



FIRST LEGO LEAGUE CHALLENGE

Mission Brainstorming Worksheets



TEAM NAME:

TEAM NUMBER:

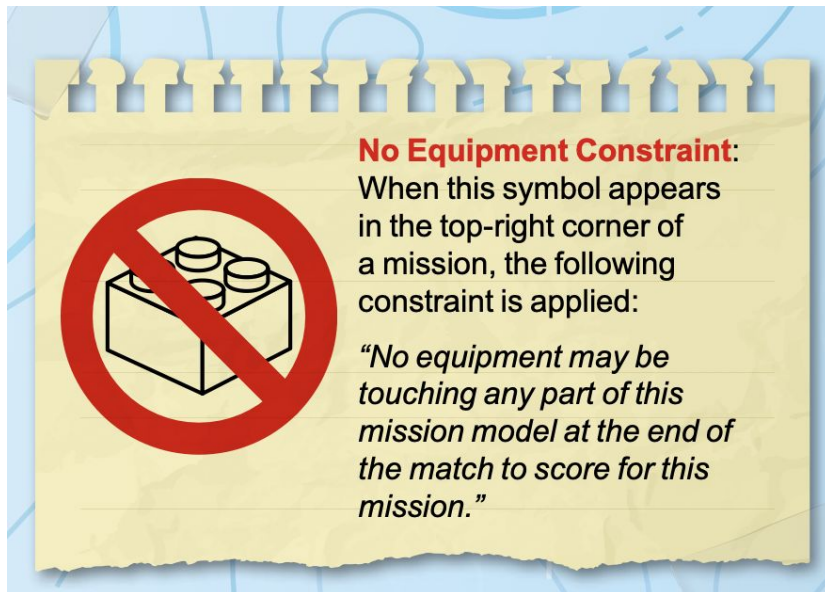
Updated: August 2024

Instructions

This document is **NOT** a substitute for reading the Robot Game Rulebook (RGR). The main purpose of this document is to brainstorm mechanisms and methods for solving missions. We assume that every student will start by reading all the rules.

Instructions for students:

1. **Read the rules carefully** - <https://www.firstlegoleague.org/season#resources>
2. **Check for any updates** - <https://www.firstlegoleague.org/season#resources>
3. **Brainstorm ideas.** Think about what you might have to build or program to solve this mission. Do you need to push/pull/pick up/drop off? What type of mechanism would be needed? Does it need to reach high or low?



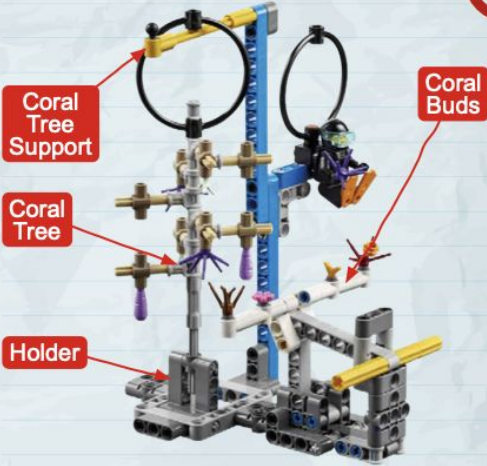
- **Equipment:** Everything teams bring to the match. (See **Rules, Before the Match** for more details.)

Equipment Inspection

- Before the match, there will be an equipment inspection. If your robot and all equipment fit completely in one launch area and under a height limit of 12 in. (305 mm) during this inspection **20**

How can we make sure that everything fits in one launch area?

01 Coral Nursery



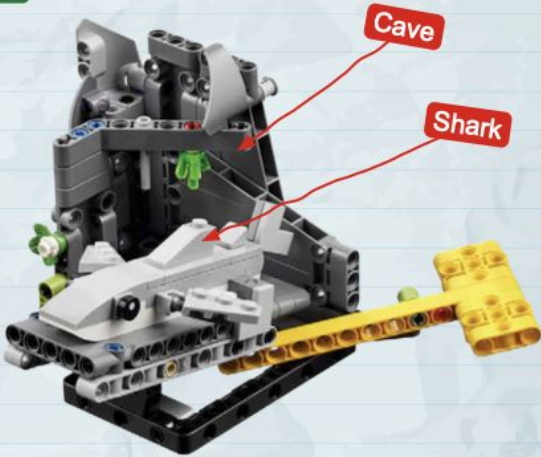
Secure new coral structures to grow in the nursery until they are strong enough for transport to the reef.

- If the coral tree is hanging on the coral tree support **20**
 - **Bonus:** and the bottom of the coral tree is in its holder **10 added**
- If the coral buds are flipped up **20**

What are some things you notice about this model?

How can we solve this mission?

02 Shark



The shark was just tagged for research - release it back into its habitat.

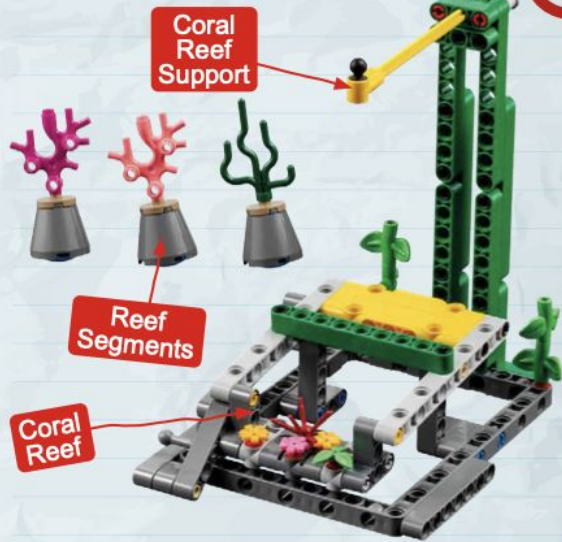
Shark Habitat

- If the shark is no longer touching the cave..... 20
- If the shark is touching the mat and is at least partly in the shark habitat..... 10

What are some things you notice about this model?

How can we solve this mission?

03 Coral Reef



Carefully mount the new coral structure without damaging other nearby reef segments.

- If the coral reef is flipped up, not touching the mat **20**
- If a reef segment is standing upright, outside of home, and touching the mat **5 each**

What are some things you notice about this model?

How can we solve this mission?

04 Scuba Diver



Help the scuba diver transport new coral from the nursery to the reef.

- If the scuba diver is no longer touching the coral nursery 20
- If the scuba diver is hanging on the coral reef support 20

The "coral nursery" includes any part of the Mission 1 mission model.

What are some things you notice about this model?

How can we solve this mission?

05 Angler Fish



Guide the angler fish back to its unexpected home within the shipwreck.

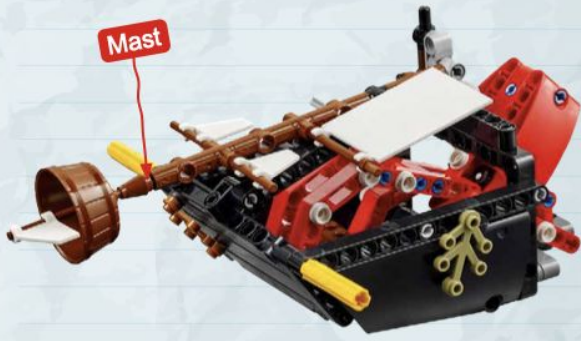
- If the angler fish is latched within the shipwreck 30



How can we solve this mission?

What are some things you notice about this model?

06 Raise the Mast



Raise the mast to restore the sunken shipwreck and explore what is inside.

• If the shipwreck's mast is completely raised..... 30

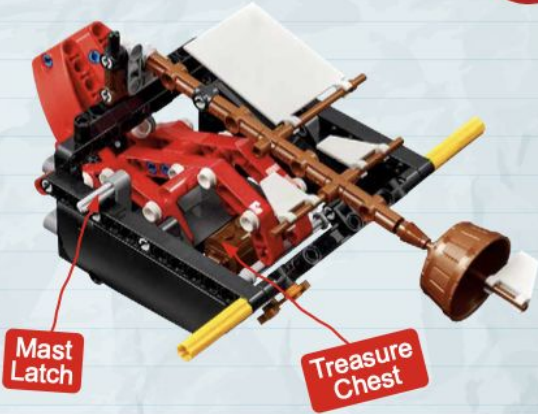
The shipwreck's mast is considered raised when the latch prevents it from returning to its starting position.



What are some things you notice about this model?

How can we solve this mission?

07 Kraken's Treasure



Retrieve the chest from the shipwreck to reveal the history and treasure it holds.

- If the treasure chest is completely outside the kraken's nest..... 20

Kraken's Nest

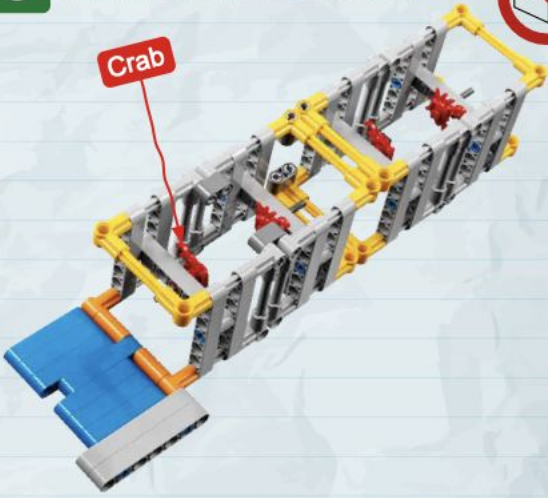
What are some things you notice about this model?

How can we solve this mission?

08 Artificial Habitat



Crab



Rearrange the artificial habitat stacks to create safe homes for the crabs and other sea creatures in this area.

- If an artificial habitat stack segment is completely flat and upright **10 each**

There are four segments of the artificial habitat stack, each defined by its yellow base. A segment is considered upright when the crab is above its yellow base.

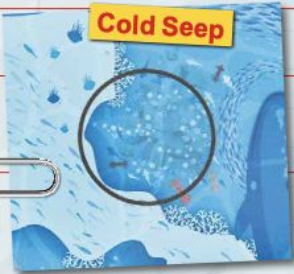
What are some things you notice about this model?

How can we solve this mission?

09 Unexpected Encounter



An unknown creature has attached itself to the AUV!
Safely release it and deliver it to the cold seep.



- If the unknown creature is released **20**
- If the unknown creature is at least partly in the cold seep **10**

What are some things you notice about this model?

How can we solve this mission?

10 Send over the Submersible



Some waters are too difficult to reach with larger ships. Send the submersible to explore the opposing field's waters.

- If your team's yellow flag is down **30**
- If the submersible is clearly closer to the opposing field **10**

*Teams may not block the opposing team.
It is not possible to earn the bonus in remote competitions or if there is no opposing team.*

What are some things you notice about this model?

How can we solve this mission?

11 Sonar Discovery



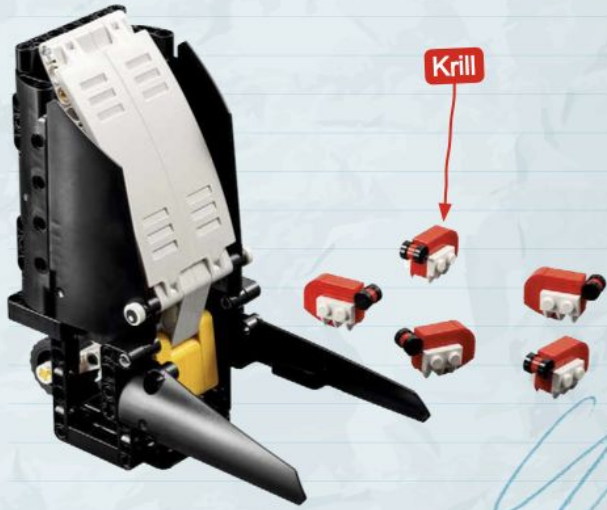
Use the ship's sonar technology to scan the surroundings for nearby objects or animals.

- If one whale is revealed **20**
- **Bonus:** If both whales are revealed **10 added**

What are some things you notice about this model?

How can we solve this mission?

12 Feed the Whale



Krill are a whale's favorite food! Collect the krill and feed them to the hungry whale.

- Krill at least partly in the whale's mouth..... **10 each**

What are some things you notice about this model?

How can we solve this mission?

13 Change Shipping Lanes



Adjust the cargo ship's route to safely avoid whale migration routes by moving to another shipping lane.

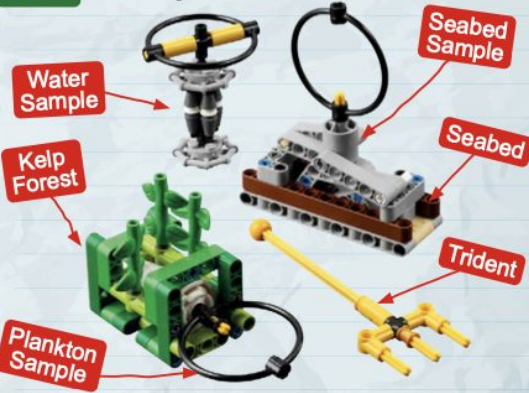
- If the ship is in the new shipping lane, touching the mat..... **20**



What are some things you notice about this model?

How can we solve this mission?

14 Sample Collection



Collect samples and artifacts from around the mat so they can be analyzed by scientists in the lab.

- If the water sample is completely outside the water sample area **5**
- If the seabed sample is no longer touching the seabed **10**
- If the plankton sample is no longer touching the kelp forest **10**

Water Sample Area



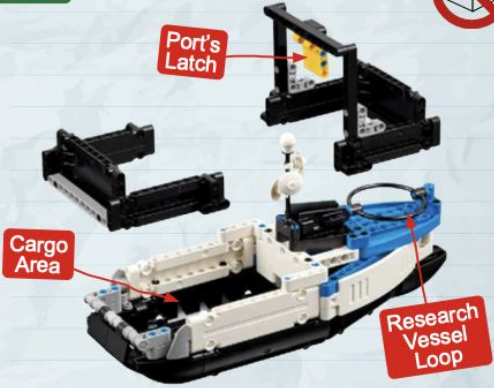
If a piece of the trident is no longer touching the shipwreck..... **20**

Bonus: If both pieces are no longer touching the shipwreck..... **10 added**

What are some things you notice about these models?

How can we solve this mission?

15 Research Vessel



Securely dock the ship that contains the samples and artifacts your team has collected.

If any of the following are at least partly in the research vessel's cargo area:

- Sample(s) **5 each**
- Trident Part(s) **5 each**
- Treasure Chest **5**
- If the port's latch is at least partly in the research vessel's loop **20**

What are some things you notice about this model?

How can we solve this mission?

Precision Tokens

You begin the match with six precision tokens worth 50 points. If you interrupt the robot outside of home, the referee will remove one token. You earn points for the number of tokens remaining at the end of the match. If the number remaining is:

(See Rules 17 and 18.)

1: 10, 2: 15, 3: 25,
4: 35, 5: 50, 6: 50



How do we keep our free points?