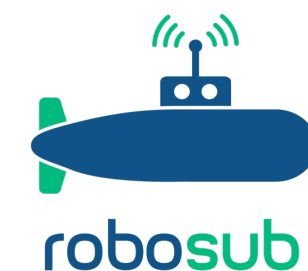


27th Annual
RoboSub 2024
Task Ideas

Logarithmic Spiral
Based on deep sea exploration expeditions.

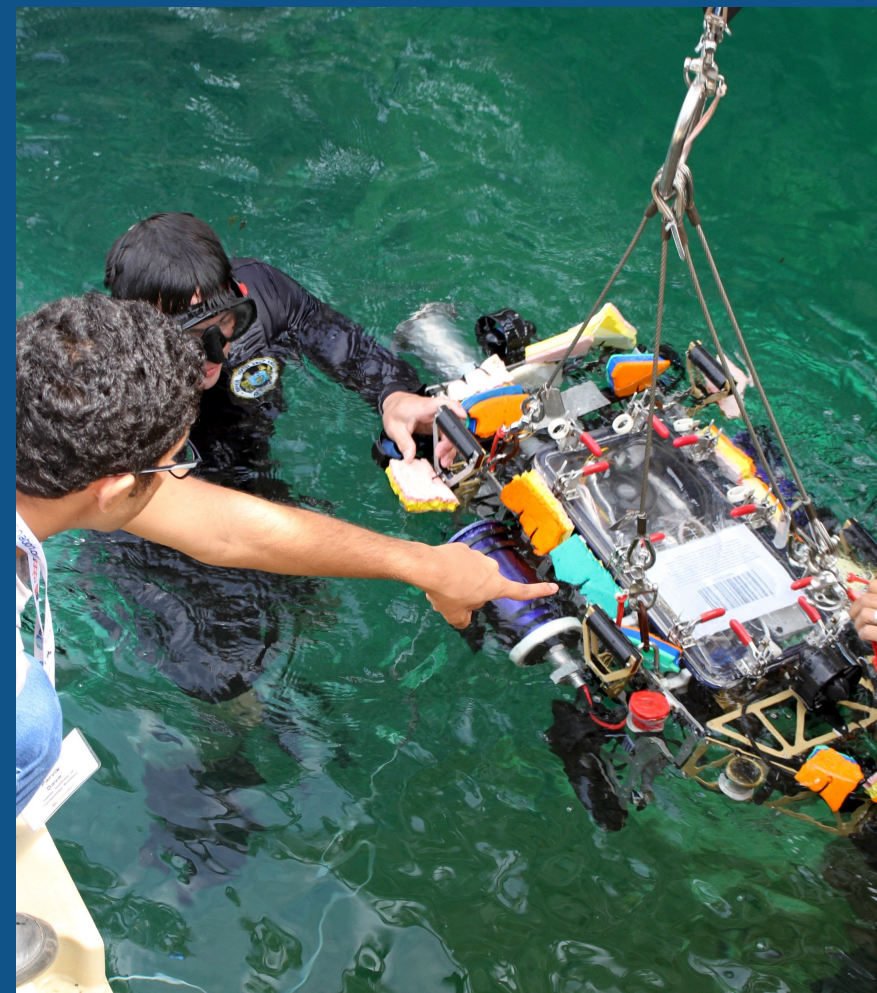
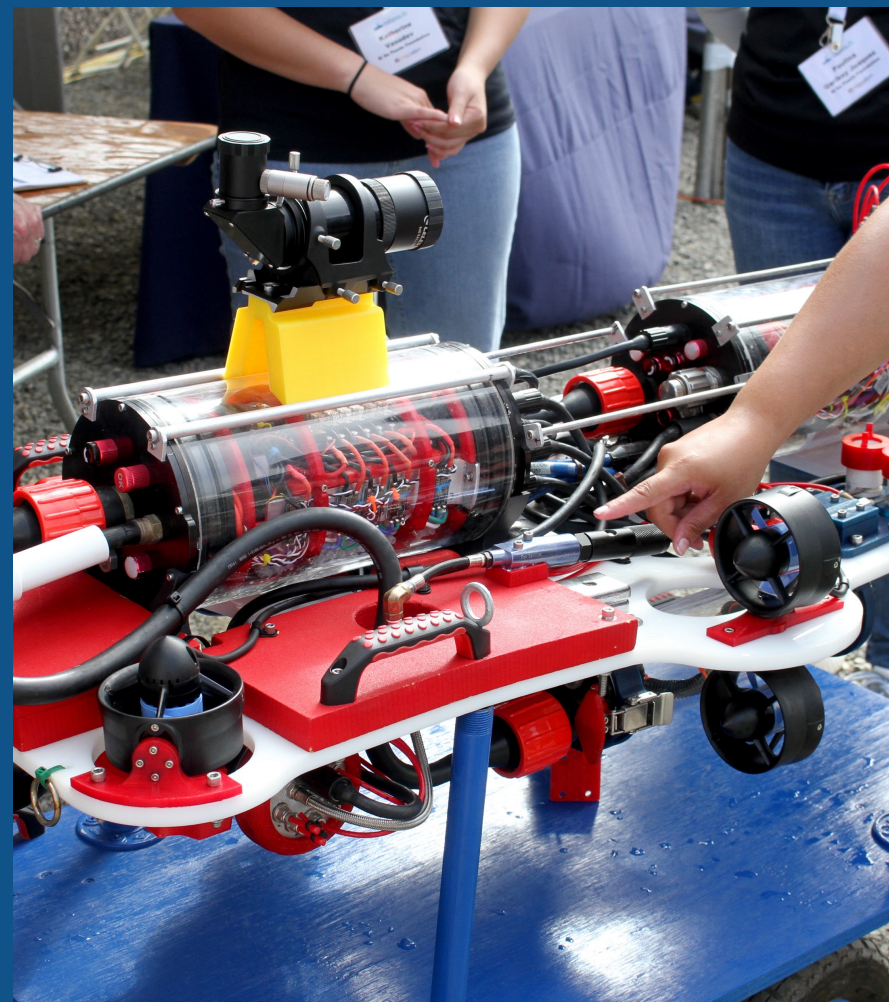




Why RoboSub?

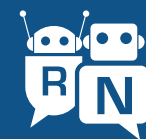
- Increase technical proficiency;
- Establish valuable professional connections; and
- Enjoy learning and collaborating while advancing the technology of AUV systems.

The nominal winners are teams that score the most points. The real winners are participants who learn lasting lessons about working together to create an autonomous system to accomplish a challenging mission in a complex environment.



27 years

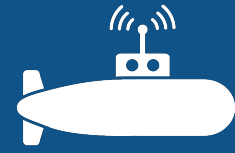
Subsurface Vessel Full Autonomy Acoustic Navigation



- **Objective:** Build an international community of innovators ranging from high school to higher education, capable of making substantive contributions to the maritime field and pushing development of small-scale Autonomous Underwater Vehicles (AUV).
- Teams must be comprised of:
 - 75% or more full-time students (college and/or high school)
- Participation in the RoboSub Competition includes:
 - Building an AUV to compete, following RoboSub's vehicle and safety requirements.
 - Providing design documentation discussing the team's technical design and competition strategy.

Find out more.

Contact RoboNation at autonomy@robonation.org



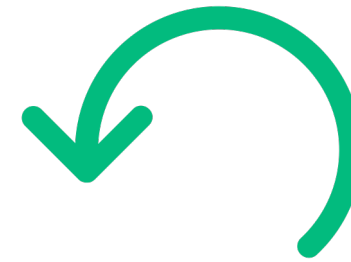
What next?

Continue reading through the **CHALLENGE** presented to RoboSub teams this season.

Autonomous behaviors evaluated in this year's challenge include...



Navigation



Attitude Control



Acoustic Identification



Markers & Torpedoes

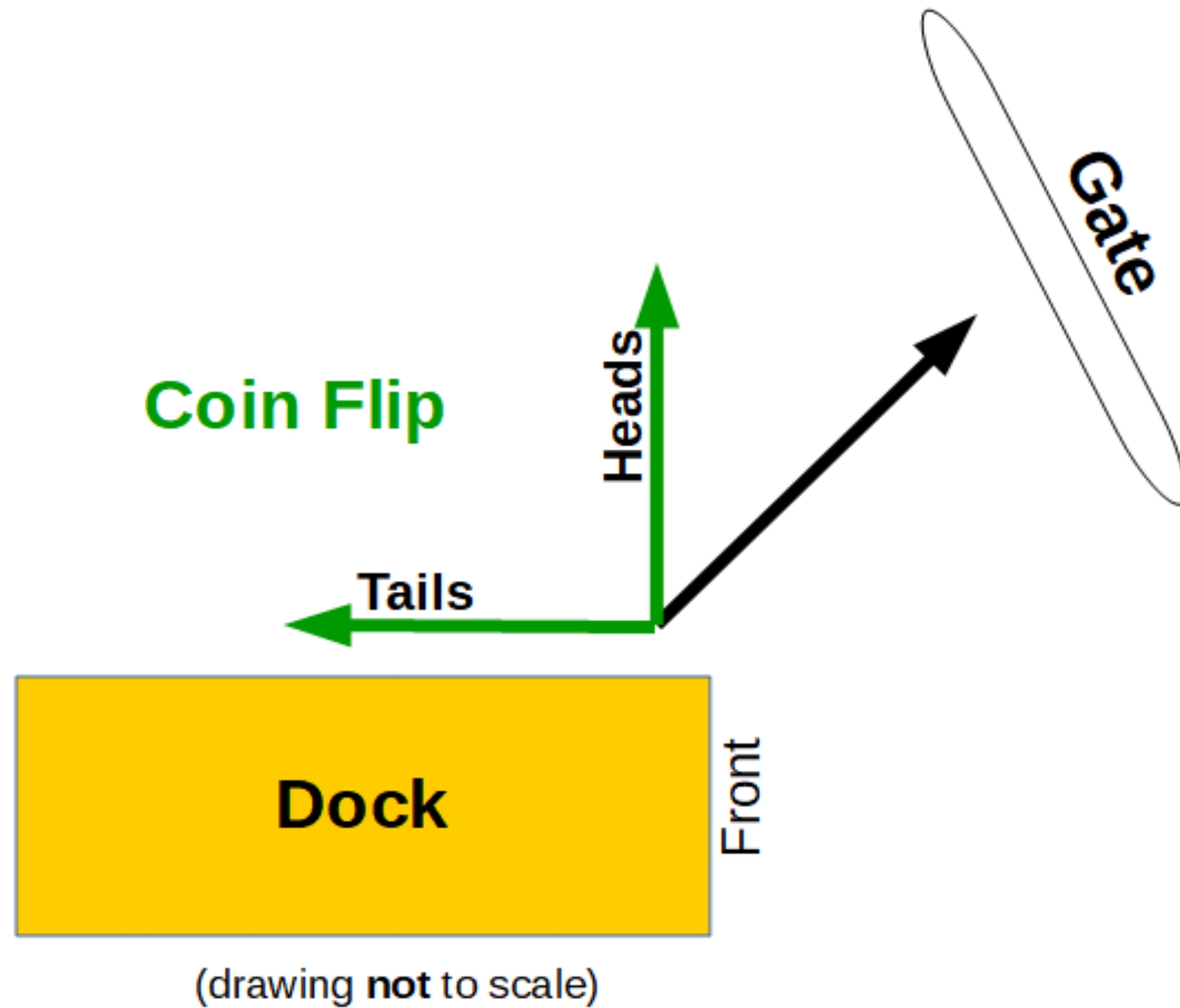


Visual Identification



Two-step Behaviors

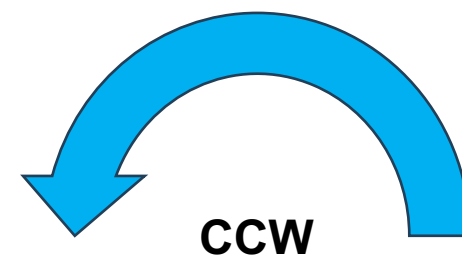
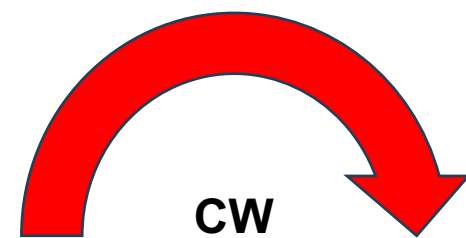
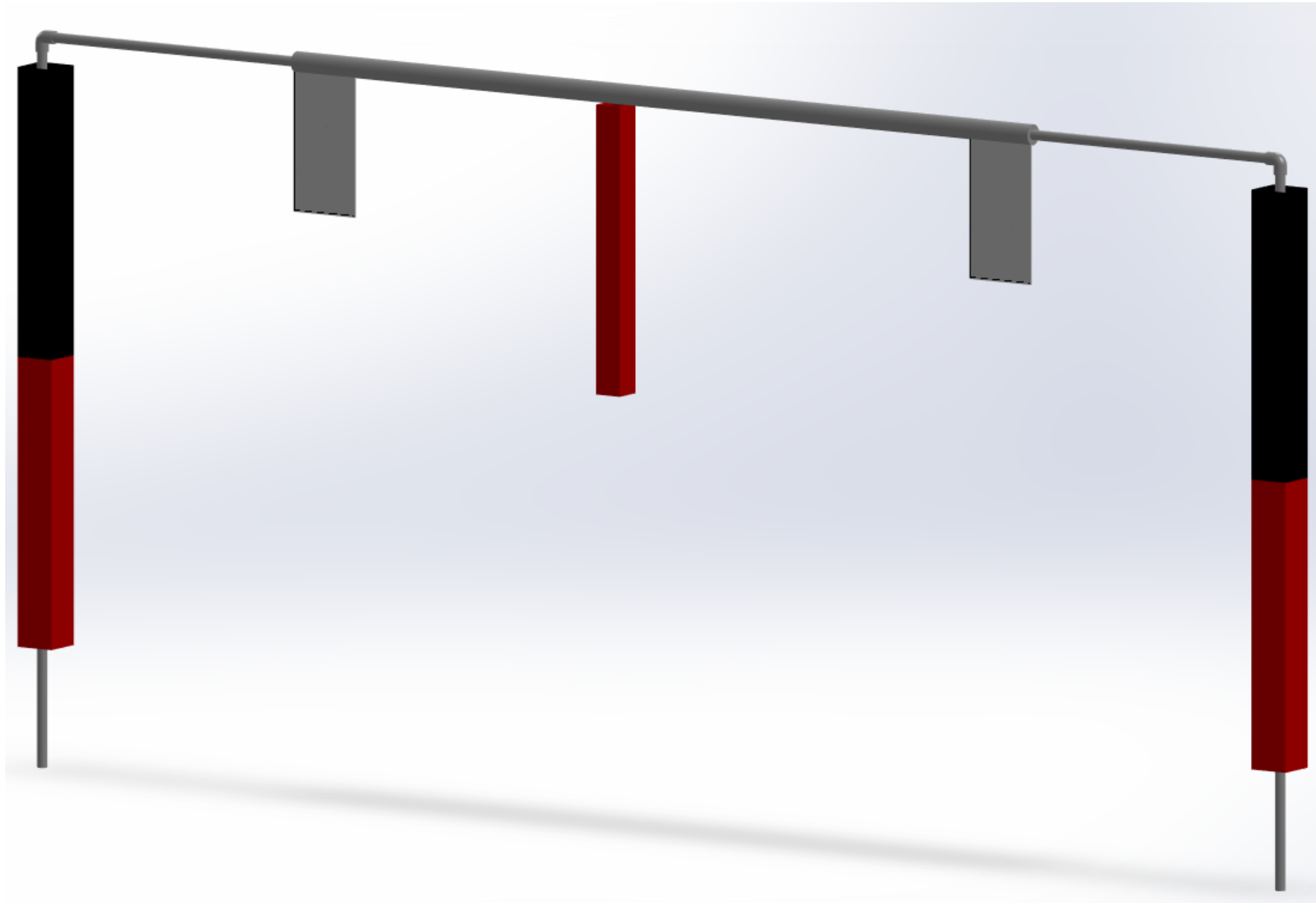
Rough Seas | Coin Flip



- 🚢 Random orientation
 - 90° or 180° from dock



Enter the Pacific | Gate



 Choose direction and ocean temperature

- Clockwise (CW) / Hot (**Red**)
- Counter clockwise (CCW) / Cold (**Blue**)

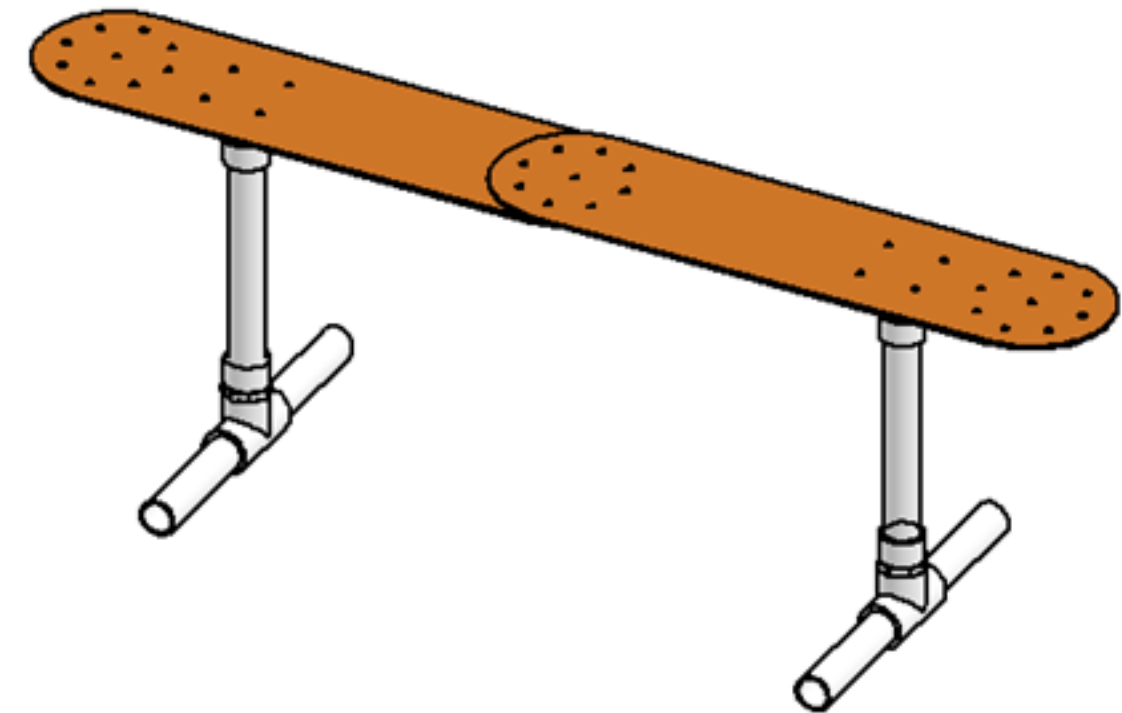
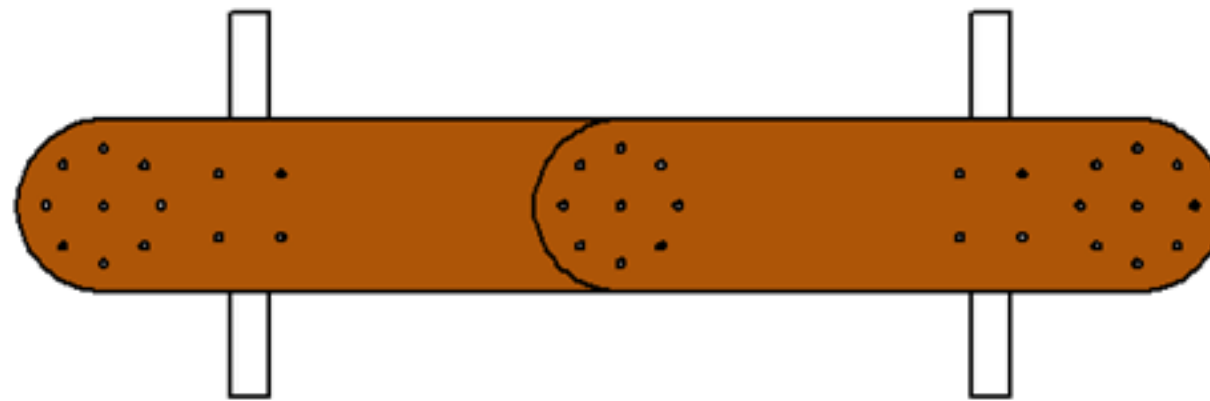
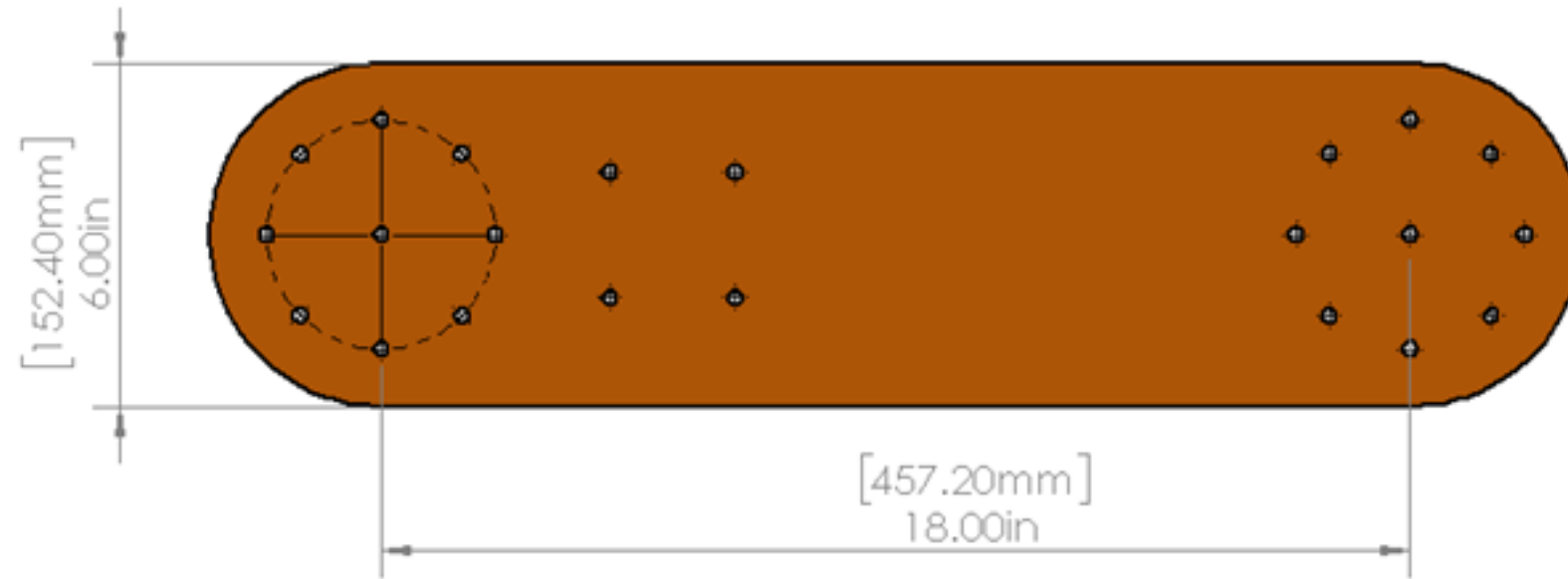
 Extra points for staying with your choice for the remainder of the tasks

 With Style

- 10 ft/3 m before/after gate
- Extra points
 - Every 90° change in orientation
 - Yaw: +100
 - Roll/Pitch: +200
 - Up to 720° rotation
 - Yaw: +800
 - Roll/Pitch: +1600

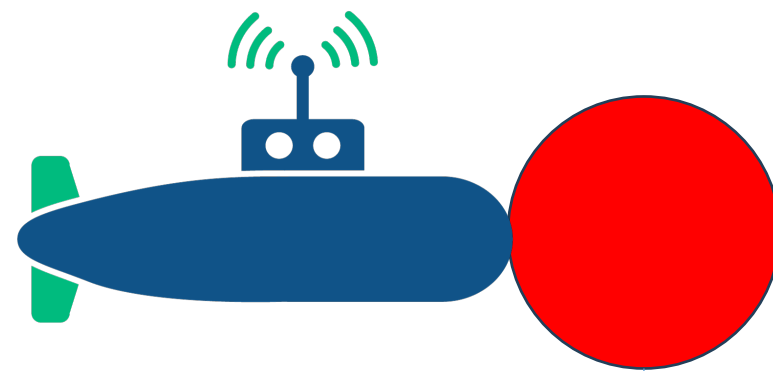


Path

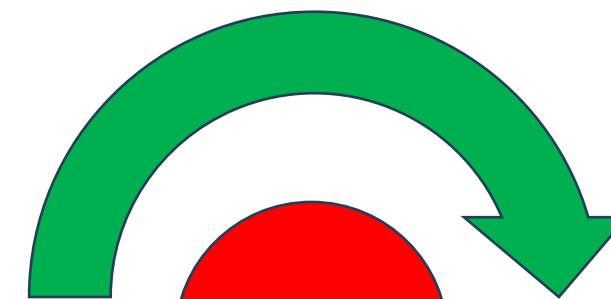


Hydrothermal vent | Buoy

 Single **RED** buoy

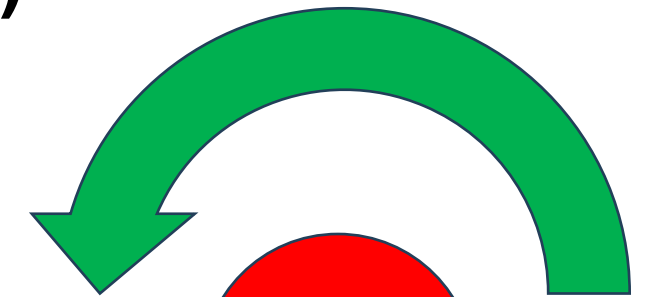


Circumnavigate
(Top View)



CW

360°



CCW

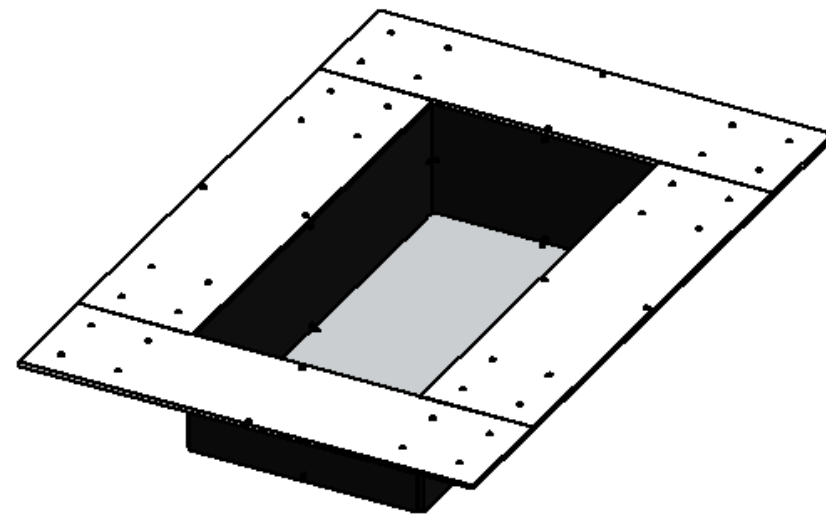
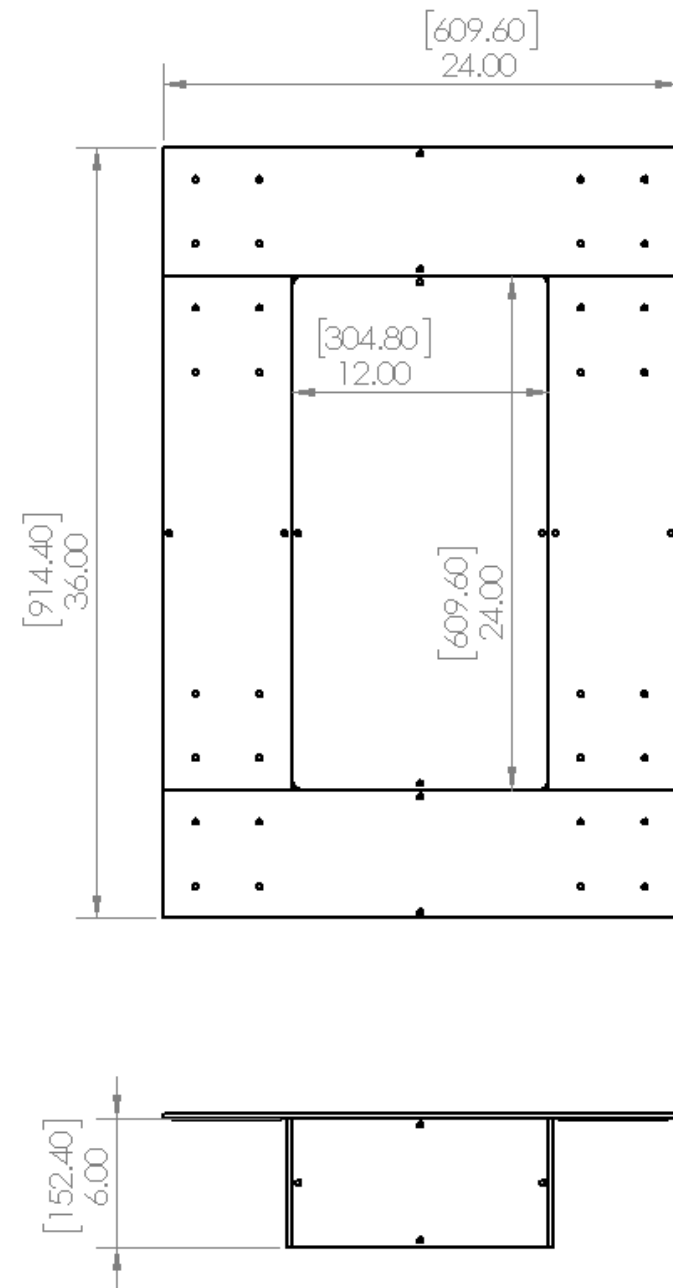
360°

Floor

(drawing **not** to scale)



Ocean Temperatures | Bins



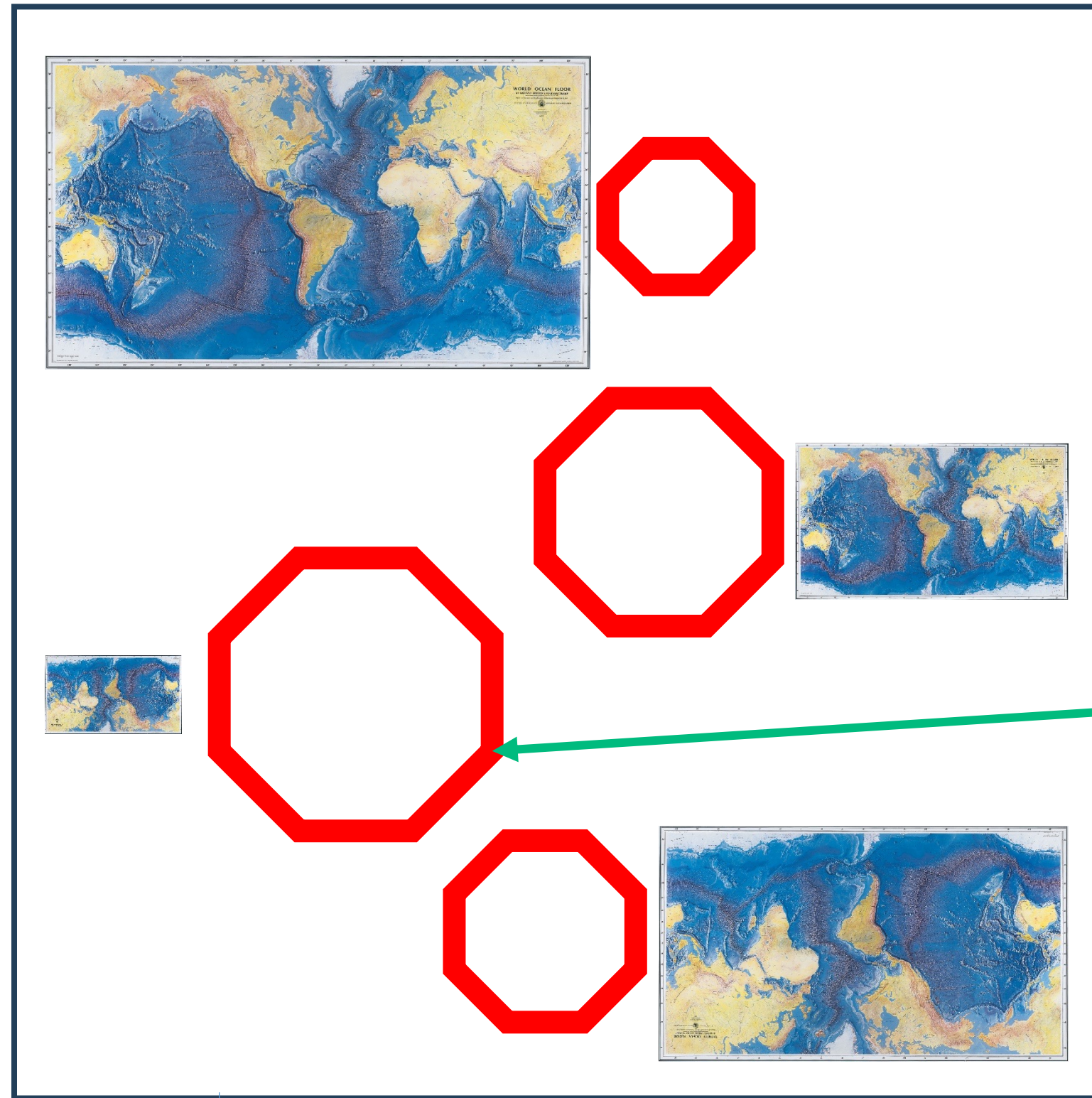
🚢 Single bin

- ½ Red, ½ Blue

🚢 Place marker in correct side based on your choice



Mapping | Torpedoes



🚢 The panel has four different map sizes and openings

- Larger map (smaller opening) more points
- Can not obtain points twice on the same map

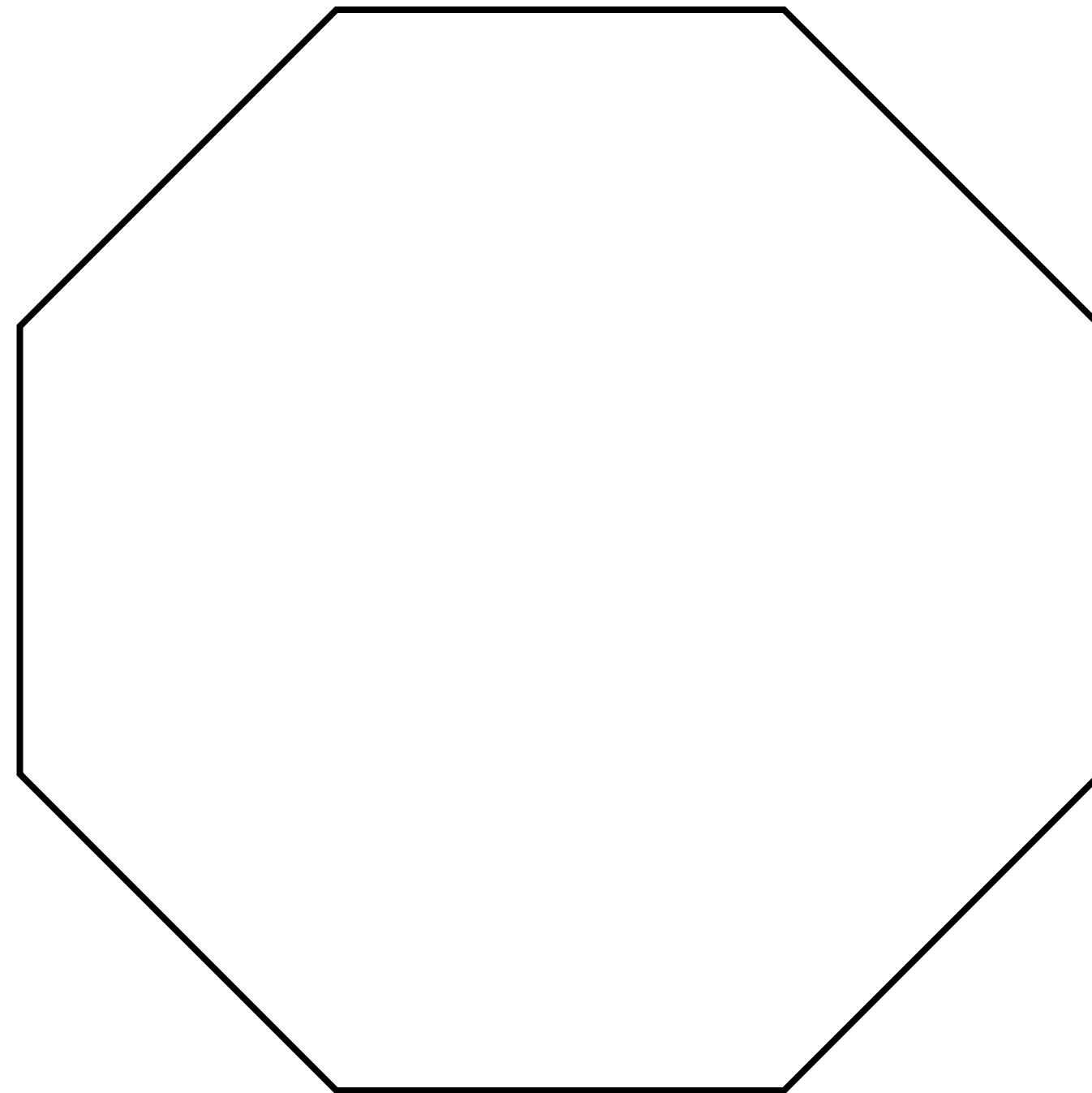
Vote on the color of octagon

Floor

(drawing **not** to scale)



Collect Samples | Octagon



- 🚢 “Ring” floating on the surface
- 🚢 One Pinger located at the center of the octagon
- 🚢 Three (3) different samples to collect
 - Tube worm
 - Sea star
 - Coral

Octagon

Location of
samples



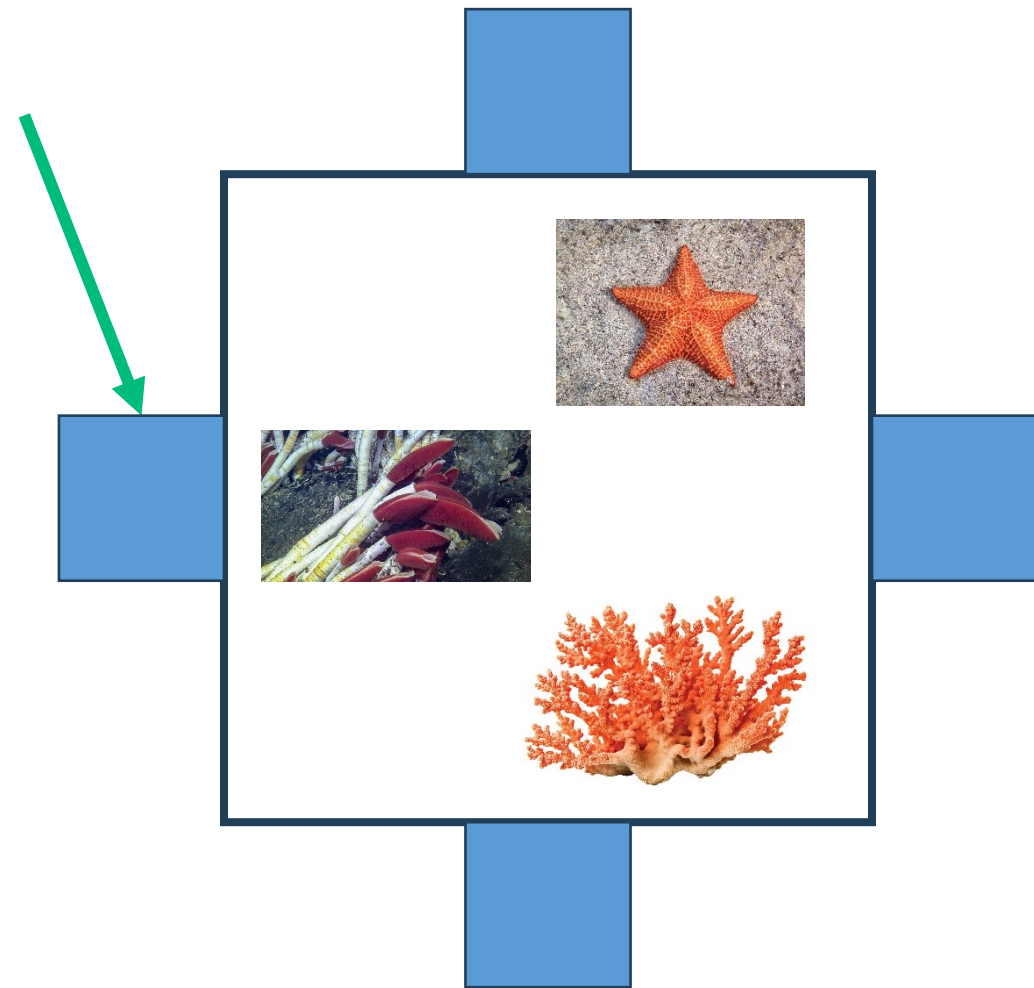
Floor

(drawing **not** to scale)



Collect Samples | Octagon

Vote on the color of the collection bins (and maybe the color of the samples)



(drawing **not** to scale)

 3 samples in the center (PVC structures).

- Tube worm
- Coral
- Sea star

 Place each one in a collection bin



Finding the tasks

Path

- One from Gate to Hydrothermal vent (Buoy)

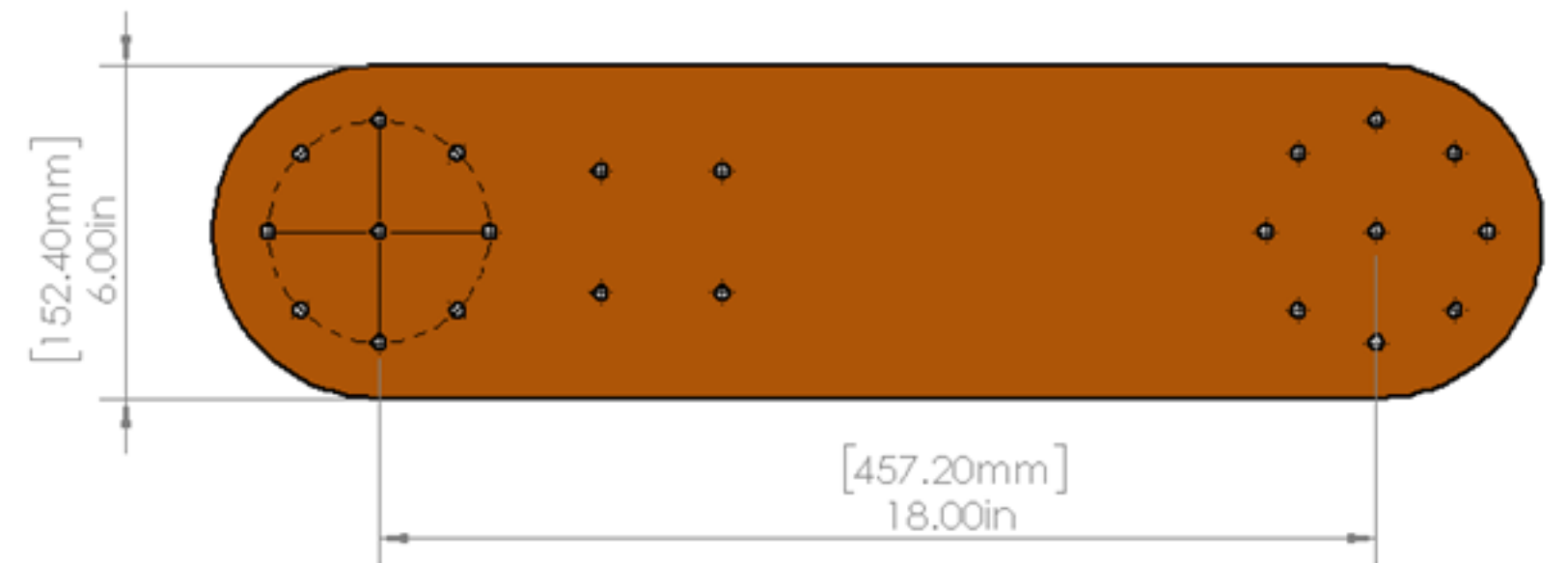
Pinger

- One located at the center of the octagon

Vote on the location of the second pinger

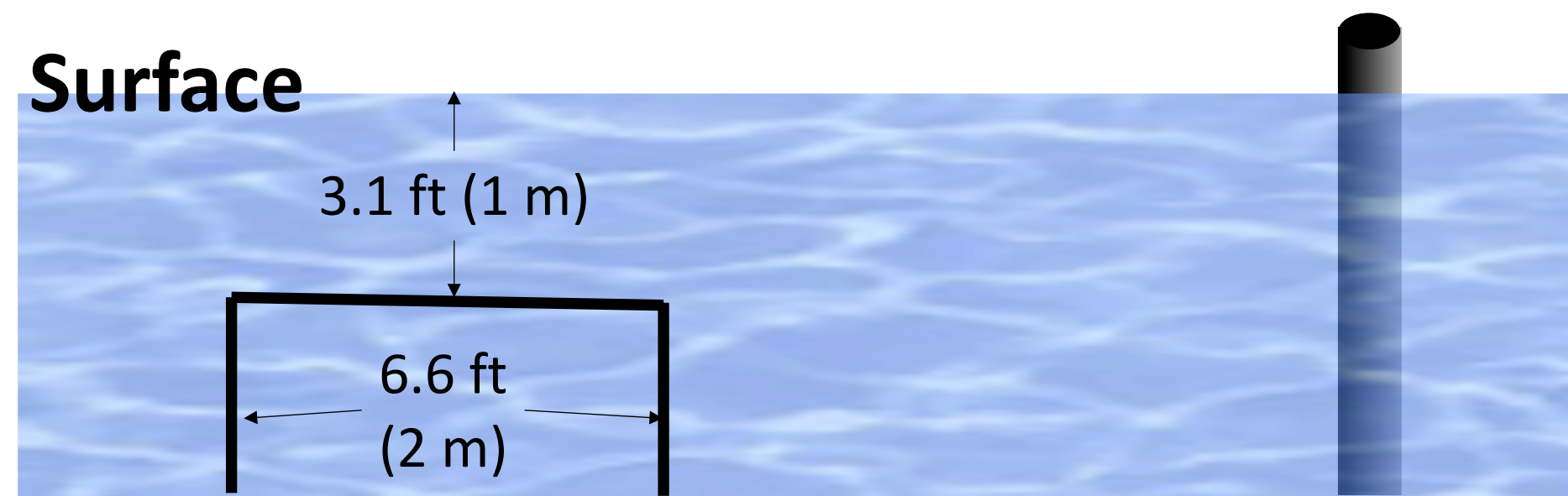
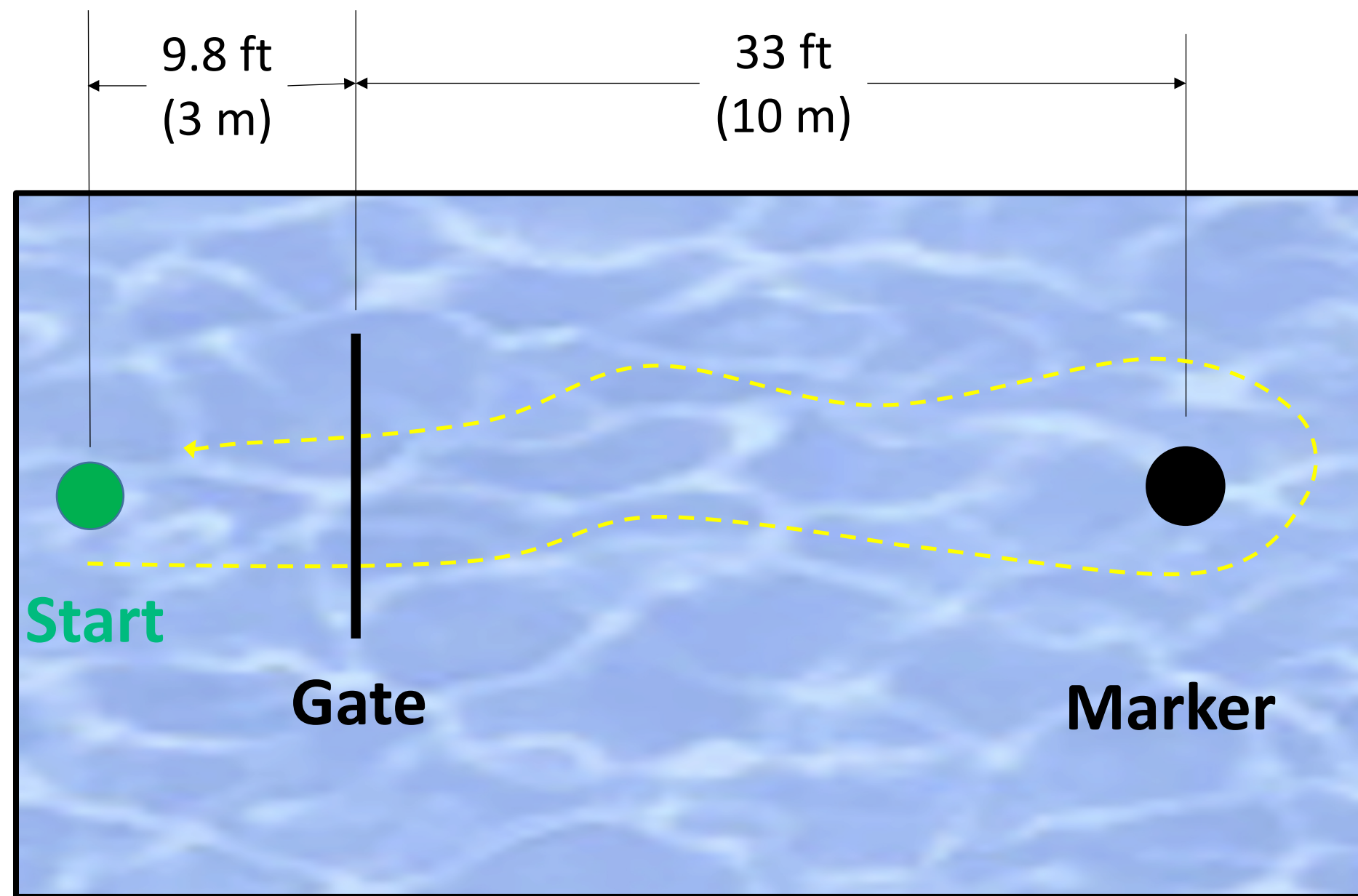
- Ocean Temperatures (Bins)
- Mapping (Torpedoes)

Second path will point toward the other task



Pre-qualification

- Optional
- Must be submitted before being on-site at competition (Deadline: July 22)
- Directions on how to do this will be available in the Team Handbook (or review the old handbook, since it's the same).



(drawing **not** to scale)

Stay Updated

ALL THINGS ROBOSUB

For all the latest information and updates all week, visit the RoboSub website!



robosub.org

DISCORD

Stay connected and updated with the RoboSub Discord. Scan the QR code below to get started!



JOIN TODAY!

- Scan the QR Code
- Select the RoboSub23 role
- Turn on notifications!



robonation.org/discord



robonation



seaperch



seaglide



gosense



roboboat



robosub



robotx



RoboNation is a 501c3 nonprofit organization whose mission is to provide a pathway of hands-on educational experiences that empower students to find innovative solutions to global challenges. Working together with the industry, research and educators, we have grown to include over nine student competitions and programs and engage more than 250,000 students per year.

For more information contact autonomy@robonation.org