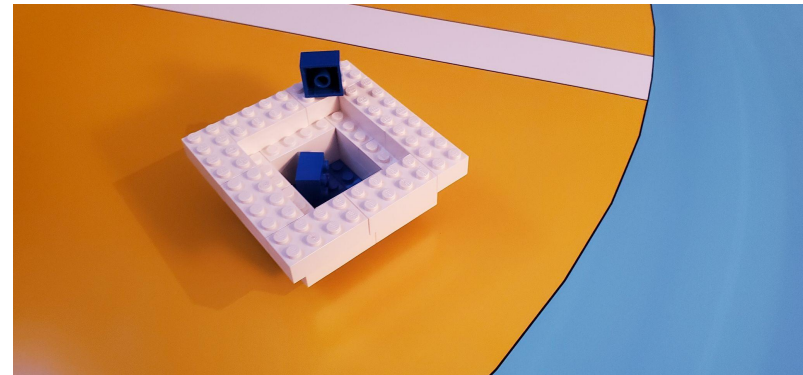
- 螺旋树被碰到



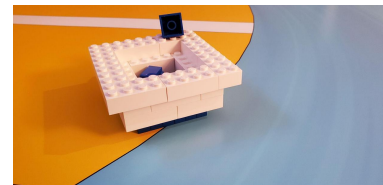
部分出所在区域 = 0 point

未被碰到所在区域 = 2 points

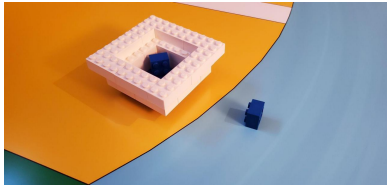
- 取水送至保护区



2 升水被送至保护区 = 22 points

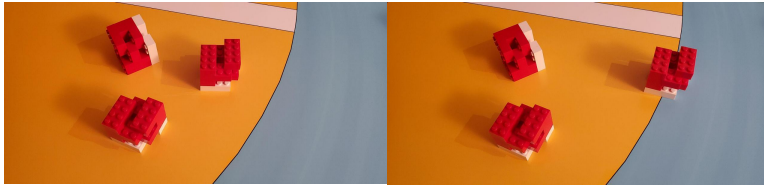


取到两升水，部分在保护区 14 points



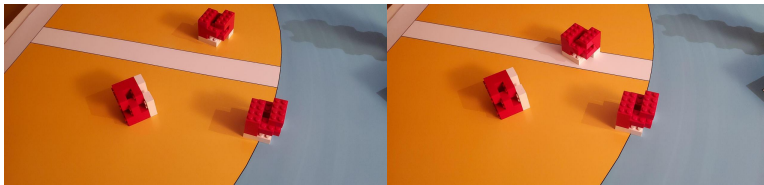
1 升水在保护区 = 11 points

- 成熟奇索被送至其中一个保护区



3 个成熟奇索 = 36 points

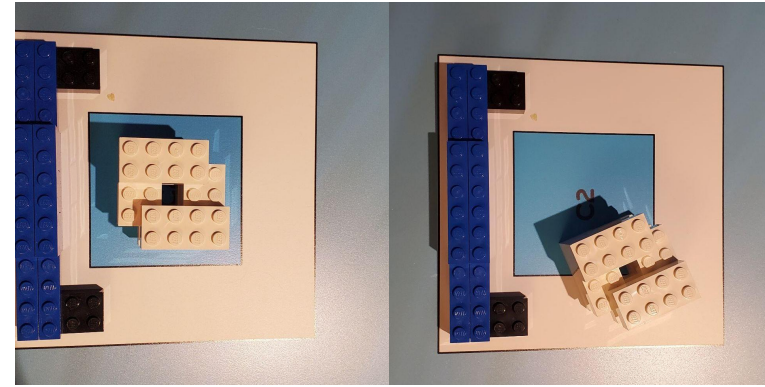
2 个成熟奇索 = 24 points



2 个成熟奇索 = 24 points

1 个成熟奇索 = 12 points

- 未成熟奇索被采摘/碰掉



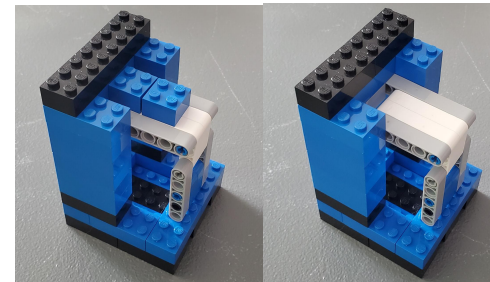
在青色方框内 = OK

部分被碰出青色方框 = -7 points

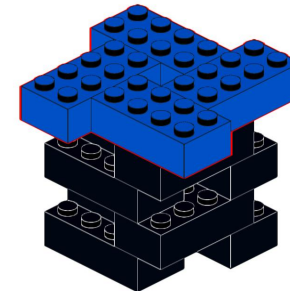
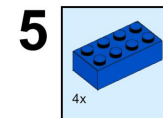
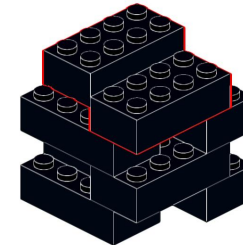
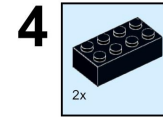
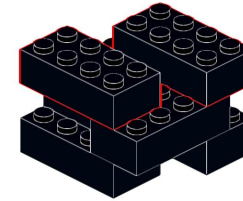
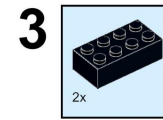
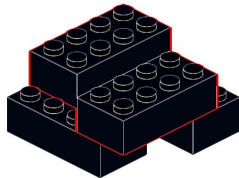
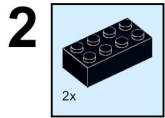
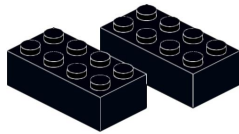
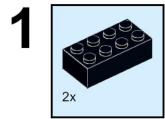
## Frequently asked questions

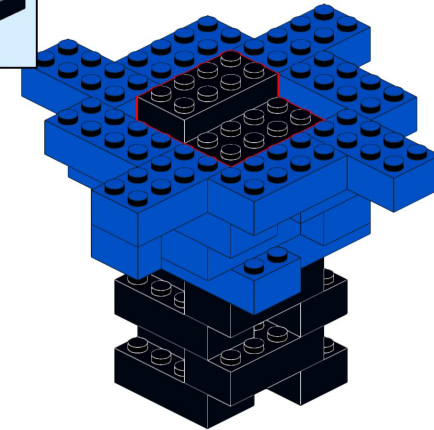
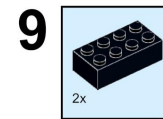
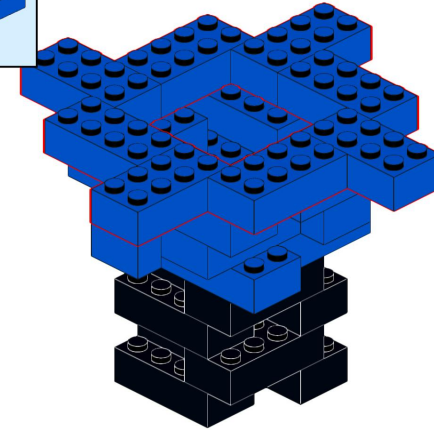
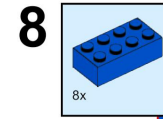
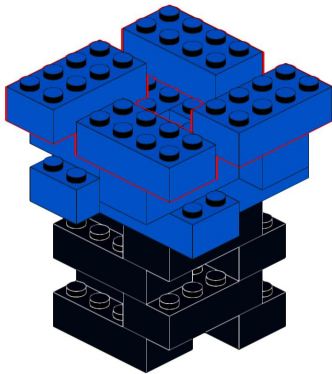
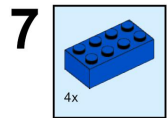
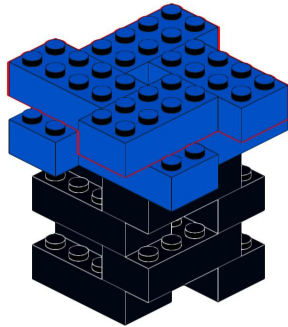
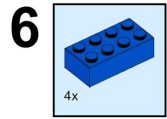
**Q1.** 水是如何被放置在瀑布内的？

**A1.** 下图展示有水和无水状态



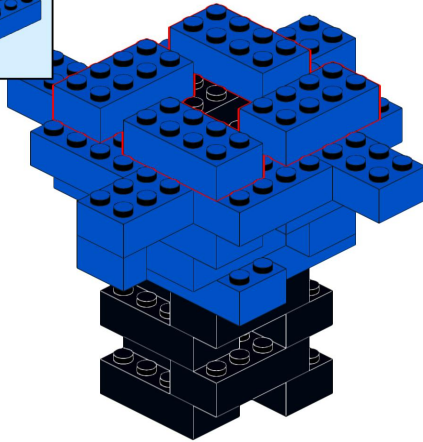
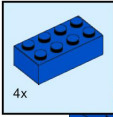
## Building instructions



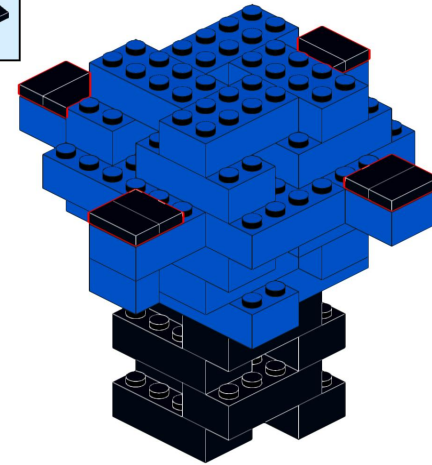




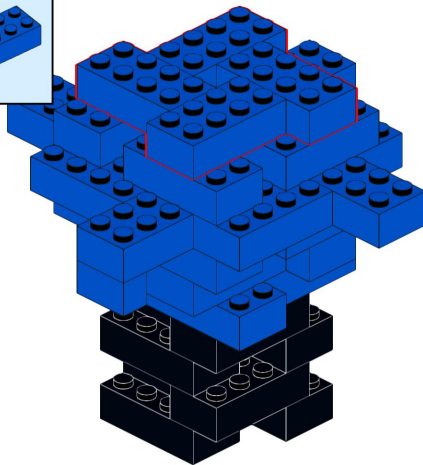
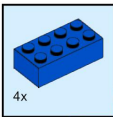
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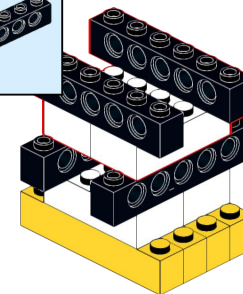
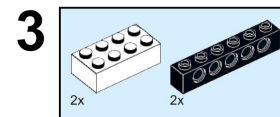
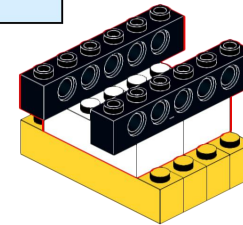
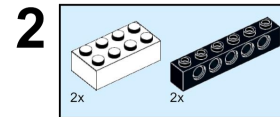
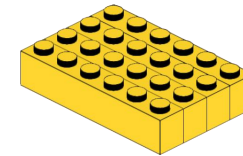
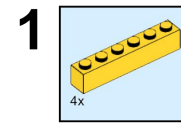
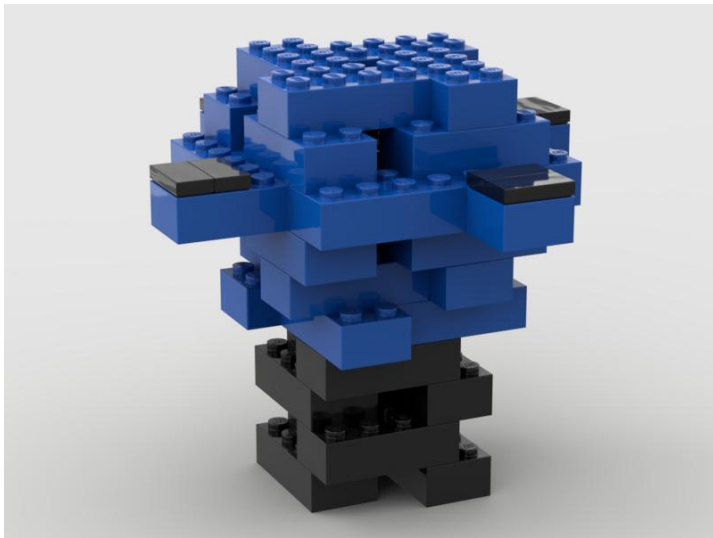
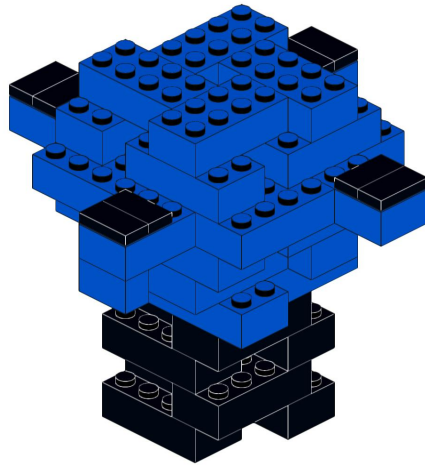
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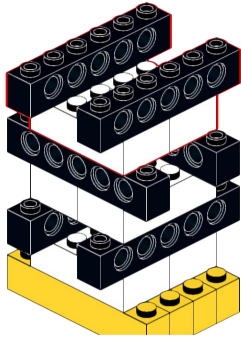
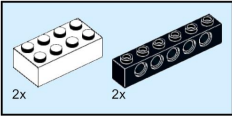
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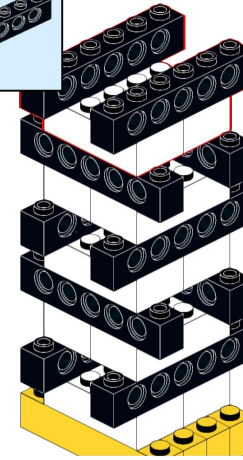
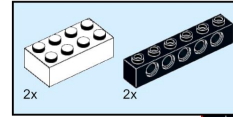
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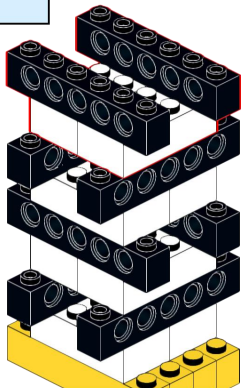
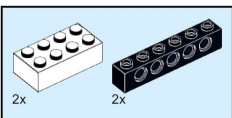
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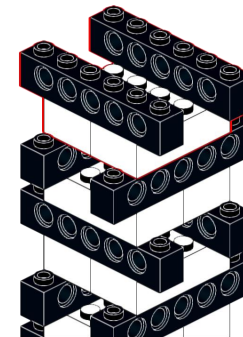
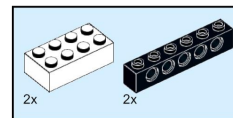
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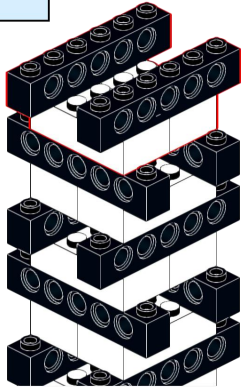
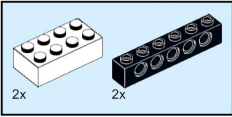
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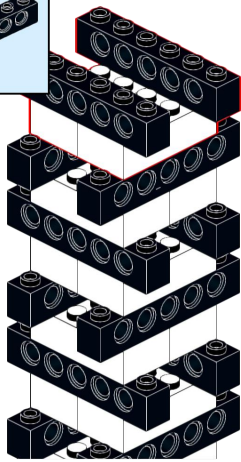
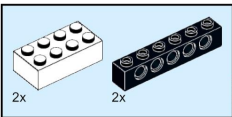
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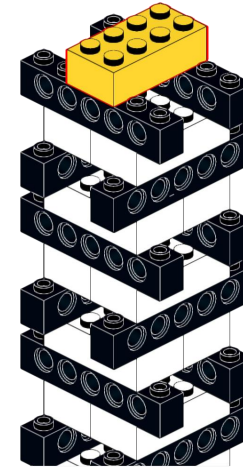
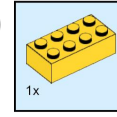
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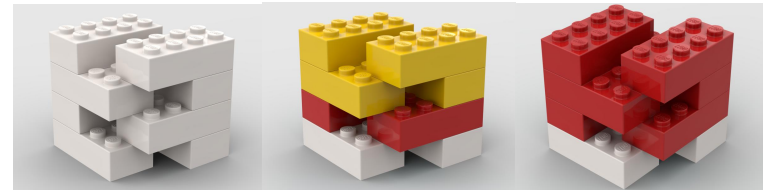
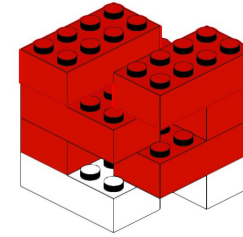
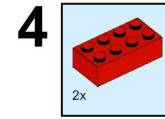
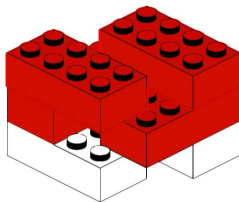
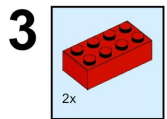
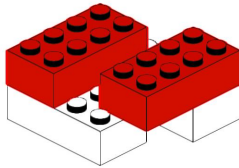
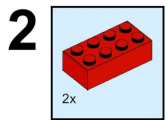
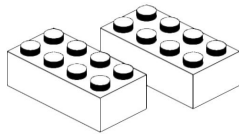
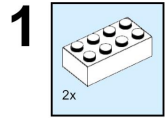


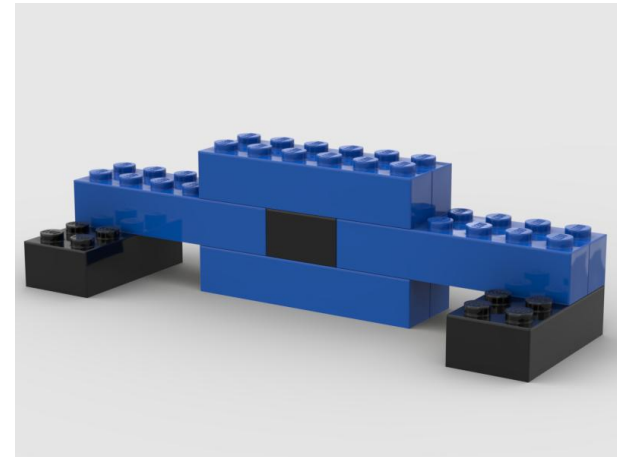
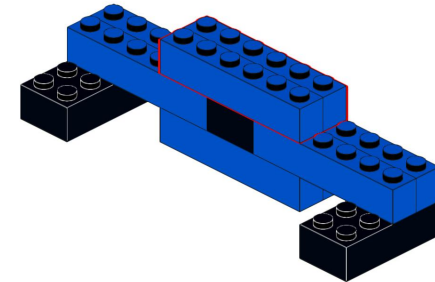
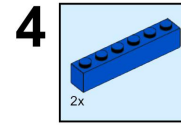
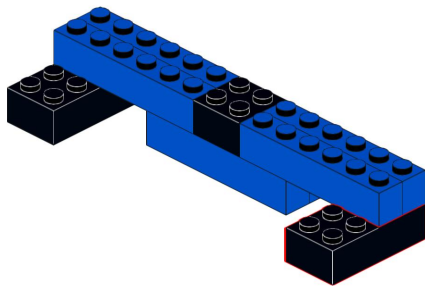
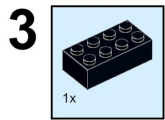
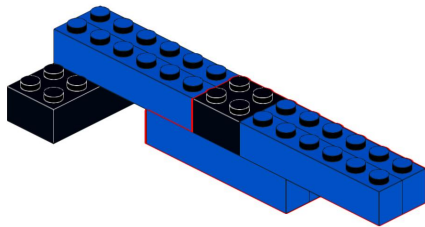
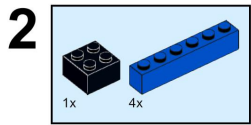
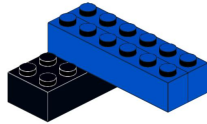
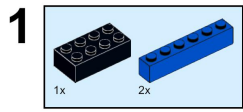
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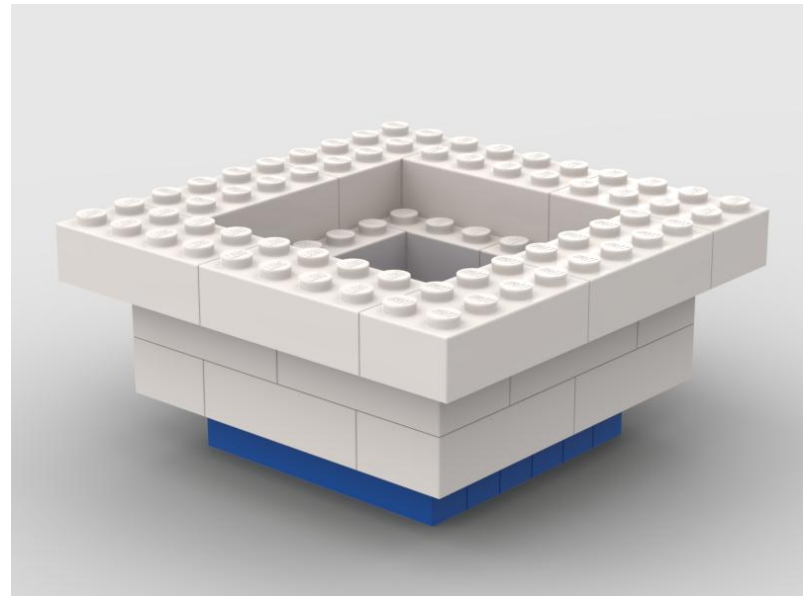
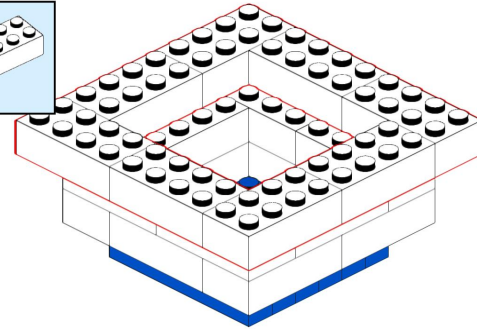
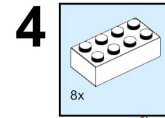
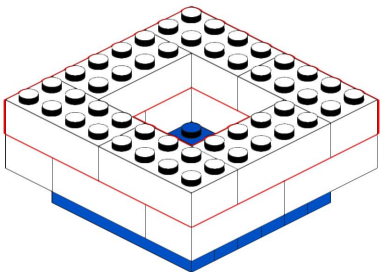
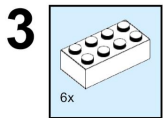
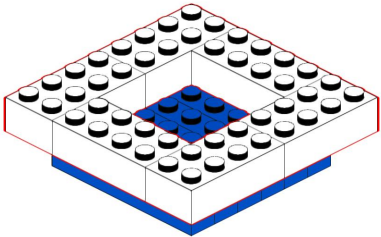
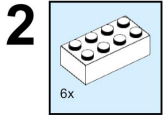
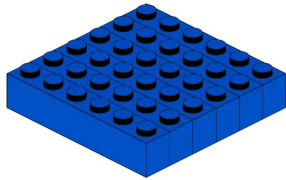
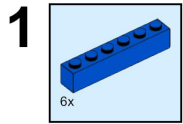


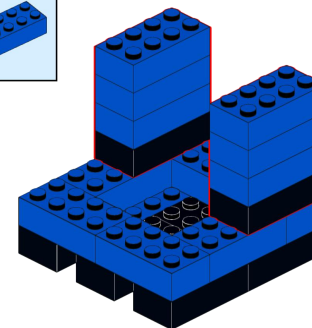
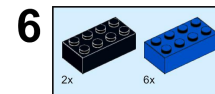
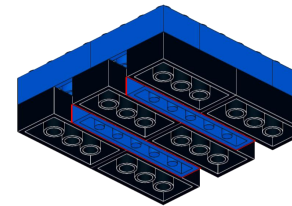
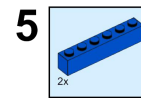
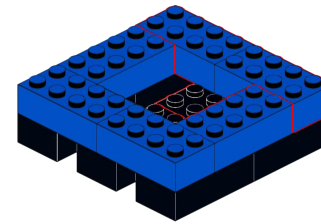
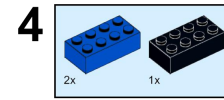
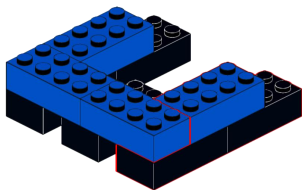
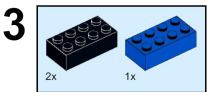
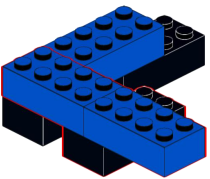
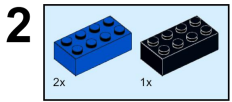
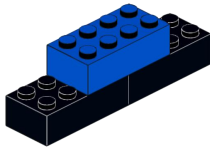
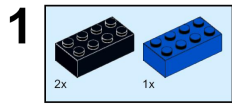
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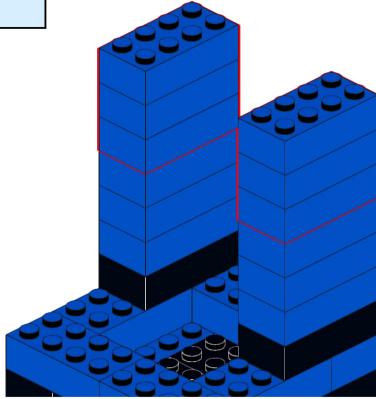
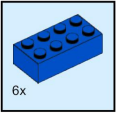




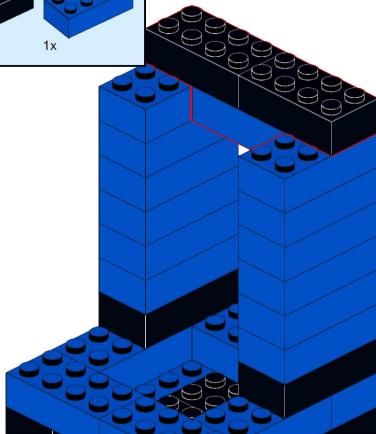
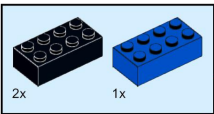




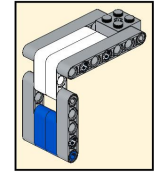
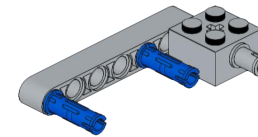
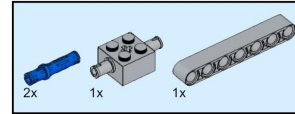
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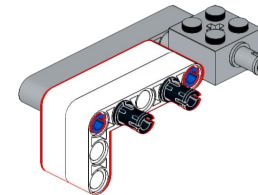
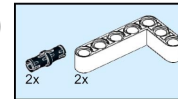
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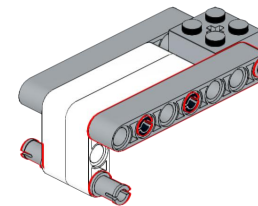
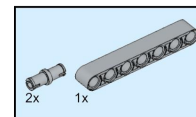
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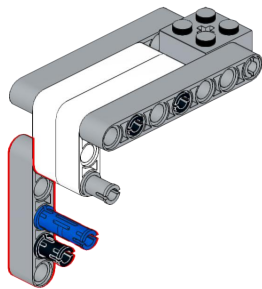
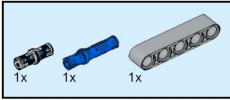
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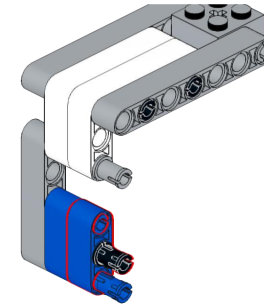
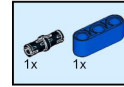
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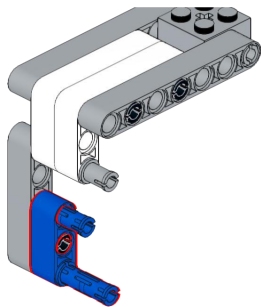
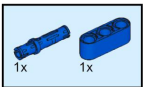
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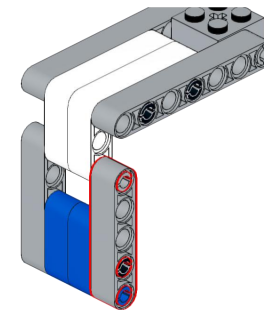
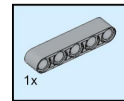
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