

# CODEAVOUR 6.0 INTERNATIONAL

## Track 2 - Climate Action Challenge

### Arena Setup Guide



Leveraging AI and Robotics  
to Shape a Greener Tomorrow

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**Important:**

1. This assembly guide provides instructions for assembling the arena and serves as a reference guide for the initial positions of game objects.
2. Please refer to the [Codeavour 6.0 Track 2 Rules and Regulation](#) document for game rules.
3. Images are only for representation purposes. Illustrations and actual items may vary slightly.
4. Refer to the component list provided with the Codeavour 6.0 Arena Objects Kit and Arena Fence Kit to identify the parts.
5. If you find the assembly process challenging, please seek assistance from your mentor.
6. All models should be aligned with the markings of the arena.
7. Carefully review the illustrations and instructions before assembling any part.
8. Handle all parts with care.



## 1. Arena Setup:

### 1.1 Arena setup on the table

1. Unroll the Printed Arena on an 8x4 feet Table with a smooth flat surface and align it perfectly in the centre.

*Note: Make sure to clean the top surface of the table before placing the arena.*

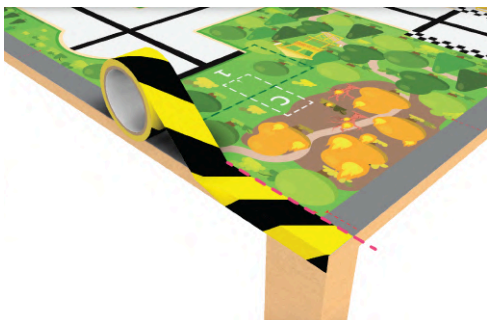


*Complete:*



2. Fix the arena on the table with the Black and Yellow Tape.

*Note: The tape shouldn't cover the area inside the grey edge of the arena.*





## 1.2 Arena setup on the floor

1. Unroll the Printed Arena flat on a smooth-levelled floor.

*Note: Make sure to clean the floor before placing the arena on it. Avoid grooves and uneven surfaces on the floor.*

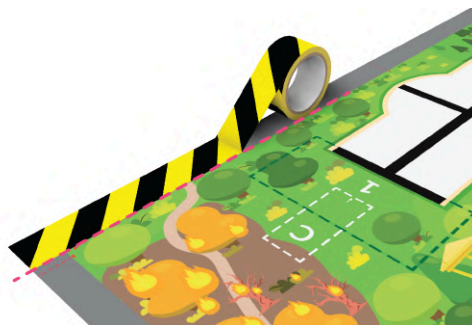


*Compete:*



2. Fix the arena on the floor by covering the grey edges of the arena under the tape.

*Note: The tape should be aligned to the inner edge of the grey border of the arena and shouldn't go inside.*



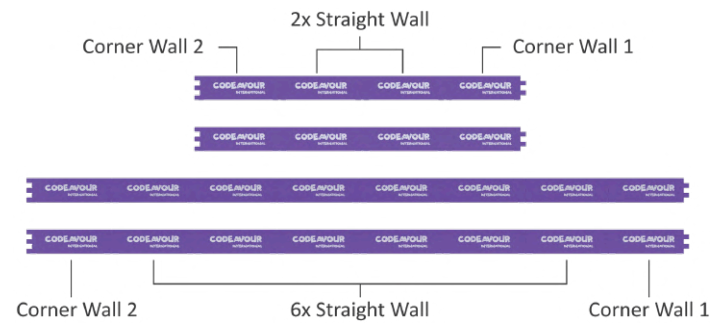
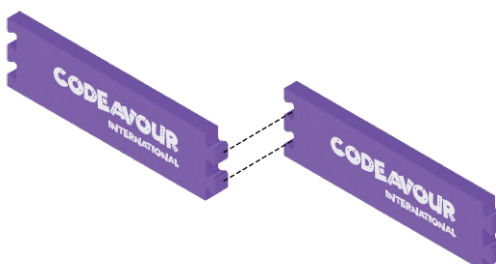
### 1.3 Wall Assembly

*Note: For both on-table and on-floor arena assembly, wall assembly is common.*

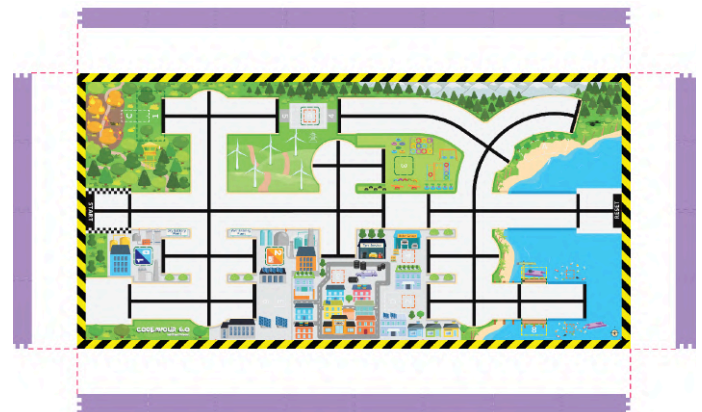
1. Cut and paste pieces of double-sided tape (about 2 cm in length) to the bottom of each wall piece.



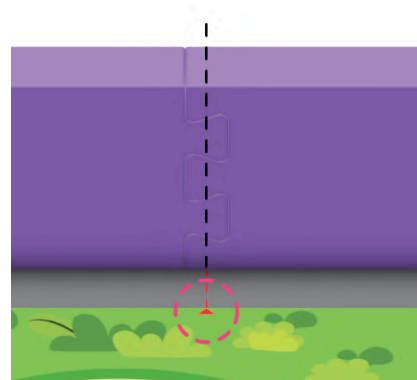
2. Assemble two sets of Straight walls of x2 and x6 pieces along with Corner Wall 1 and Corner Wall 2.



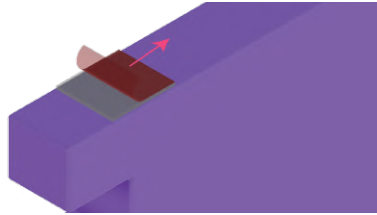
3. Assess how the wall assemblies will align with each other and to the arena.



*Note: Straight Wall joints should align with the triangle marks on the arena as shown below.*

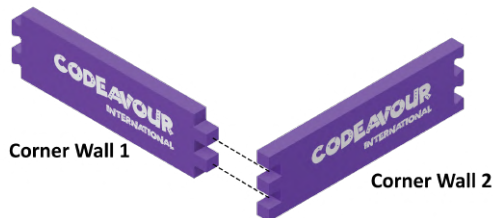


4. Peel-off the top of all the double-sided tapes pasted on the walls.

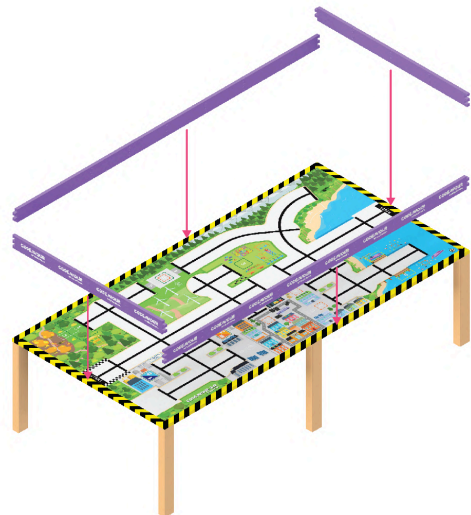


5. Fix the sets of walls with Corner walls on the Arena with care, confirming their marked placement on the Arena and also mending corner wall joints.

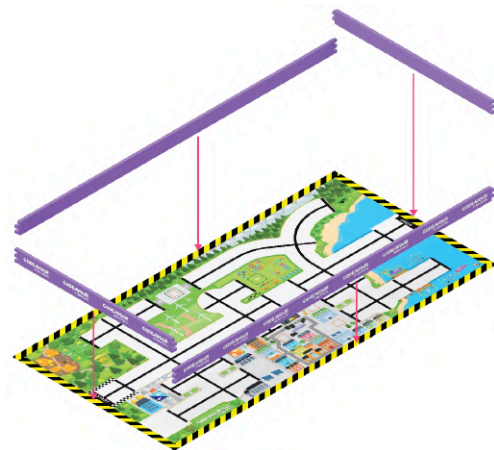
*Example of Corner wall fixture:*



*Wall assembly on-table arena:*

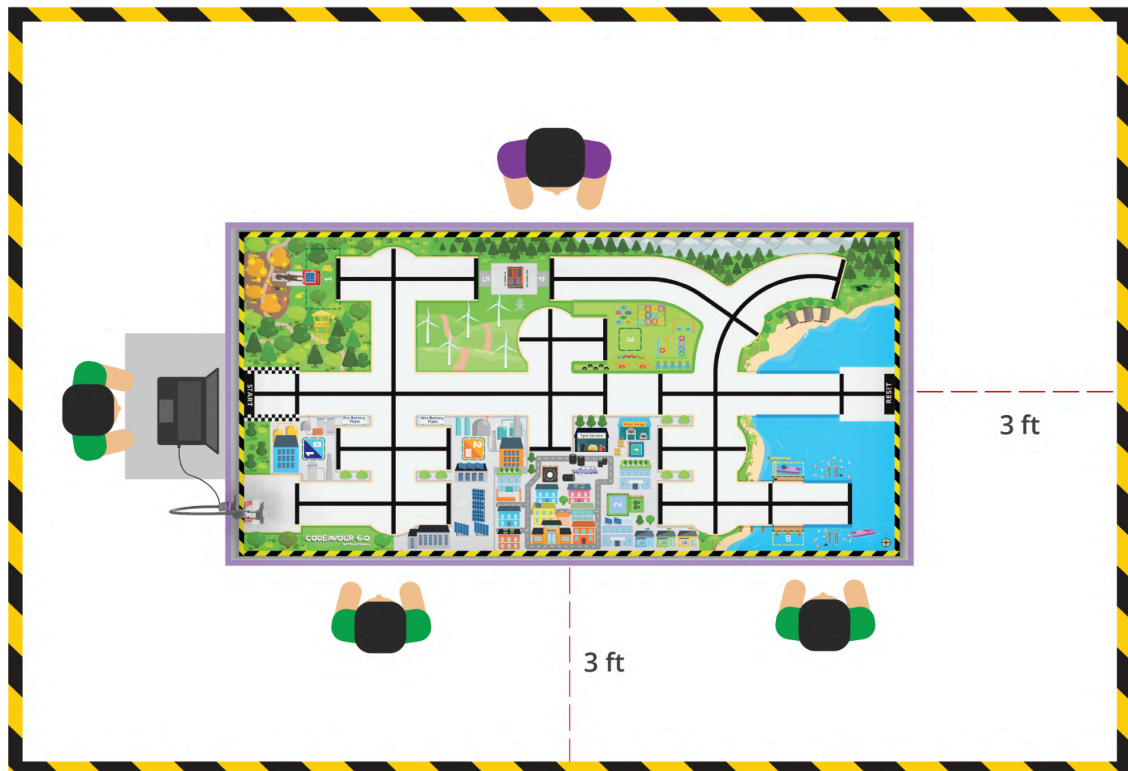


*Wall assembly on-floor arena:*



### 1.4 Pit area marking

1. Apply **Black and Yellow tape** around the arena leaving exactly **3 feet** from each side.

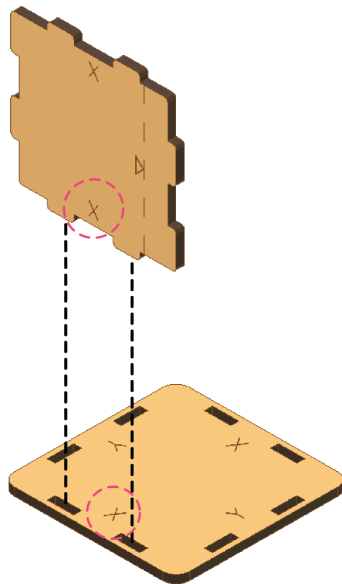




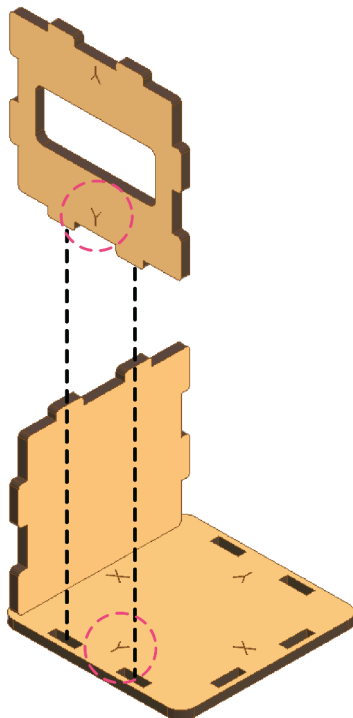
## 2. Arena Objects Assembly

### 2.1 Cube Assembly

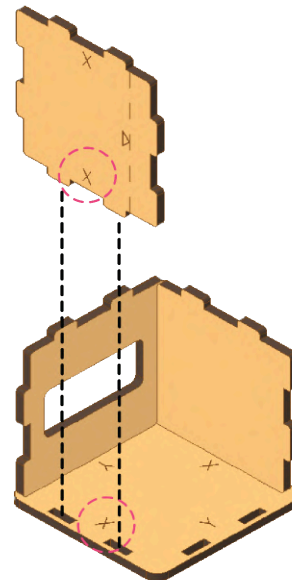
1. Attach **Cube P3** to **Cube P1** by matching the letter 'X' on both parts.



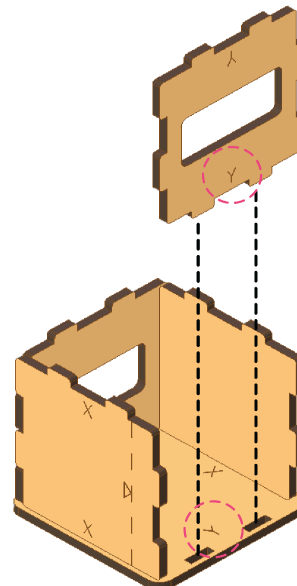
2. Attach **Cube P2** to **Cube P1** by matching the letter 'Y' on both parts.



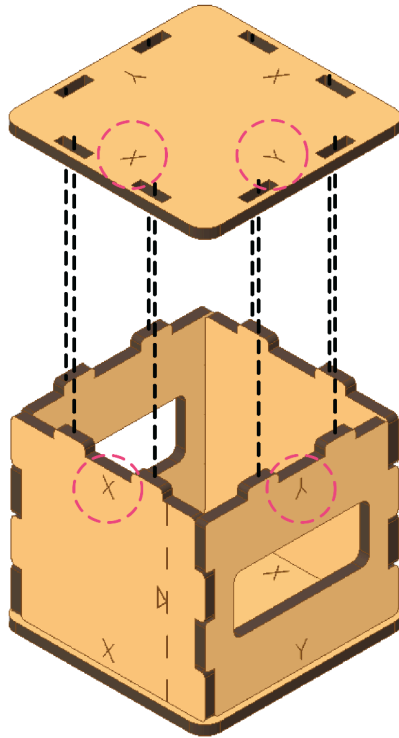
3. In the same way, attach another **Cube P2** and **Cube P3** to **Cube P1**.  
(a)



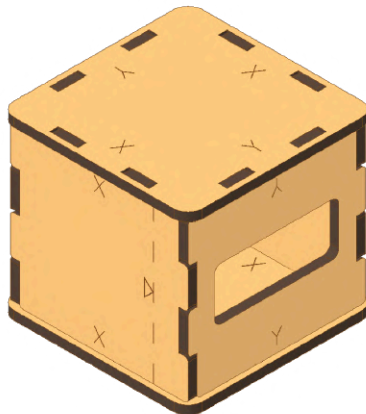
(b)



4. Attach another **Cube P1** by matching the letters 'X' and 'Y' on the part faces.

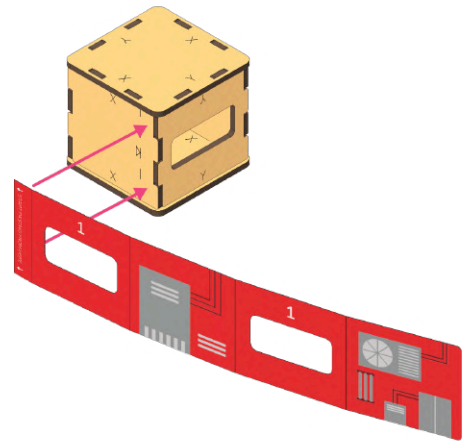


*Assembled View:*

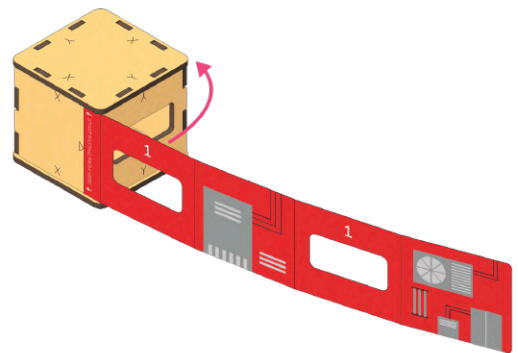


5. Start pasting the **Side Sticker** on the cube from the guides given on the face of **Cube P3** and Sticker.

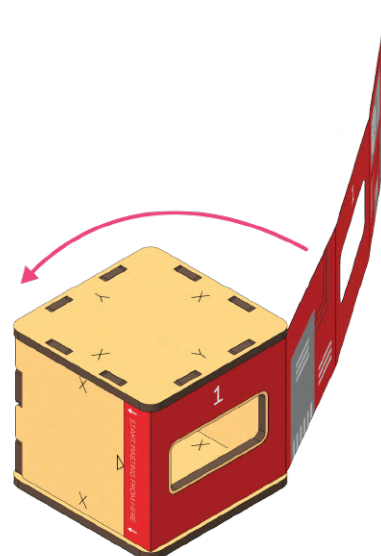
(a)



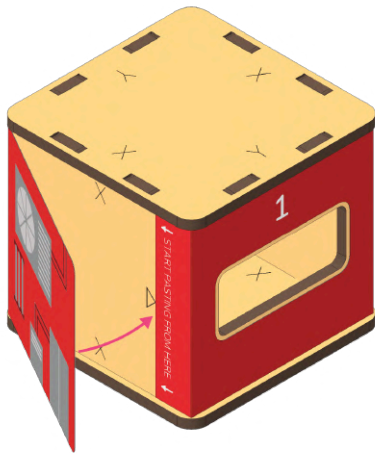
(b)



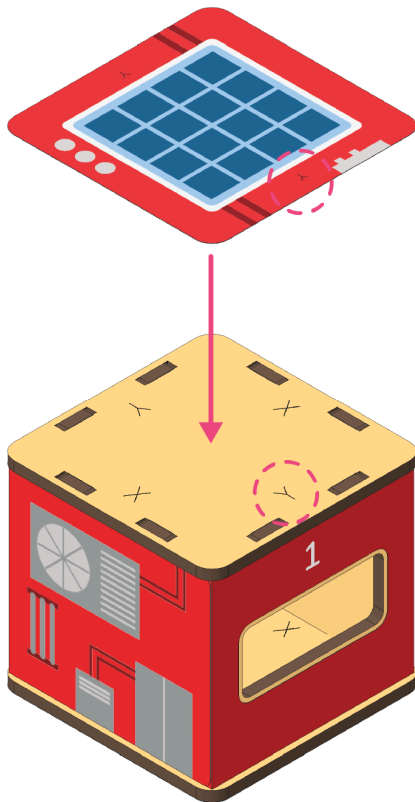
(c)



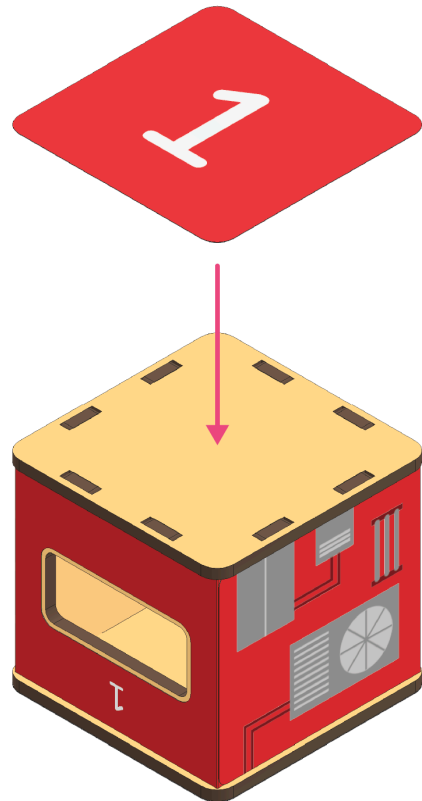
(d)



6. Apply the **Top Sticker** on the top side of the cube by matching the letter 'Y' on the Top Sticker and the cube.



7. Apply the **Bottom Sticker** on the bottom side of the cube.



8. In the same way, assemble all 8 cubes.



1. Charging Dock



2. Roof Garden



3. Used Tyres



4. Used EV Battery



5. Expired Wet Battery



6. Expired Dry Battery



7. Waste Bin 1



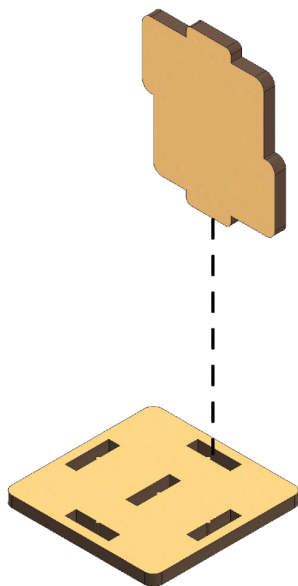
8. Waste Bin 2



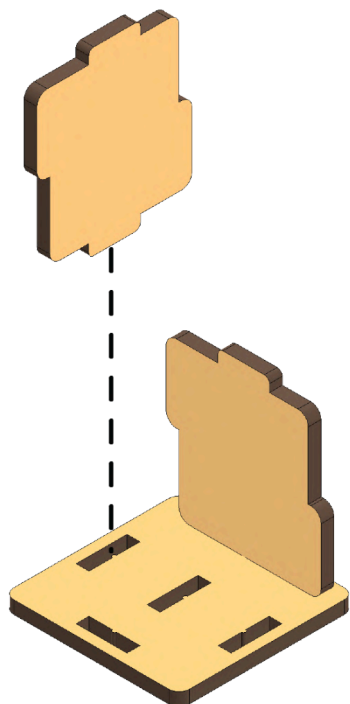
## 2.2 Plastic Waste Cube Assembly

1. Attach four **Small Cube P2** on top of the **Small Cube P1** one by one as shown.

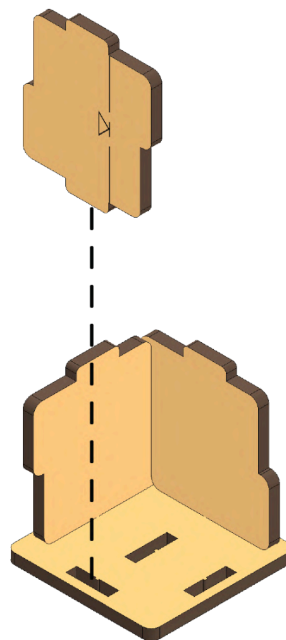
(a)



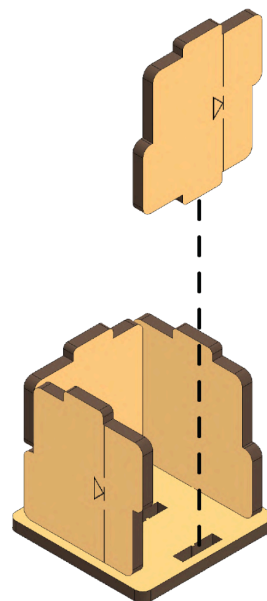
(b)



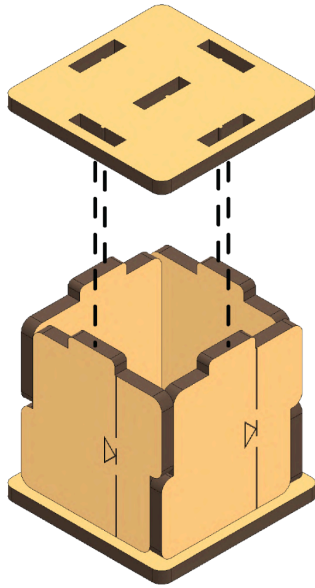
(c)



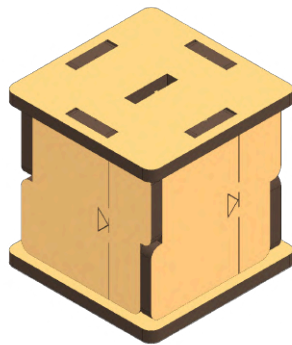
(d)



2. Attach another **Small Cube P1** to the part faces.

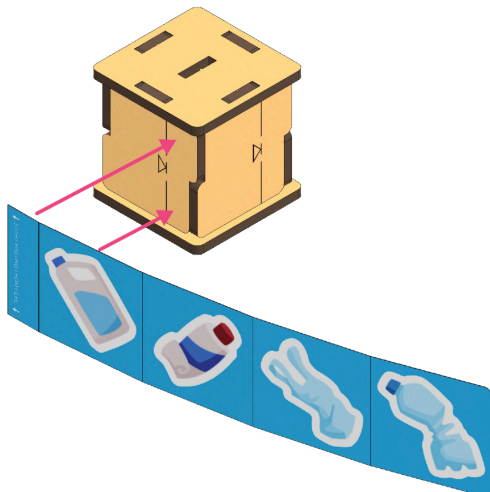


*Assembled View:*

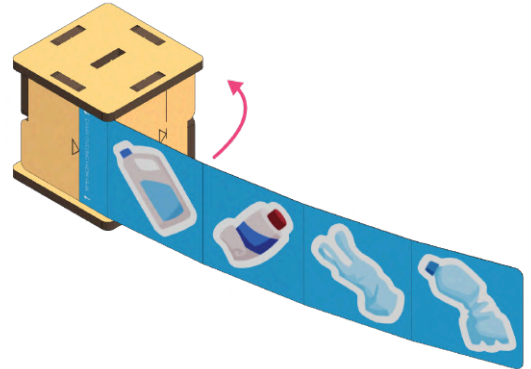


3. Start pasting the **Side Sticker** on the cube from the guides given on the face of **Cube P3** and Sticker.

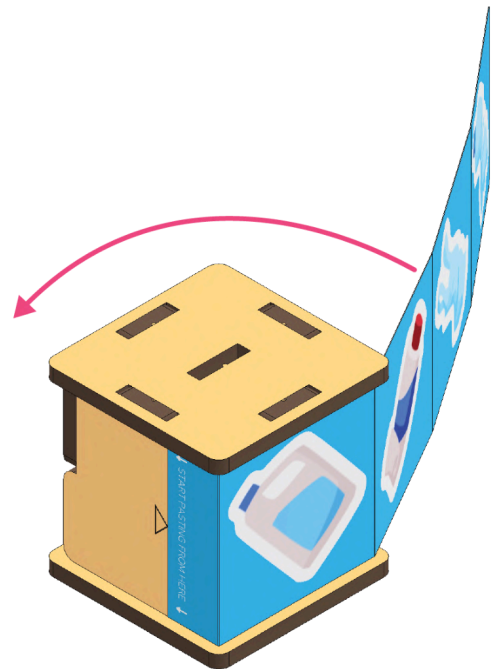
(a)



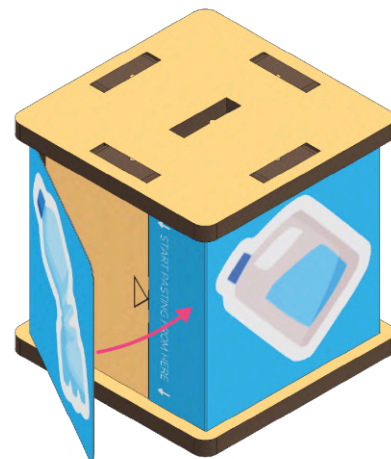
(b)



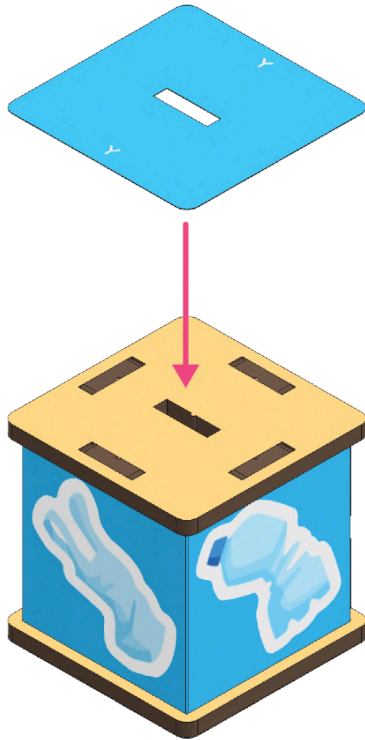
(c)



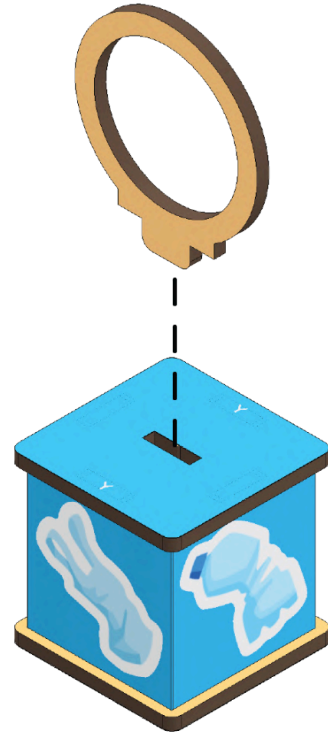
(d)



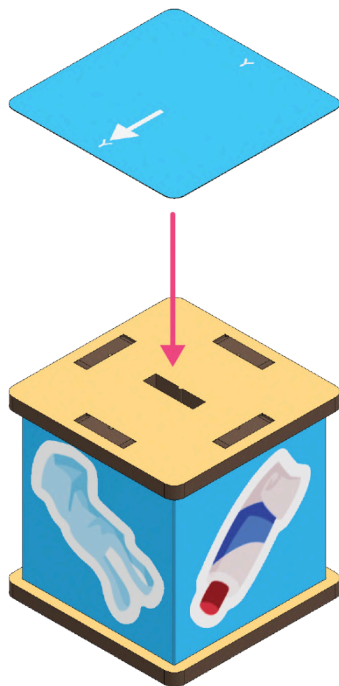
4. Apply the **Top Sticker** on the top side of the cube by matching the centre slot on the Top Sticker and the cube.



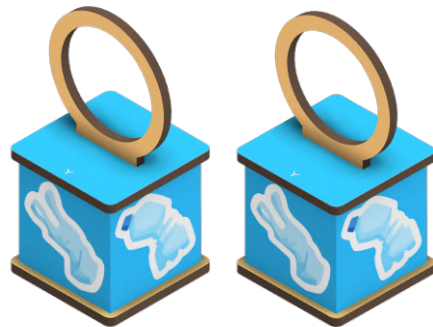
6. Secure the **Hook** to the **Small Cube P1** at the top of the Plastic Waste Cube Assembly.



5. Apply the **Bottom Sticker** on the bottom side of the cube by matching the letter 'Y' of the top sticker.



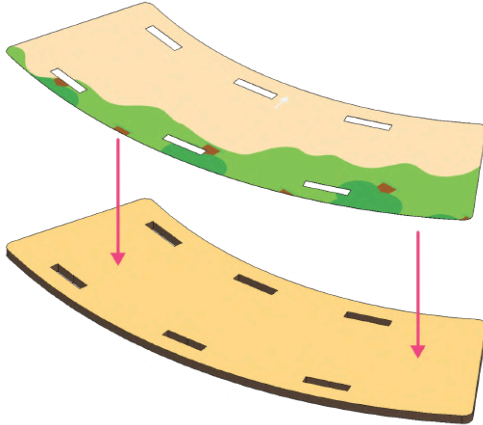
7. Plastic Waste Cube is complete. Now, repeat steps 1 to 6 and assemble one more Plastic Waste Cube.



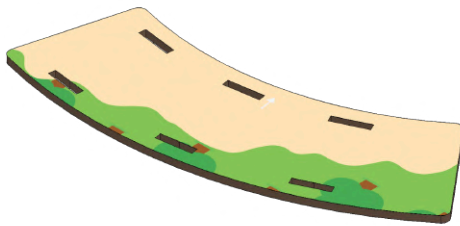
### 2.3 Object (A)

#### Coastal Barrier Assembly

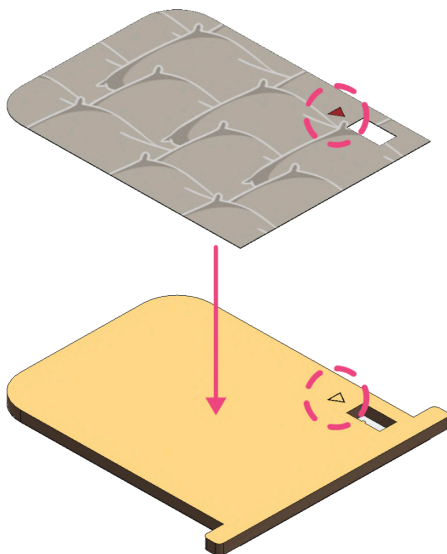
1. Apply the sticker from the sticker sheet **S1** on top of the **(A) Coastal Barrier Base** as shown below.



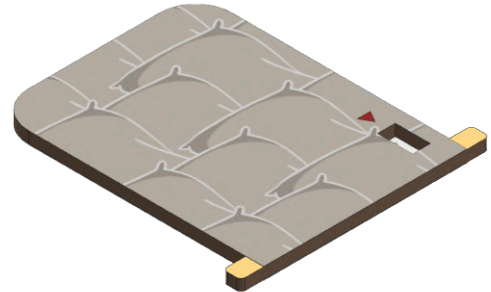
*Assembled View:*



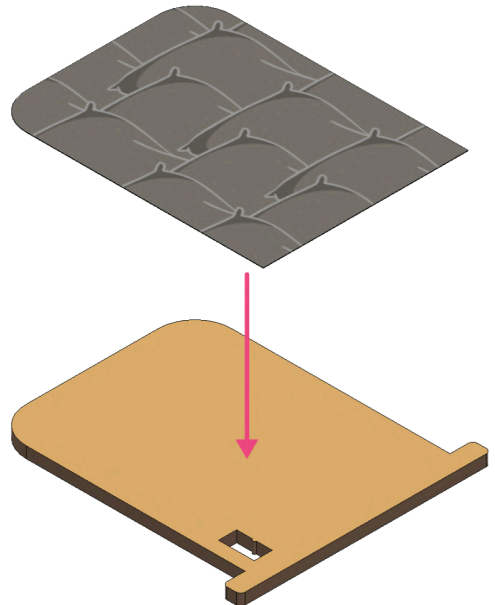
2. Apply the sticker from sheet **S2** onto the **(A) Coastal Barrier Bag**, ensuring the triangle marks on both are positioned to overlap.



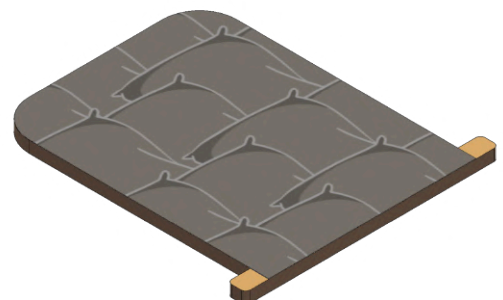
*Assembled View:*



3. Apply the sticker from the sticker sheet **S3** on the other side of the same **(A) Coastal Barrier Bag** as shown below.

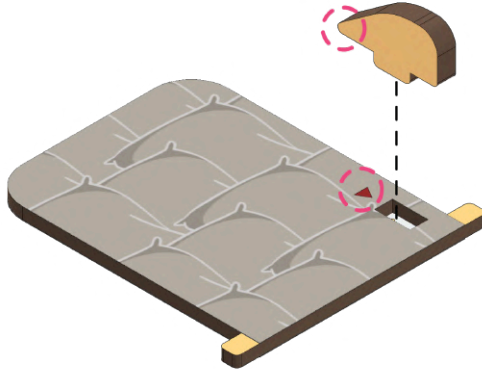


*Assembled View:*

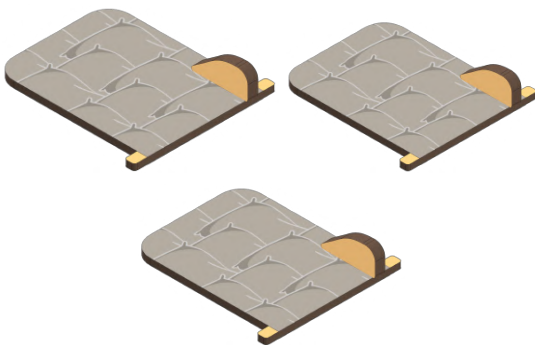




4. Attach the **(A) Coastal Barrier Bag Stand** to the **(A) Coastal Barrier Bag** from the marked side, ensuring that the pointed side faces the triangular mark.

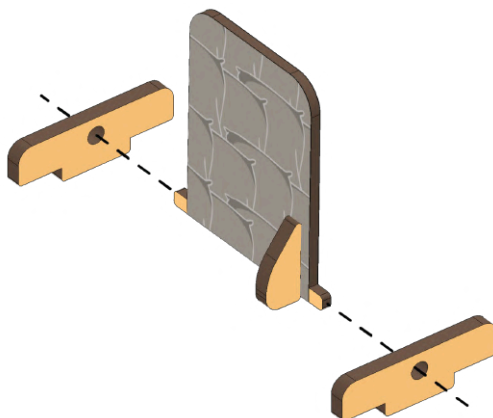


5. Follow steps 2 to 4 and make two more Coastal Barrier Bag Assemblies.



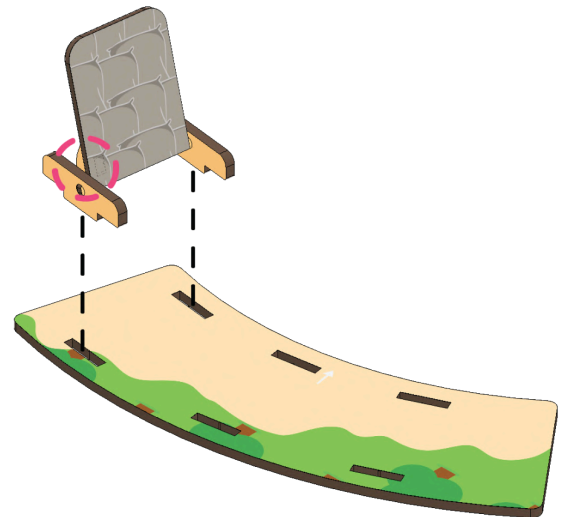
6. Attach the Coastal Barrier Bag Assembly to the **(A) Coastal Barrier Base** using two **(A) Coastal Barrier Knuckles**, as shown below.

(a)



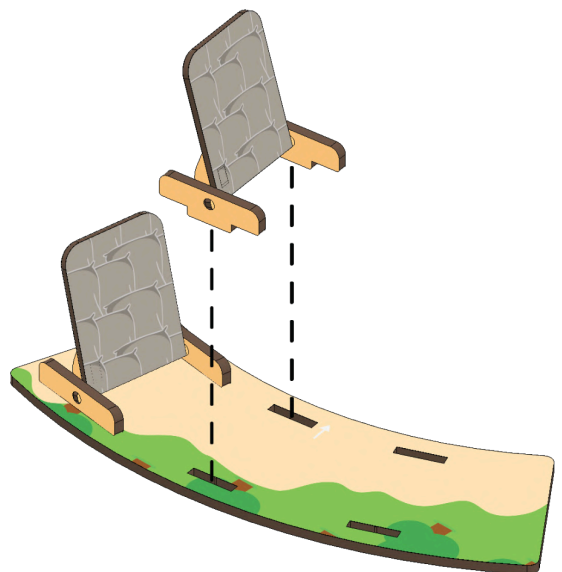
Note: Ensure that the **(A) Coastal Barrier Bag Stand** is oriented correctly, as shown in the illustration below.

(b)

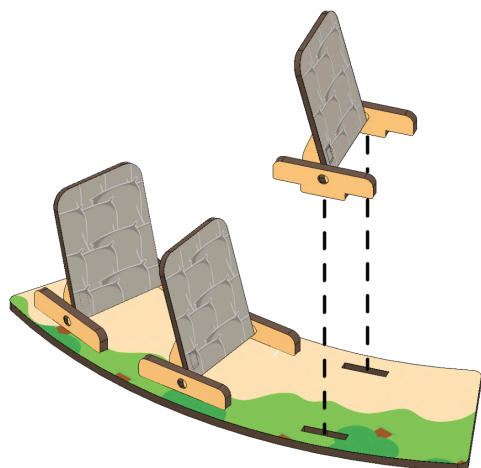


7. Similarly, attach the other two Coastal Barrier Bag Assemblies to the **(A) Coastal Barrier Base**, ensuring they are oriented correctly as illustrated below.

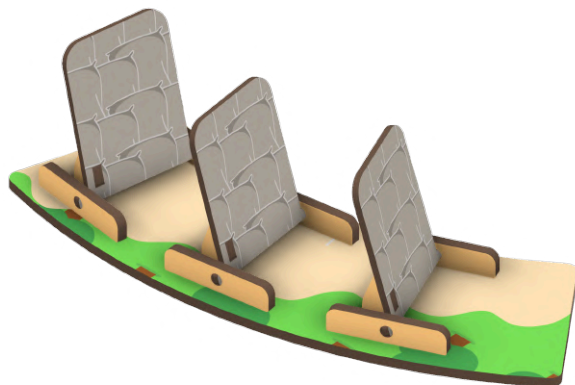
(a)



(b)

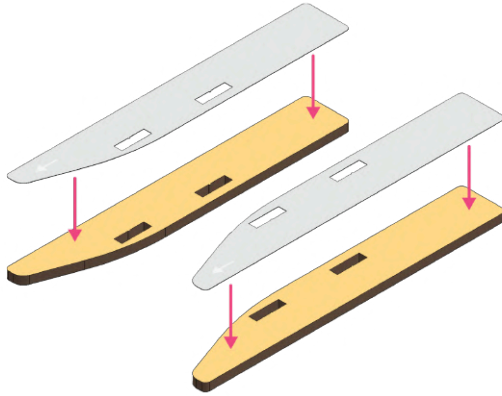


*Complete:*

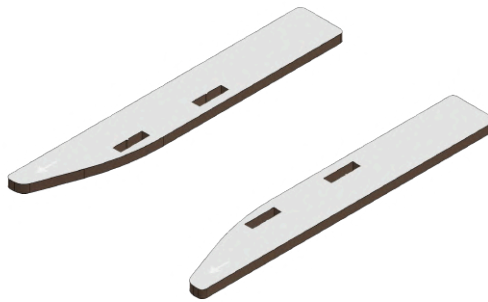


## 2.4 Object (B) Sub Station Assembly

1. Apply the sticker from the sticker sheet **S4** on top of both the **(B) Base** as shown below.

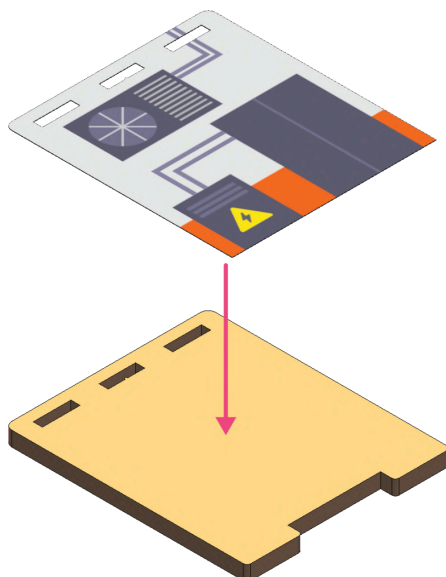


*Assembled View:*

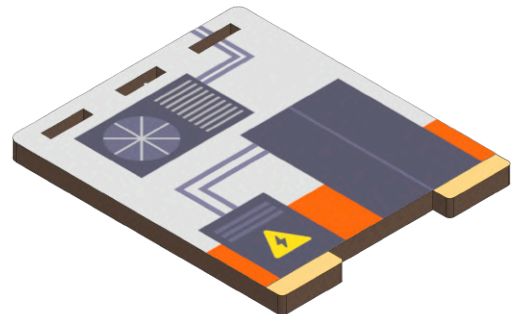


2. Apply the sticker from sticker sheet **S5** on both the **(B) Walls**.

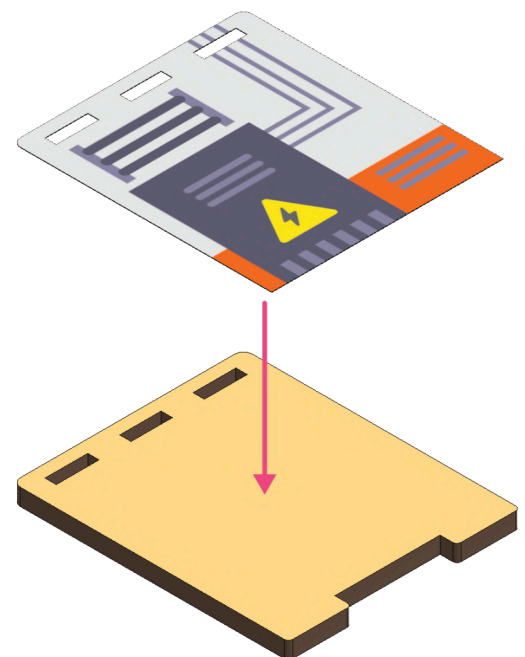
**(B) Wall - 1:**



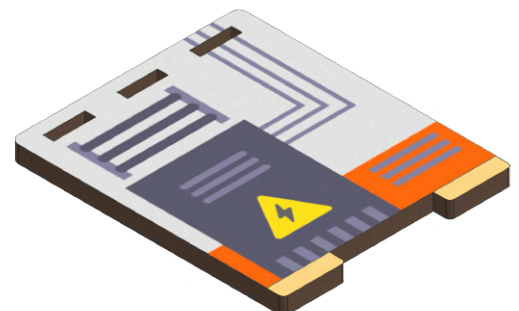
*Assembled View:*



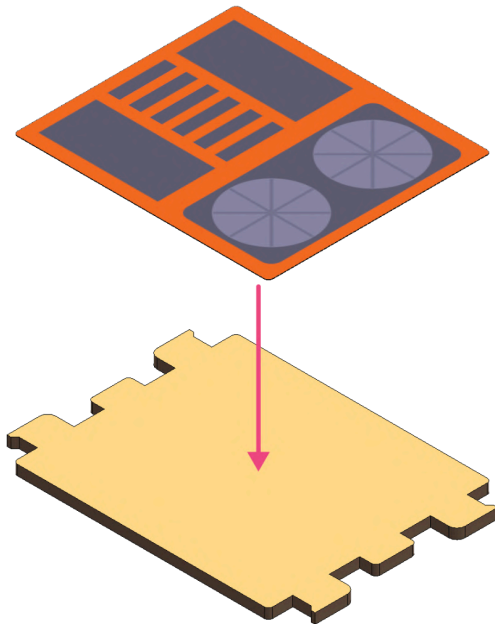
**(B) Wall - 2:**



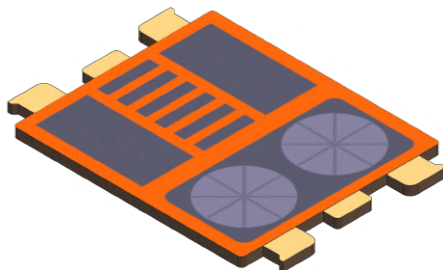
*Assembled View:*



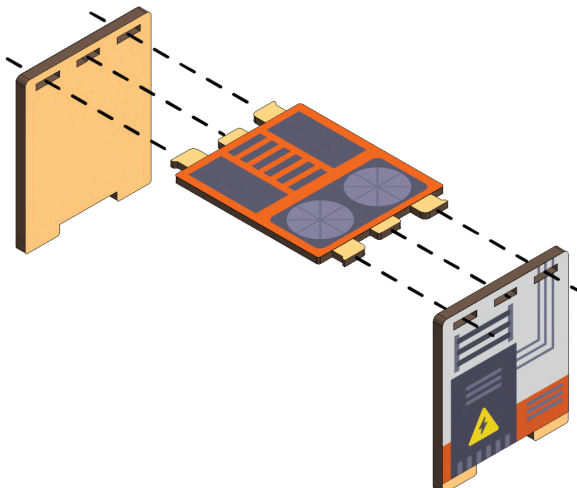
3. Apply the sticker from the sticker sheet **S6** on top of **(B) Top** as shown below.



*Assembled View:*

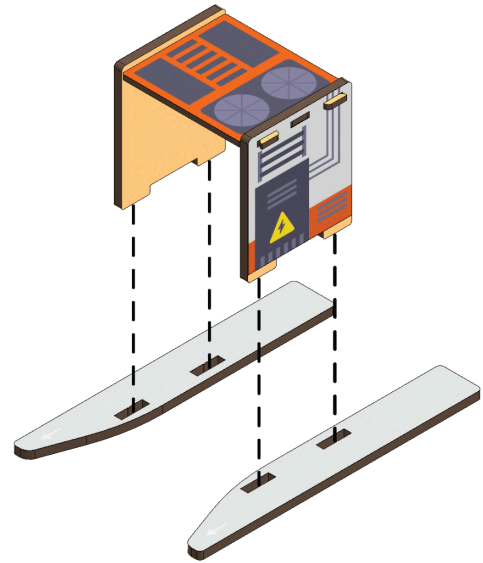


4. Now, attach both the **(B) Walls** to the **(B) Top**.

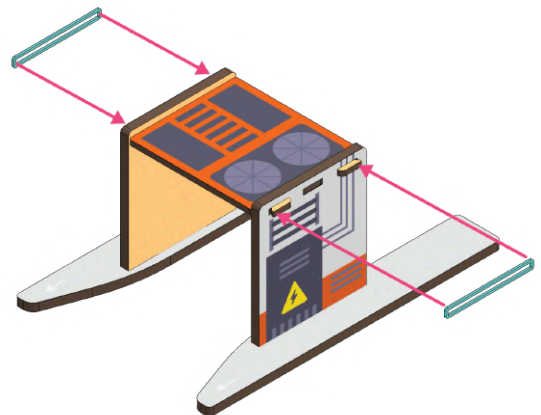


5. Attach the assembly on **(B) Base**.

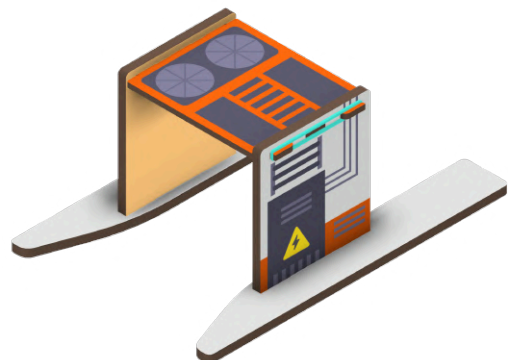
(a)



6. Now secure the **(B) Top** to the **(B) Walls** using a couple of **Rubber Bands**.



*Complete:*

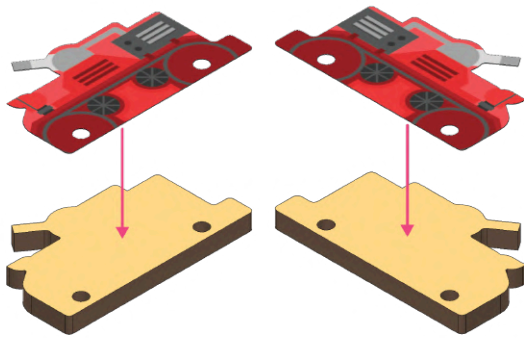




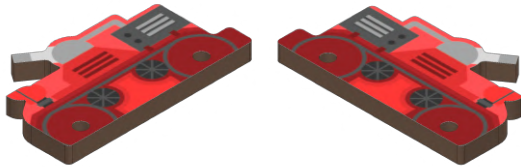
## 2.5 Object (C)

### Fire Safety Robot Launch Pad Assembly

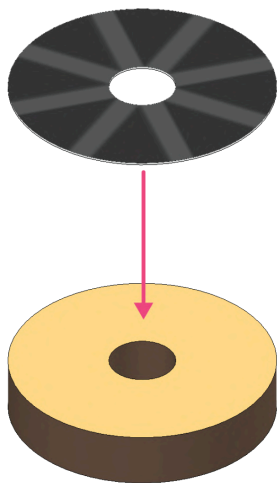
1. Apply stickers from the sticker sheet **S8** on both the **(C) Fire Safety Robot** parts as shown below.



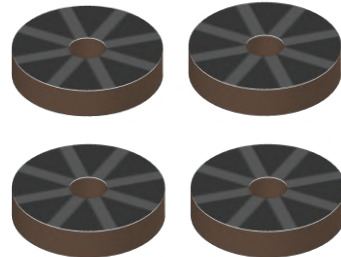
Assembled View:



2. Apply stickers from the sticker sheet **S8** onto the four **(C) Wheels** as shown below.

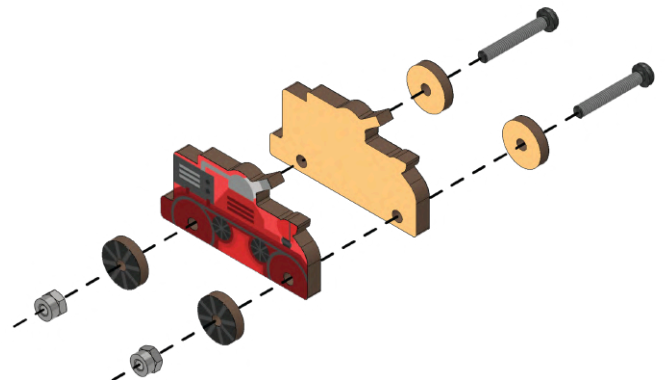


Assembled View:



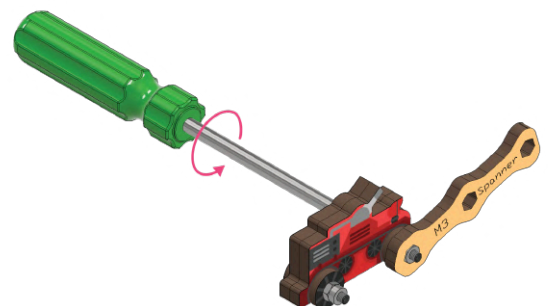
3. Now, attach both **(C) Fire Safety Robot**, ensuring the stickered sides are facing outward. Secure them along with the four **(C) Wheels** using **M3 Bolts (20mm)** and **M3 Lock Nuts**, tightening them with an **M3 Spanner**, as shown below.

(a)

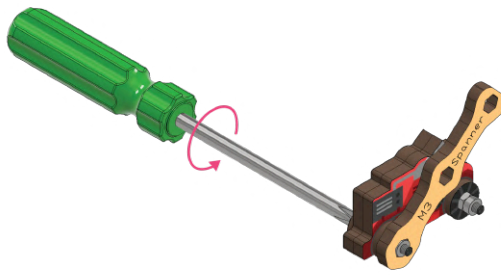


*Note: Keep the M3 Lock Nuts slightly loose to ensure good mechanism operation.*

(b)



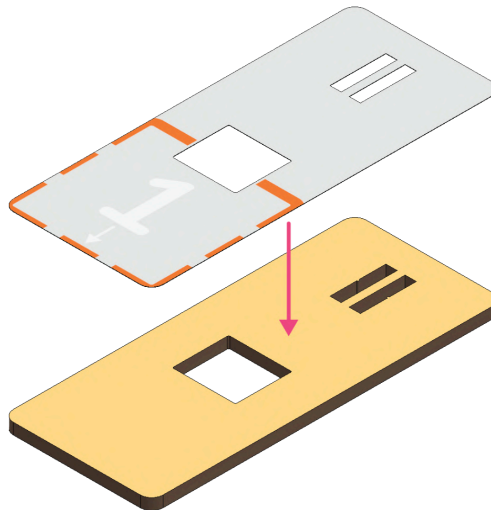
(c)



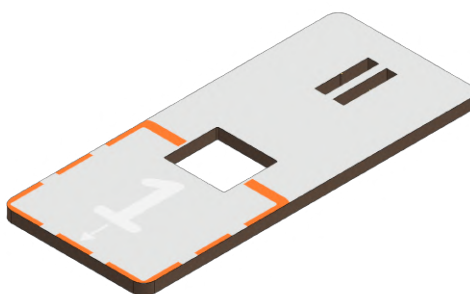
Complete:



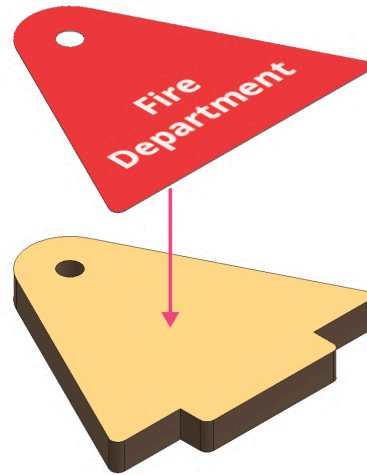
4. Apply stickers from the sticker sheet **S7** on the **(C) Base**.



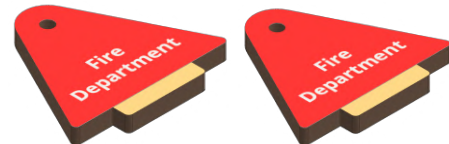
Assembled View:



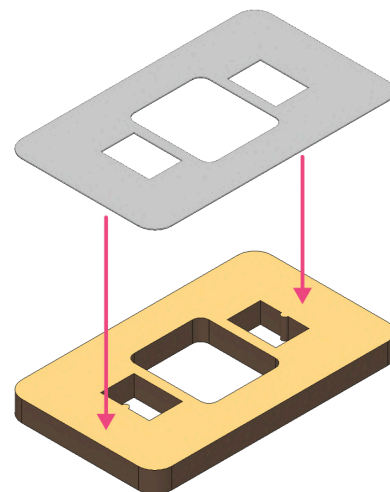
5. Apply stickers from the sticker sheet **S8** on both the **(C) Fulcrum** parts as shown below.



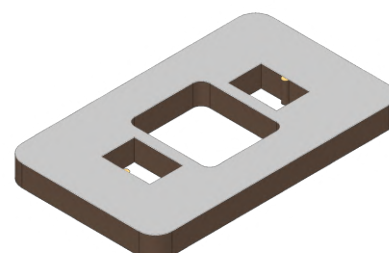
Assembled View:



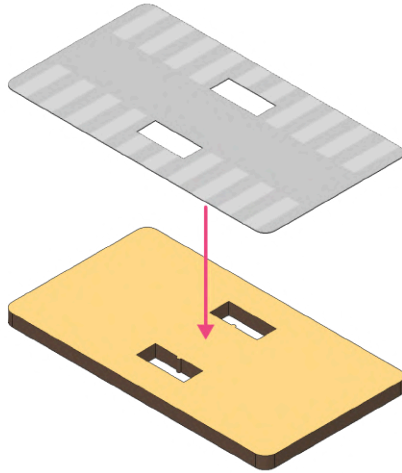
6. Apply stickers from the sticker sheet **S8** on the **(C) Doc Plate 1**.



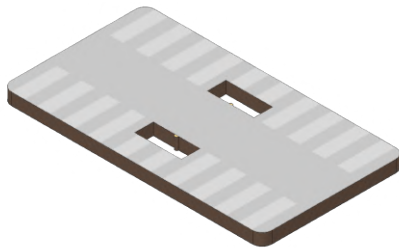
Assembled View:



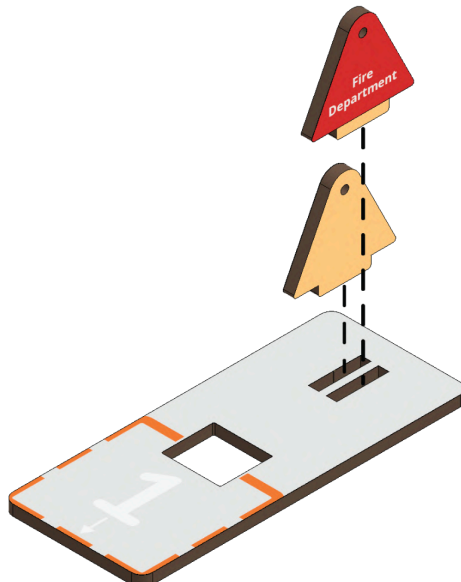
7. Apply stickers from the sticker sheet **S8** on the **(C) Doc Plate 2**.



Assembled View:



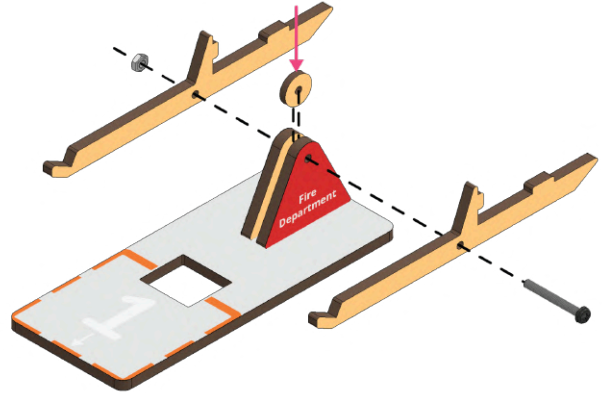
8. Now, attach both the **(C) Fulcrum** to the **(C) Base**, ensuring the stickered side faces outward.



9. Attach both **(C) Beams** to the **(C) Fulcrums**, positioning the **(C) Wheel** between the **(C) Fulcrums**. Secure everything using **M3 Bolts**

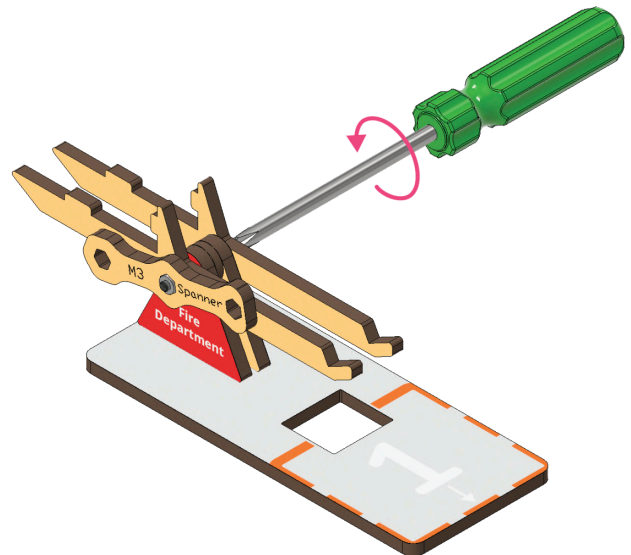
**(25mm)** and **M3 Lock Nuts**, tightening them with an **M3 Spanner** and **Screw Driver**.

(a)

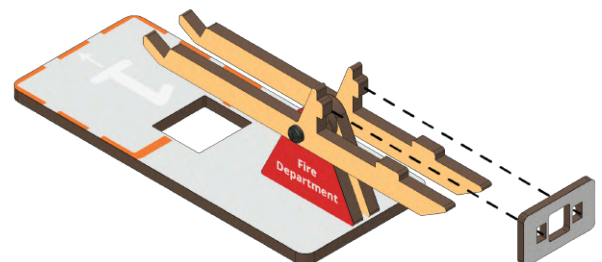


Note: Keep the M3 Lock Nuts slightly loose to ensure good mechanism operation.

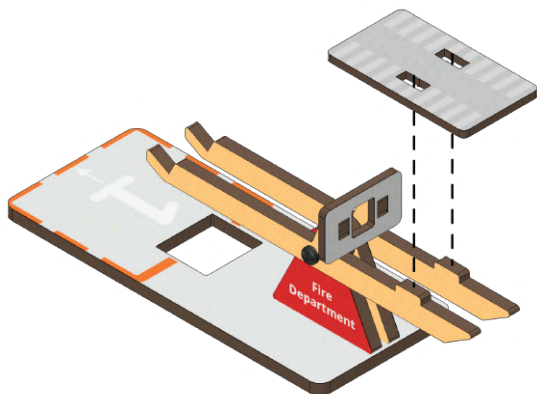
(b)



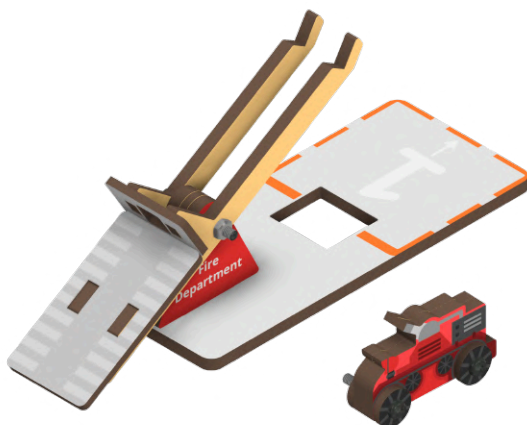
10. Attach the **(C) Dock Plate 1** to the **(C) Beams**.



11. Attach the **(C) Dock Plate 2** to the **(C) Beams**.



Complete:

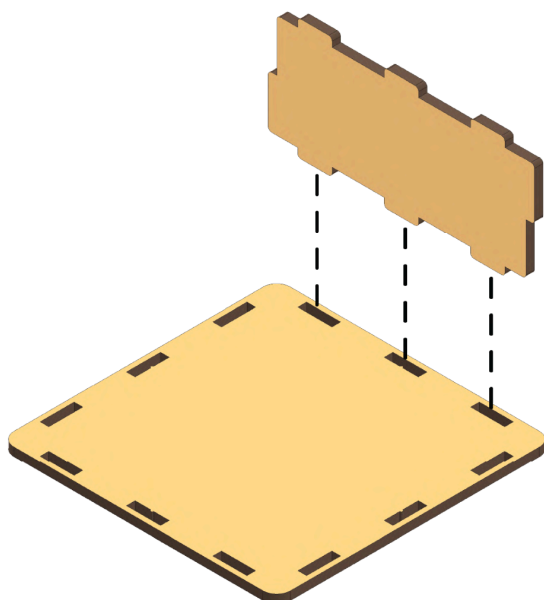


## 2.6 Object (D)

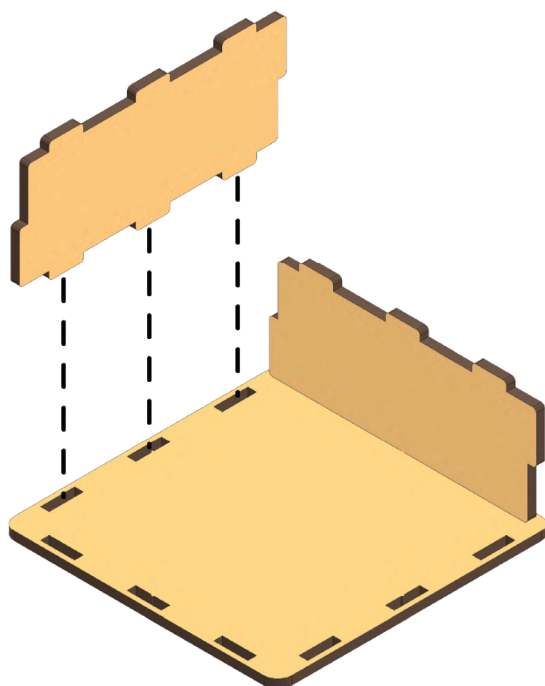
### Building Assembly

1. Attach four **(D) Building P2** on top of the **(D) Building P1** one by one as shown.

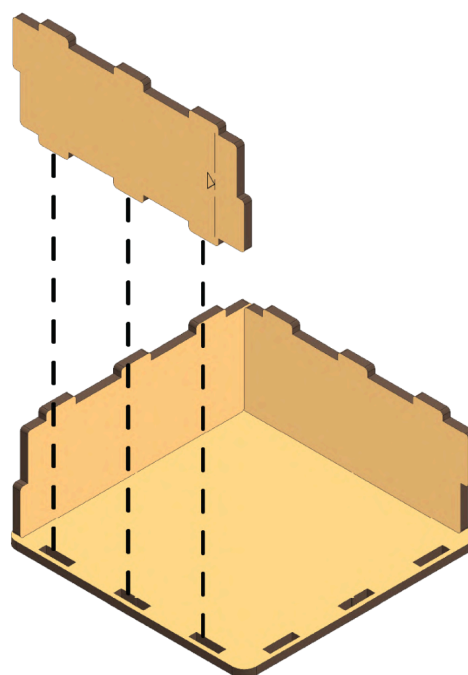
(a)



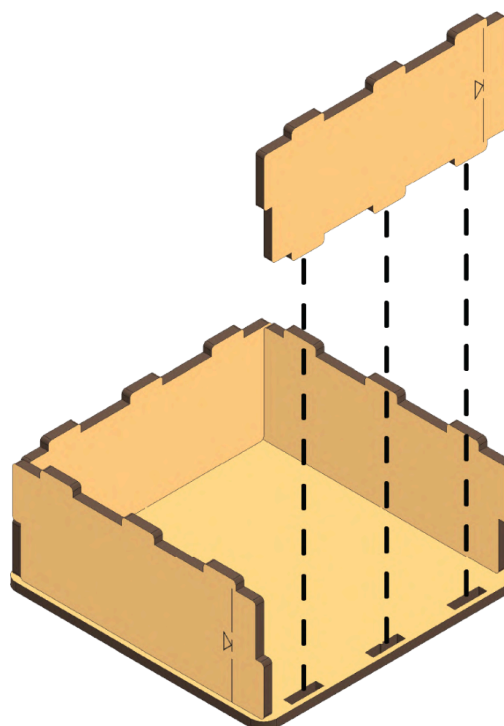
(b)



(c)

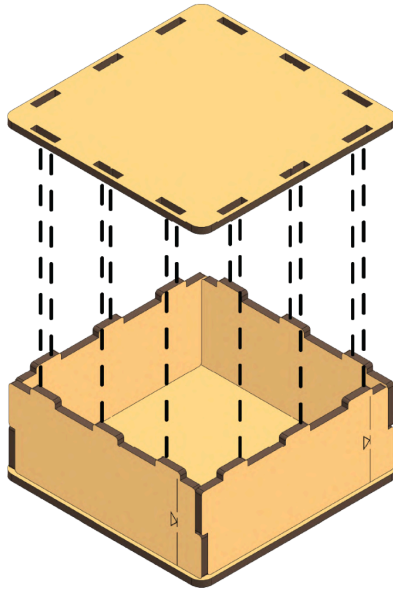


(d)

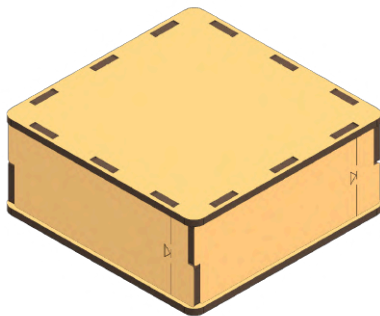




2. Attach another **(D) Building P1** on the part faces.

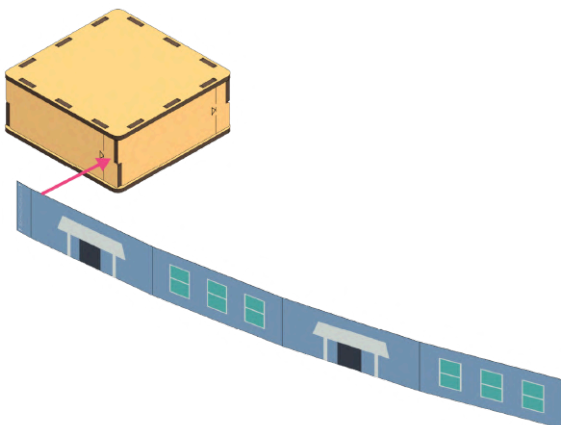


*Assembled View:*

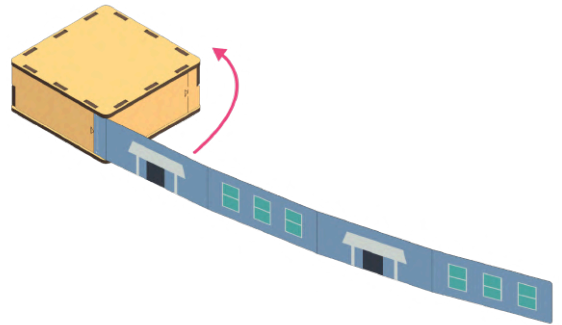


3. Start pasting the **(D) Side Sticker** on the assembly from the guides given on the face of **(D) Building P2** and Sticker.

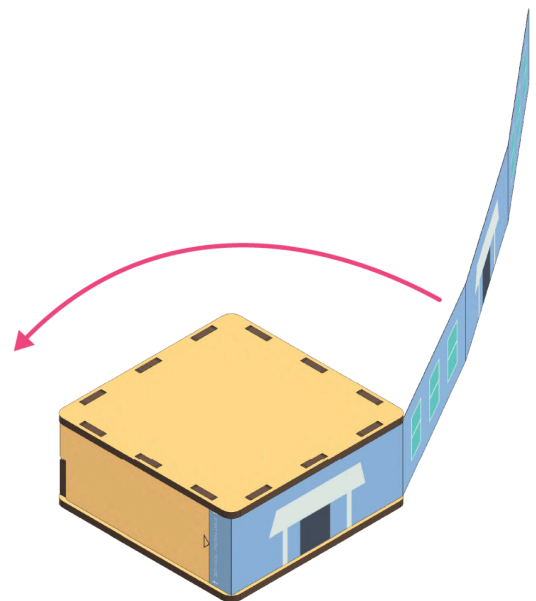
(a)



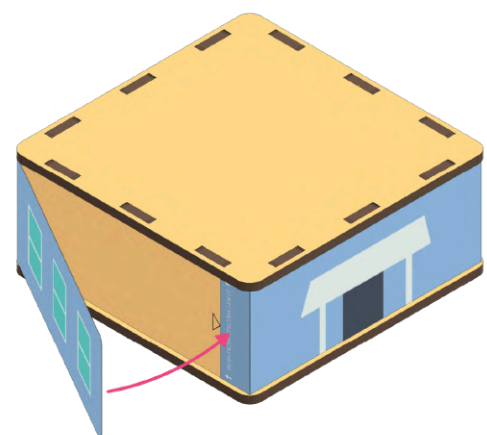
(b)



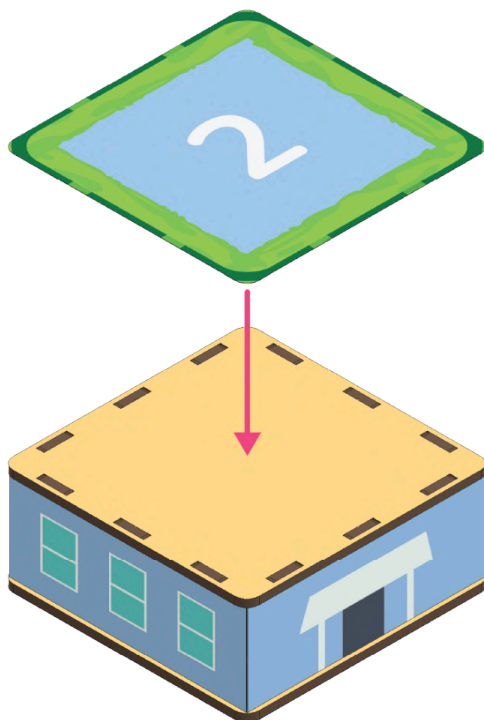
(c)



(d)



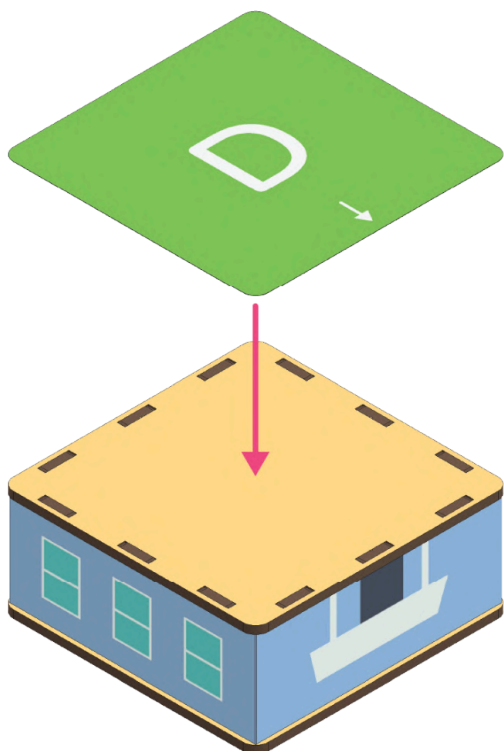
4. Apply the **Top Sticker** on the top side of the assembly.



Complete:



5. Apply the **Bottom Sticker** on the bottom side of the assembly as shown below.

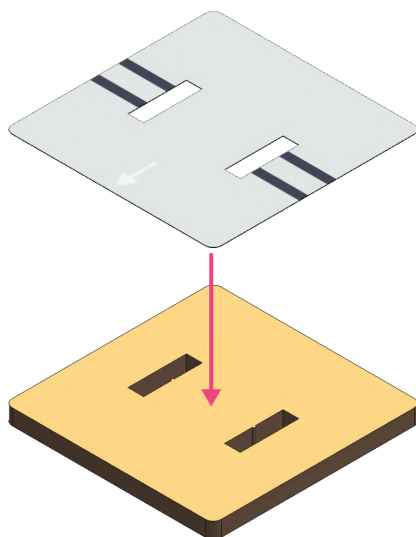


## 2.7 Object (E)

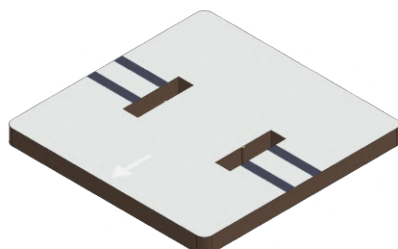
### Solar Panel Assembly

1. Apply stickers from the sticker sheet **S6** on both the **(E) Base** parts as shown below.

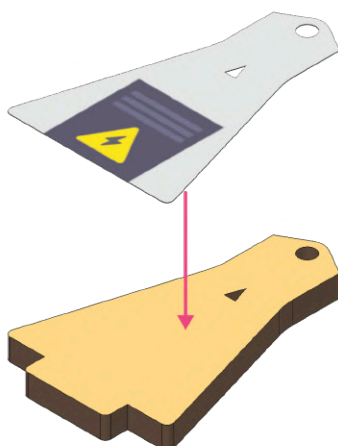
(a)



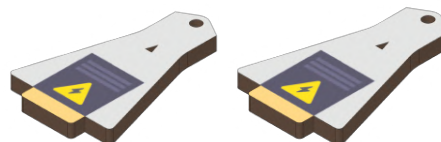
*Assembled View:*



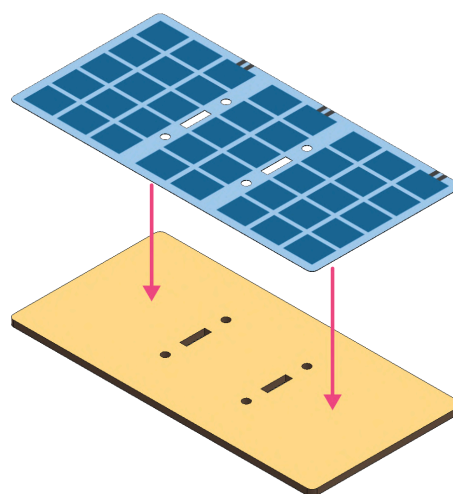
2. Apply the sticker from sticker sheet **S9** on both the **(E) Solar Panel Legs**.



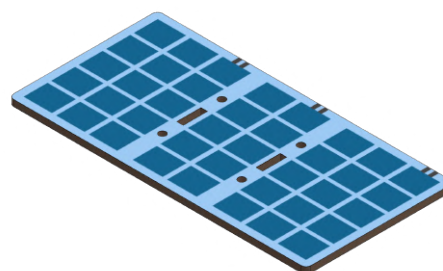
*Assembled View:*



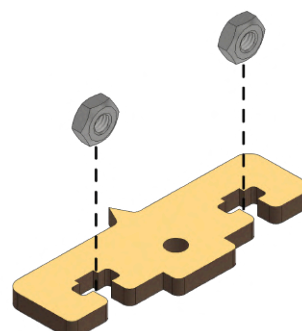
3. Apply stickers from the sticker sheet **S9** on both the **(E) Solar Panel** parts as shown below.



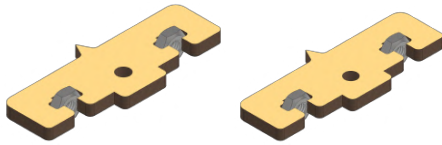
*Assembled View:*



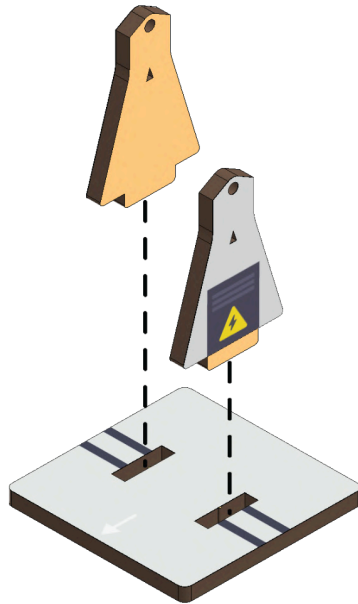
4. Insert **M3 Nuts** into the slots in both the **(E) Panel Mounts** as shown below.



Complete:

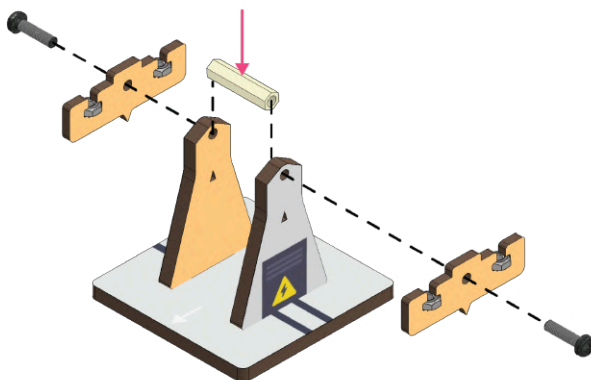


5. Attach both the **(E) Panel Legs** to the **(E) Base**, ensuring the stickered side faces outward.

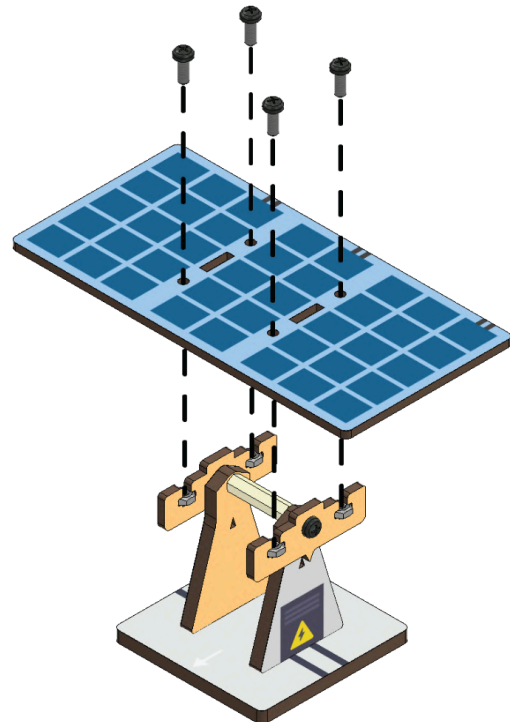


6. Attach both **(E) Panel Mounts** to the **(E) Panel Legs**, positioning the **M3 Spacer (20mm)** between the **(E) Panel Legs**. Secure everything using **M3 Bolts (12mm)**.

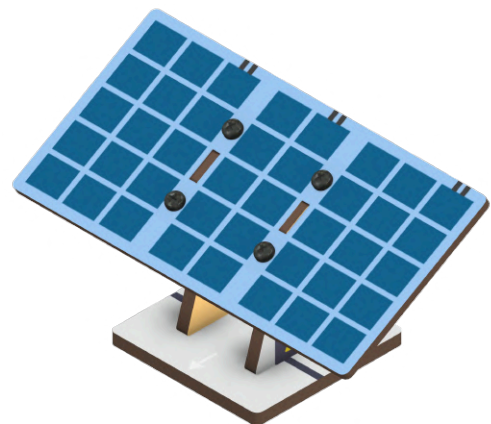
*Note:* Keep the M3 Bolts slightly loose to ensure good mechanism operation.



7. Attach the **(E) Solar Panel** to the assembly using **M3 Bolts (8mm)**.



Complete:



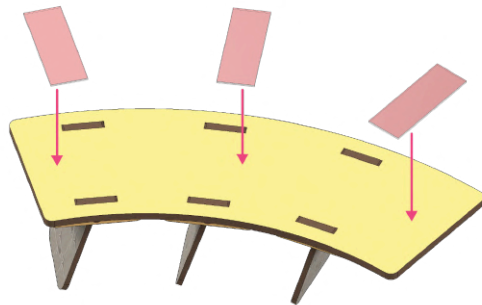


### 3. Placement of Objects on the Arena

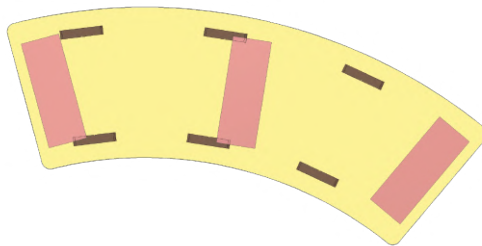
#### 3.1 Object (A)

##### Coastal Barrier Placement

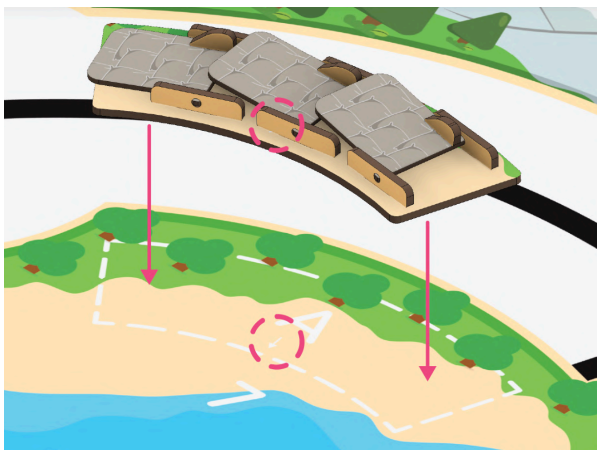
1. Cut and paste pieces of double-sided tape (about 5 cm in length) to the bottom of the Coastal Barrier Assembly as shown below.



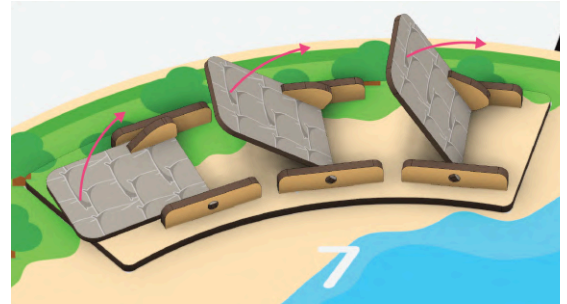
*Bottom View:*



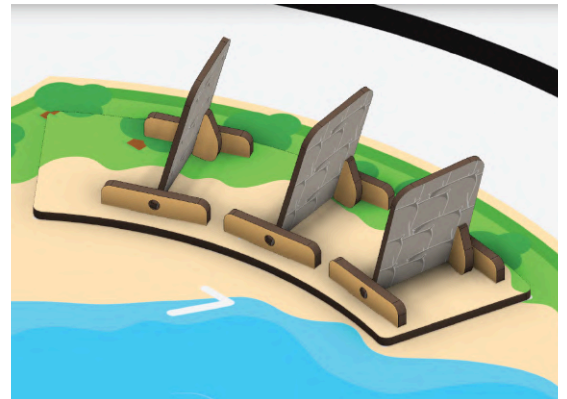
2. Peel off the cover of the double-sided tape and place the Coastal Barrier Assembly in its marked area (A), aligning it with the white guidelines and the arrow mark on both the object and the arena.



3. Prepare for Challenge 7 by picking up the **(A) Coastal Barrier Bags** vertically, as shown in the illustration below.



*Compete:*

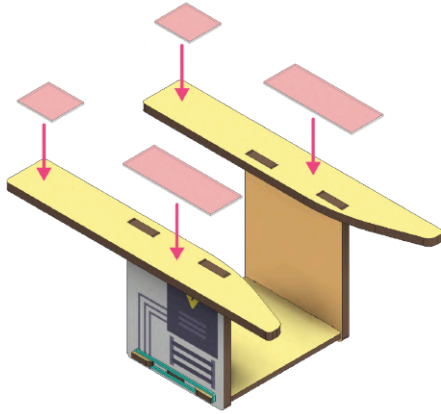




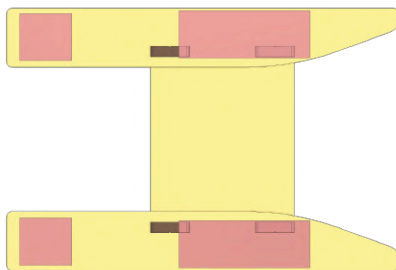
### 3.2 Object (B)

#### Sub Station Placement

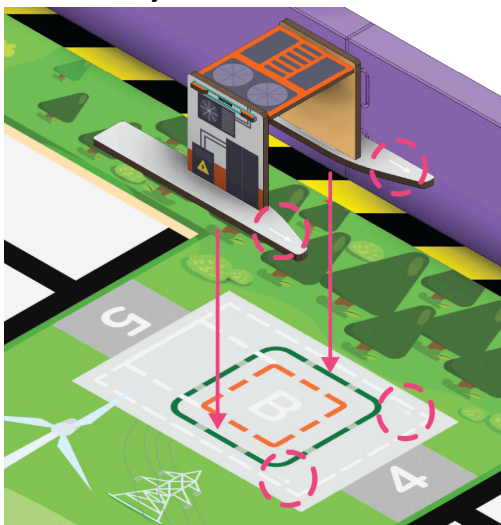
1. Cut and paste pieces of double-sided tape (about 2-5 cm in length) to the bottom of the Sub Station Assembly as shown below.



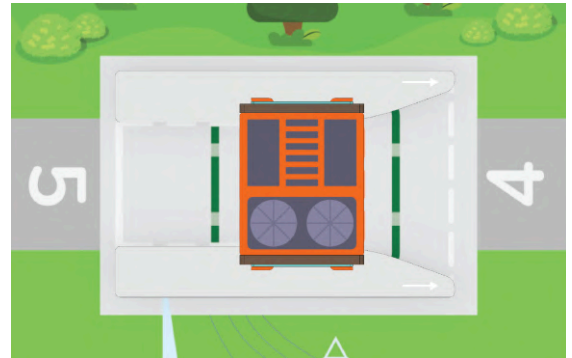
*Bottom View:*



2. Peel off the cover of the double-sided tape and place the Sub Station Assembly in its marked area (B), aligning it with the white guidelines and the arrow mark on both the object and the arena.



*Top View:*



3. Place a cube of Challenge 5 in the Sub Station Assembly at the marked pickup point, as illustrated below.

*Note: The judge may randomly select any type of no. 5 cube based on the rules and age group.*



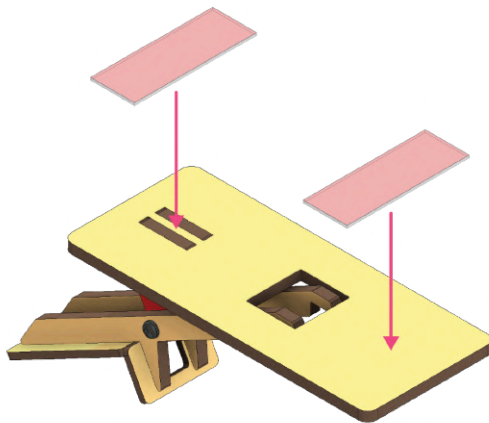
*Complete:*



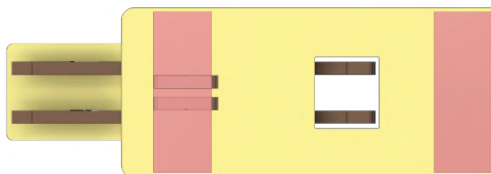
### 3.3 Object (C)

#### Fire Safety Robot Launch Pade Placement

1. Cut and paste pieces of double-sided tape (about 5 cm in length) to the bottom of the Fire Safety Robot Launch Pad Assembly as shown below.



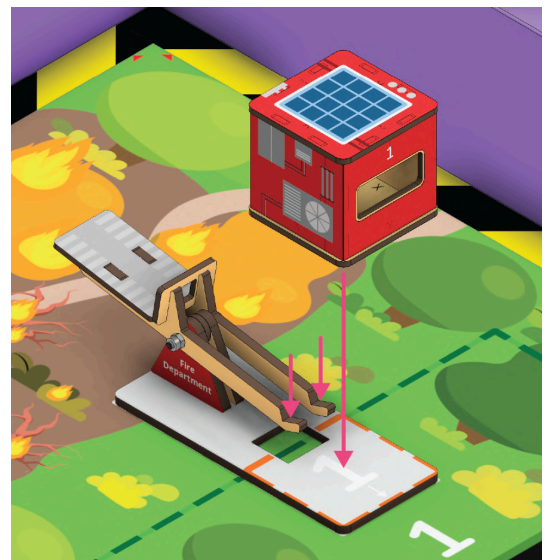
*Bottom View:*



2. Peel off the cover of the double-sided tape and place the Fire Safety Robot Launch Pade Assembly in its marked area (C), aligning it with the white guidelines and the arrow mark on both the object and the arena.



3. Place a **Charging Dock** cube of Challenge 1 on the Fire Safety Robot Launch Pad Assembly at the marked pickup point, ensuring the **(C) Beams** are engaged as illustrated below.



4. Place an assembled **Fire Safety Robot** on the Fire Safety Robot Launch Pad as shown below.



*Complete:*

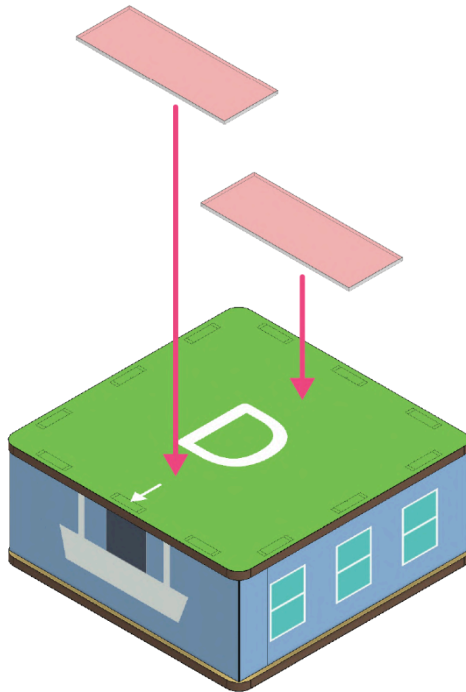




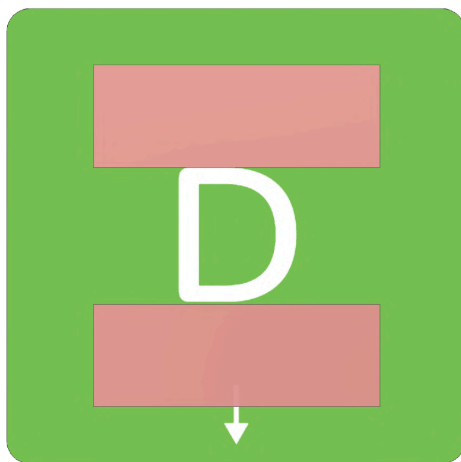
### 3.4 Object (D)

#### Building Placement

1. Cut and paste pieces of double-sided tape (about 5 cm in length) to the bottom of the Building Assembly as shown below.



*Bottom View:*



2. Peel off the cover of the double-sided tape and place the Building Assembly in its marked area (D), aligning it with the white guidelines and the arrow mark on

both the object and the arena.



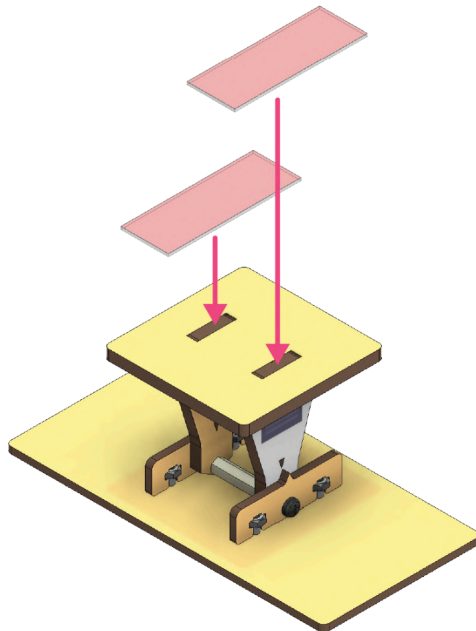
*Complete:*



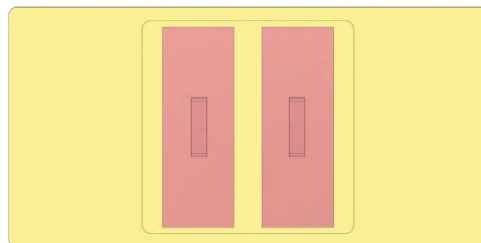
### 3.5 Object (E)

#### Solar Panel Placement

1. Cut and paste pieces of double-sided tape (about 5 cm in length) to the bottom of the Solar Panel Assembly as shown below.

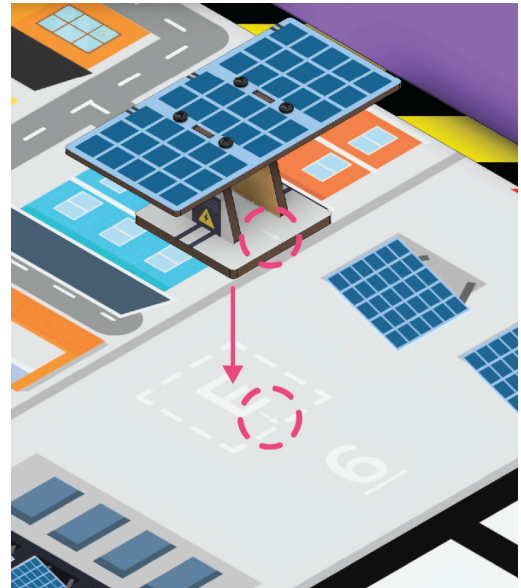


*Bottom View:*



2. Peel off the cover of the double-sided tape and place the Solar Panel Assembly in its marked area (E), aligning it with the white guidelines and the arrow mark on

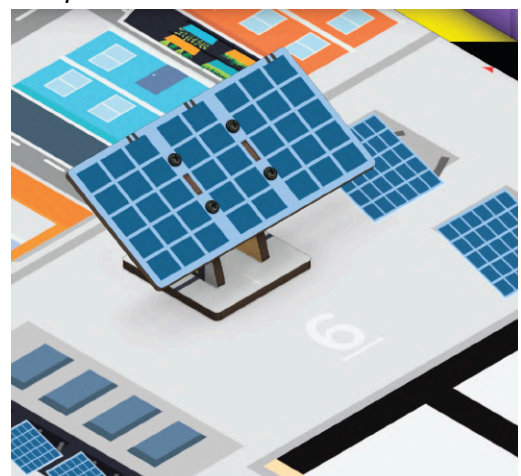
both the object and the arena.



3. Tilt the Solar Panel towards the East, according to the given direction in the bottom right corner of the arena.



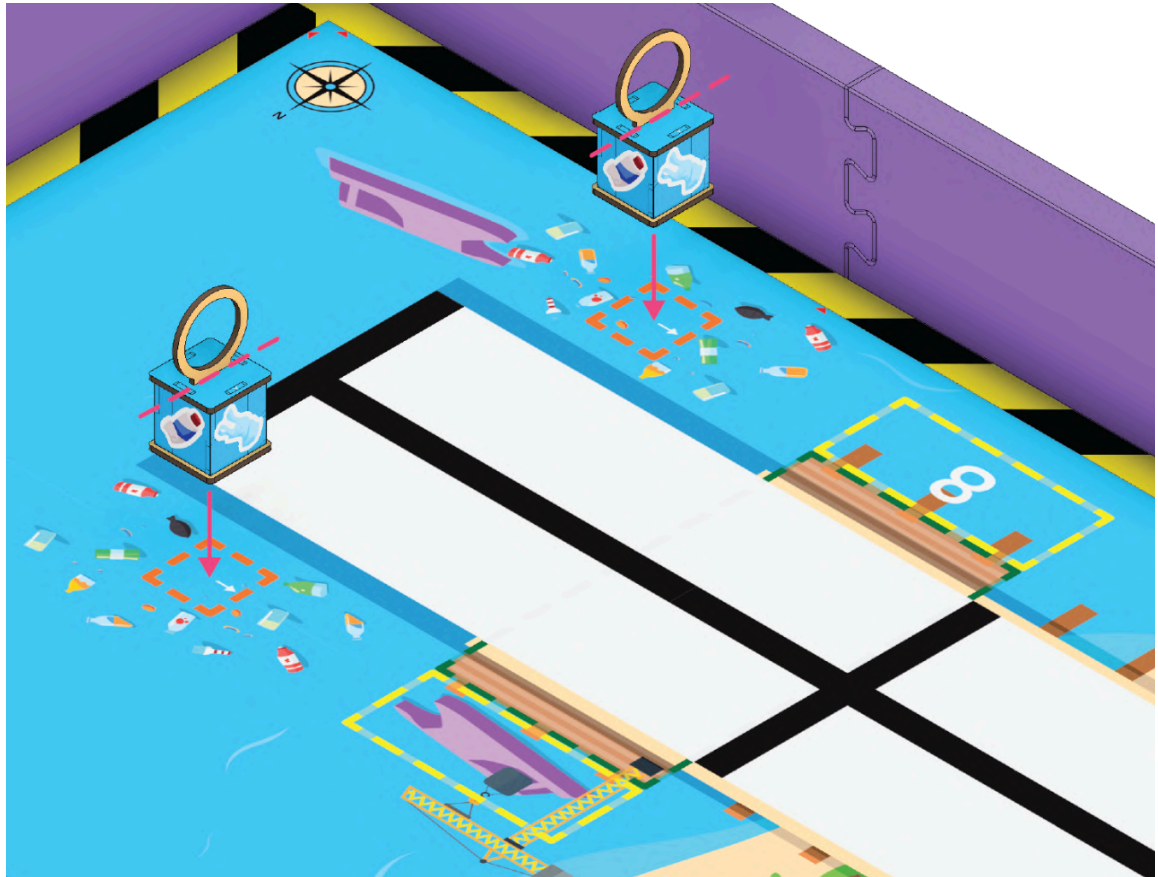
*Complete:*





### 3.6 Plastic Waste Cubes Placement

1. Place a Plastic Waste Cubes at its marked Pick-up Point keeping the hook direction as shown below.



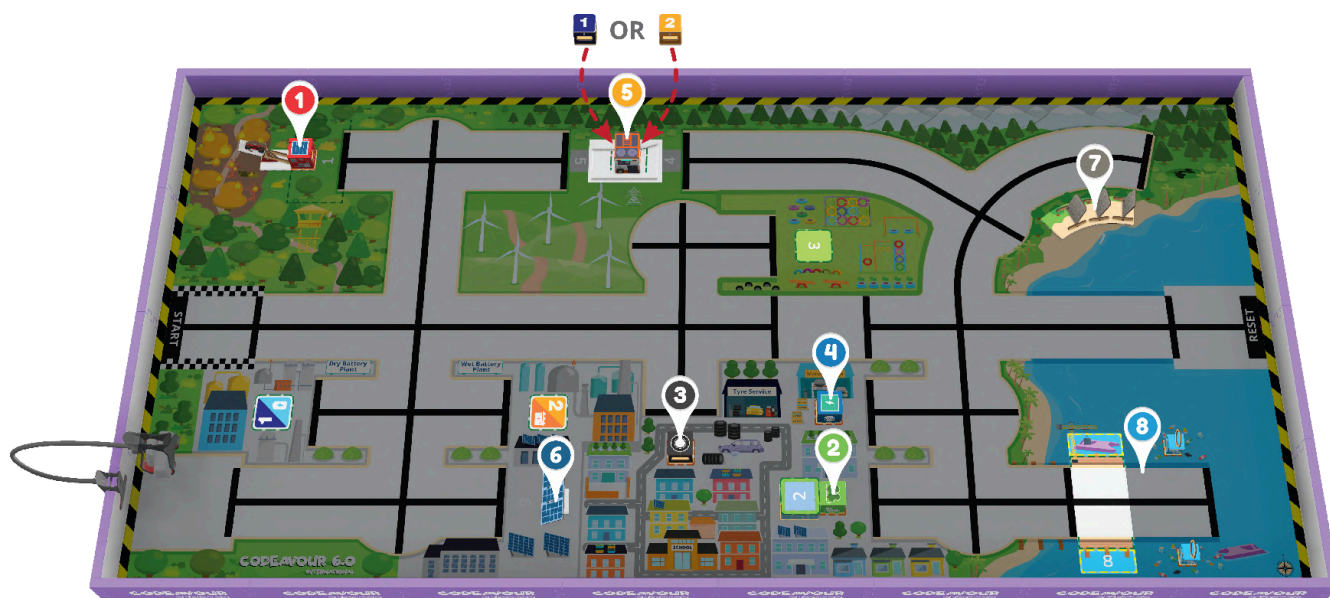
*Complete:*



### 3.5 Cubes' Initial Configurations

All the Cubes will be arranged in the arena according to the provided setup diagrams below.

*Note: Before the match, the judge will decide and randomly place any one out of two types of cubes for Challenge 5.*



*Initial positions of game objects (Elementary)*



*Initial positions of game objects (Junior/Senior)*

### 3. Camera Setup

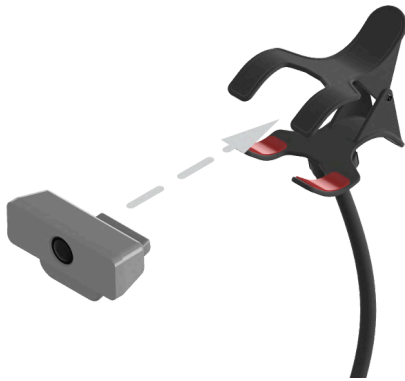
*Note: The Arena Object Kit only includes the Camera mount. We recommend buying a webcam that has the following specifications:*

*Camera connection type: Wired, USB 2.0*

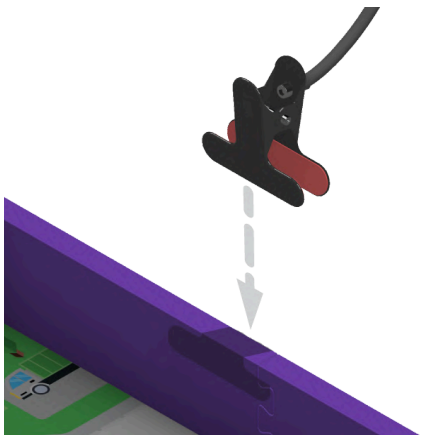
*Camera FOV: DFOV 90°*

*Capture Resolution: FHD (1920 x 1080)*

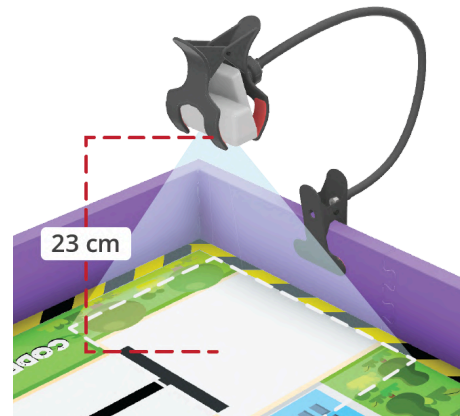
1. Clamp the camera to the camera mount and secure the cables using cable ties.



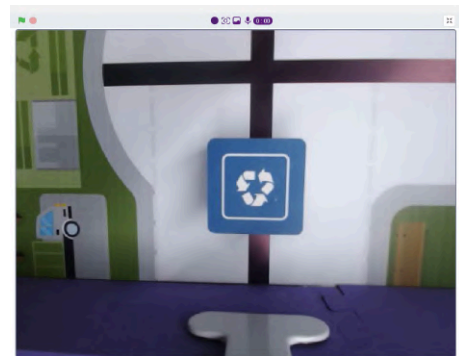
2. Install a camera mount on the arena wall near the recognition area.



3. Adjust the camera height to 23cm from the arena.



**Camera Position**



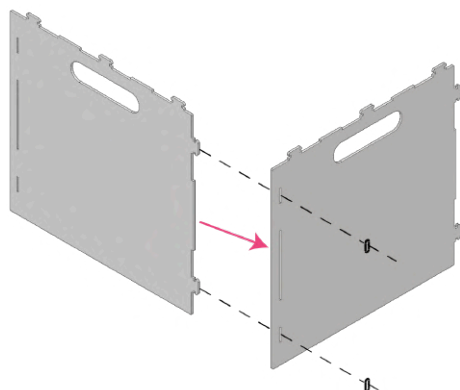
**Camera Field of View in Pictoblox**



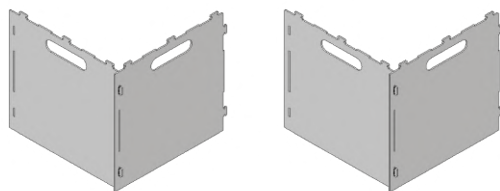
## 4. Bot Dimension Verification Box Assembly

*Note: This Bot Dimension Verification Box is only available to Codeavour 5.0 event organizers and partners (not for sale\*).*

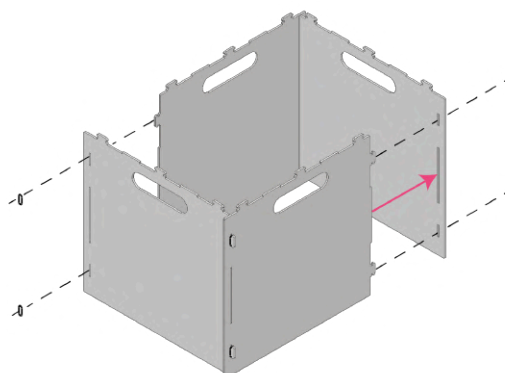
1. Attach two **Side Plates** with a couple of **O-rings**.



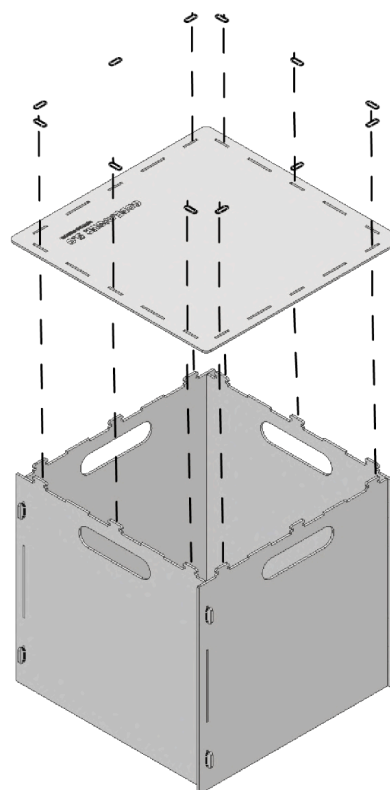
2. Similarly, assemble another two **Side Plates** and make two identical **Side Plate Assemblies**.



3. Attach both **Side Plate Assemblies** with **O-rings**.



4. Attach the **Top Plate** with **O-rings**.



*Complete:*

