



# Yamanote Clock

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## Product Description and Creative Ideation

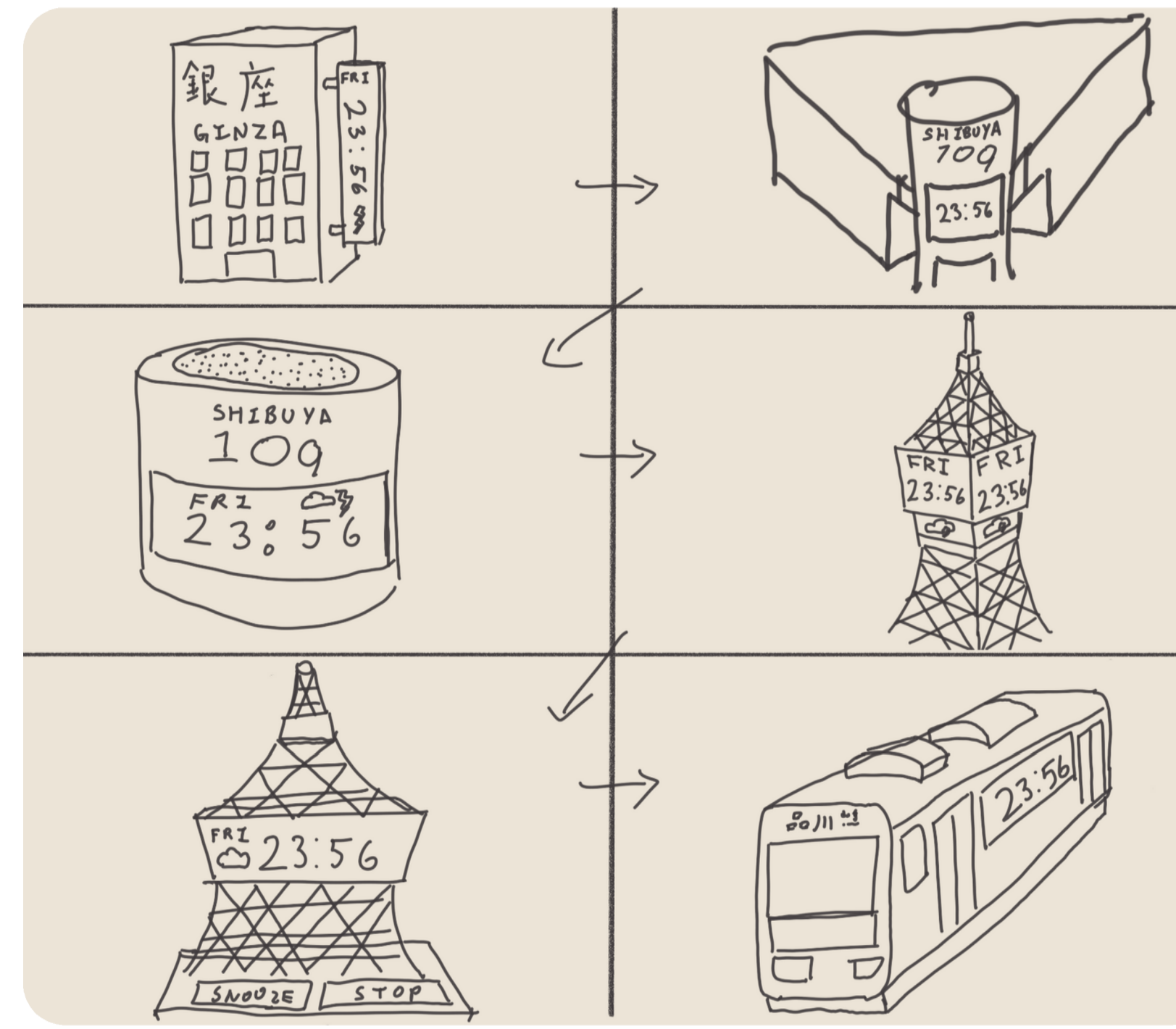
For my individual project, I chose to represent Japanese culture through the Yamanote Line, a staple of daily life and tourism in Tokyo. I modeled the alarm clock after the E231 series train, preserving its iconic green stripes and window shape. I integrated the clock's interface directly into the vehicle's features, specifically by using the rooftop AC vents to function as the snooze and stop buttons and with vents on the undercarriage to mimic jingles of stations along the train line.

### Design Heuristic Cards:

- Simplify
- Contextualize

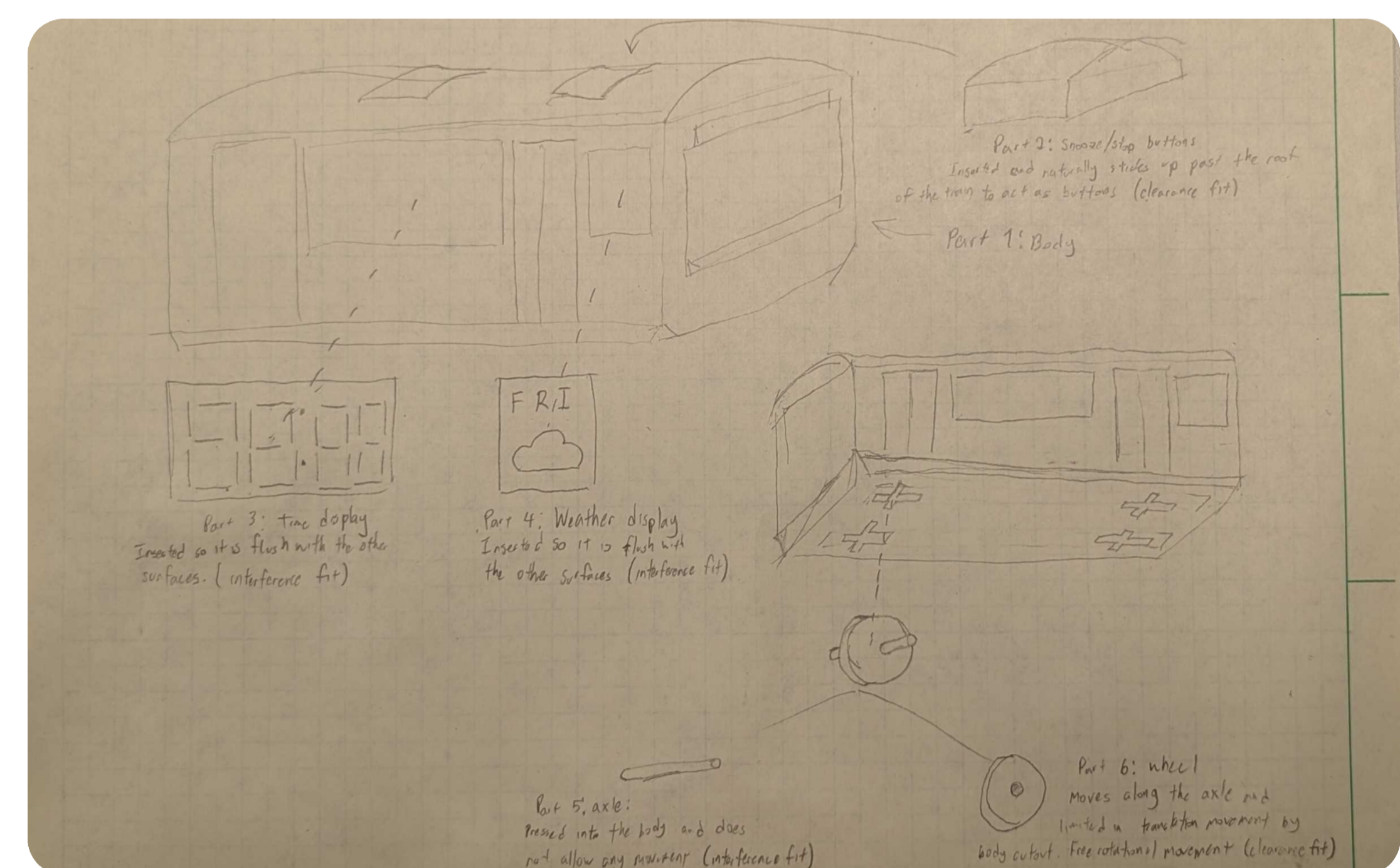
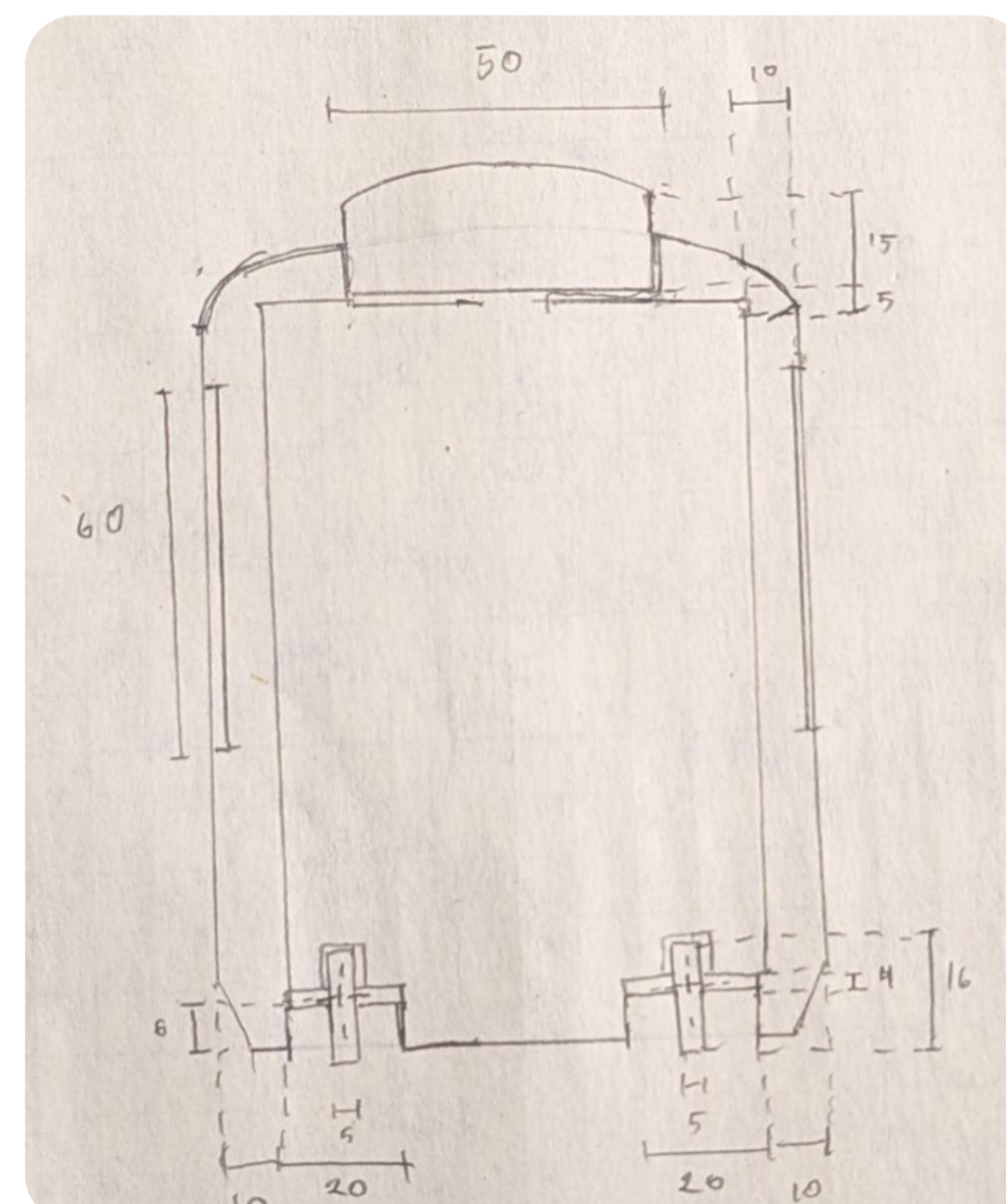
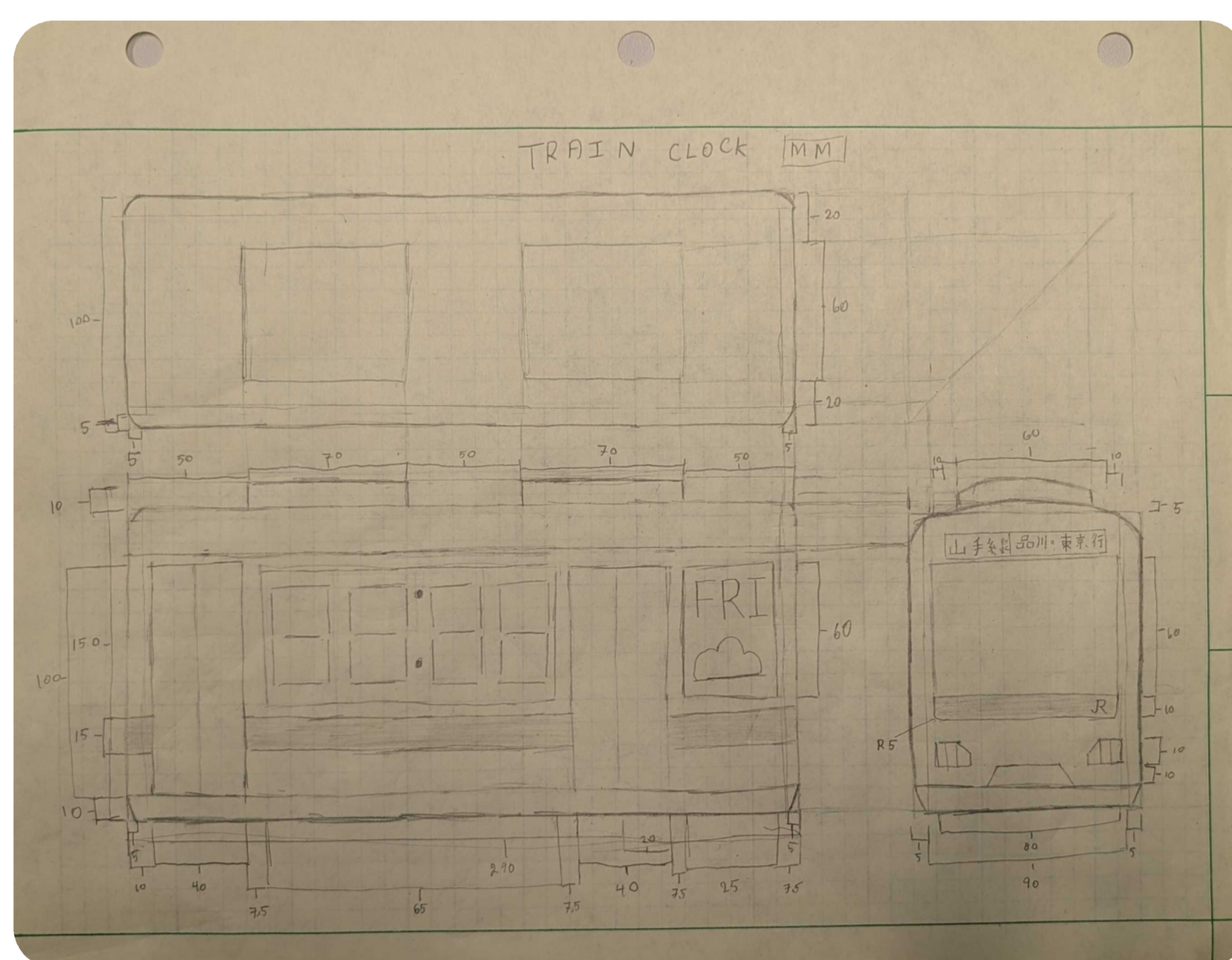
My design is unique in that it simplifies the complex machinery of a train into a sleek, functional alarm clock without losing the vehicle's original aesthetic identity. Additionally, the design also works to recontextualize similar model trains to function in a new product as an alarm clock.

## Thumbnail Sketches and Perspective View

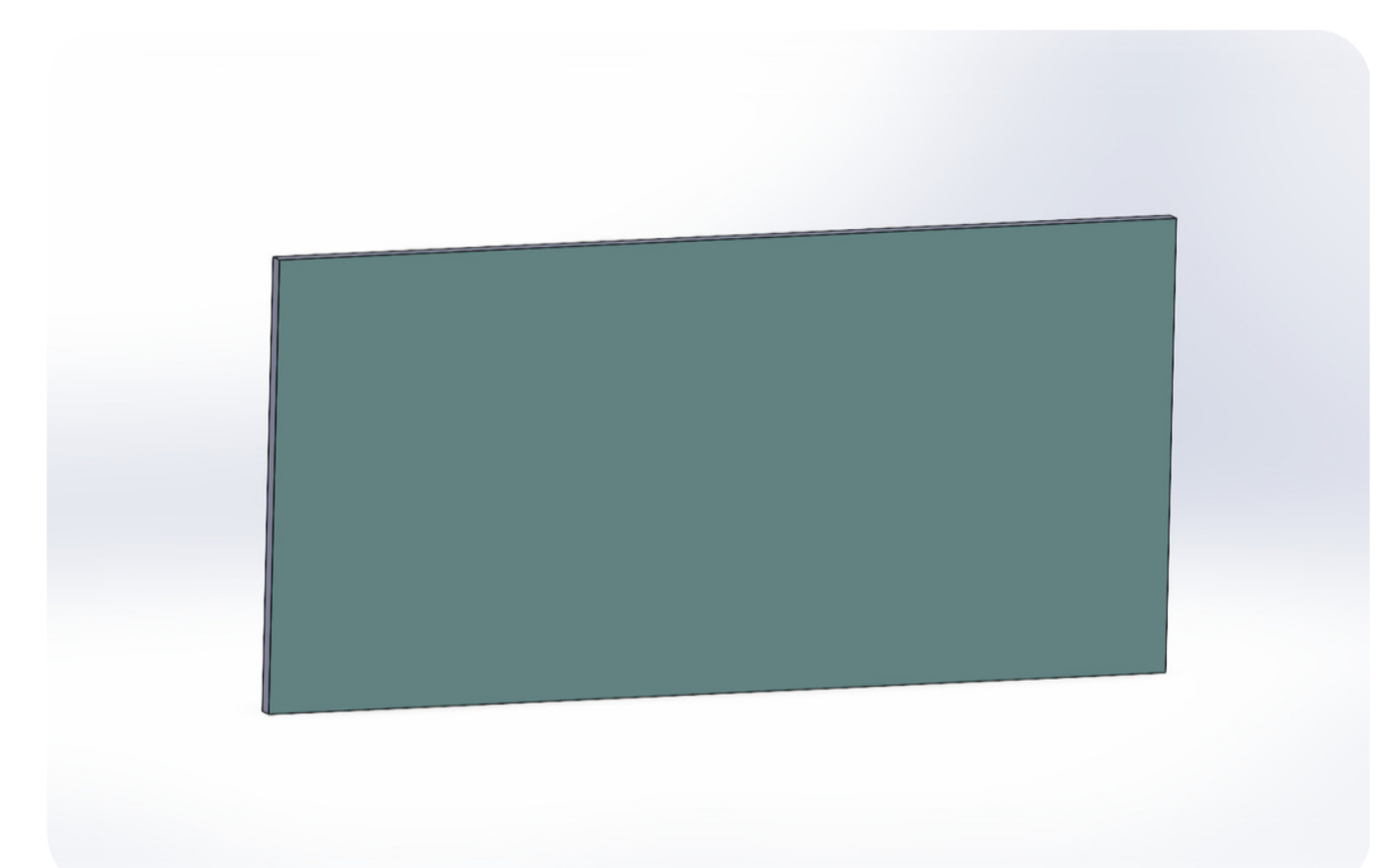
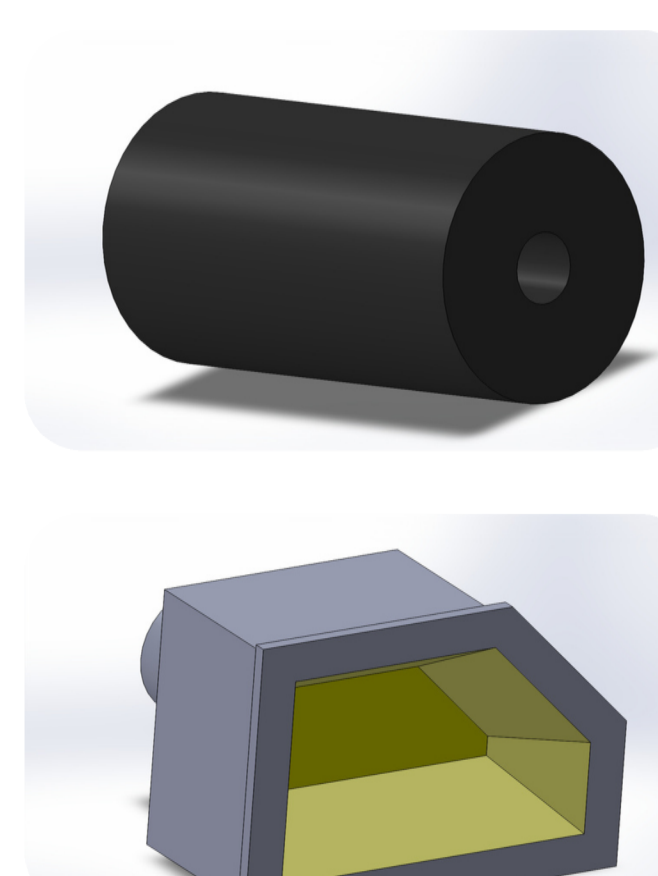
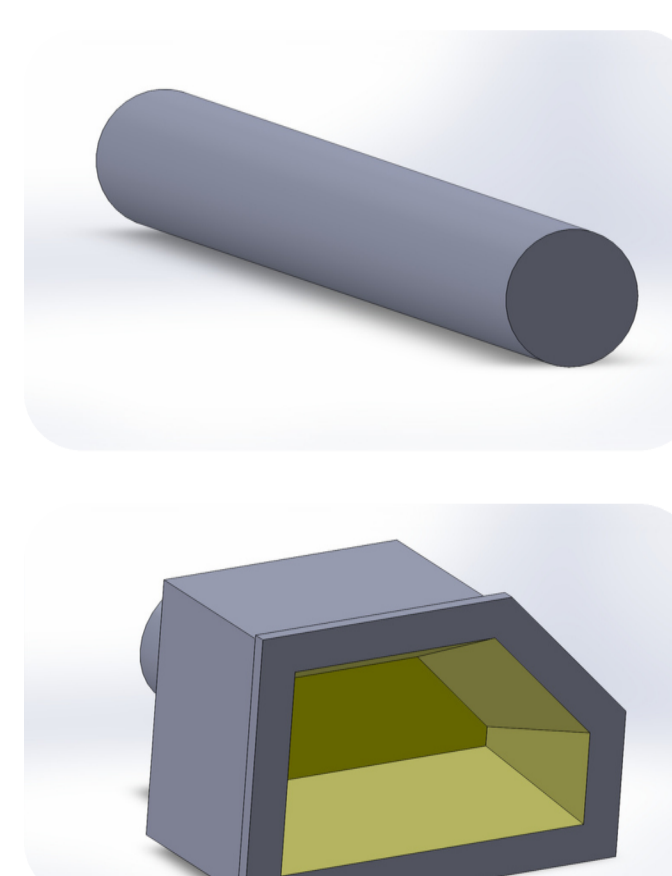
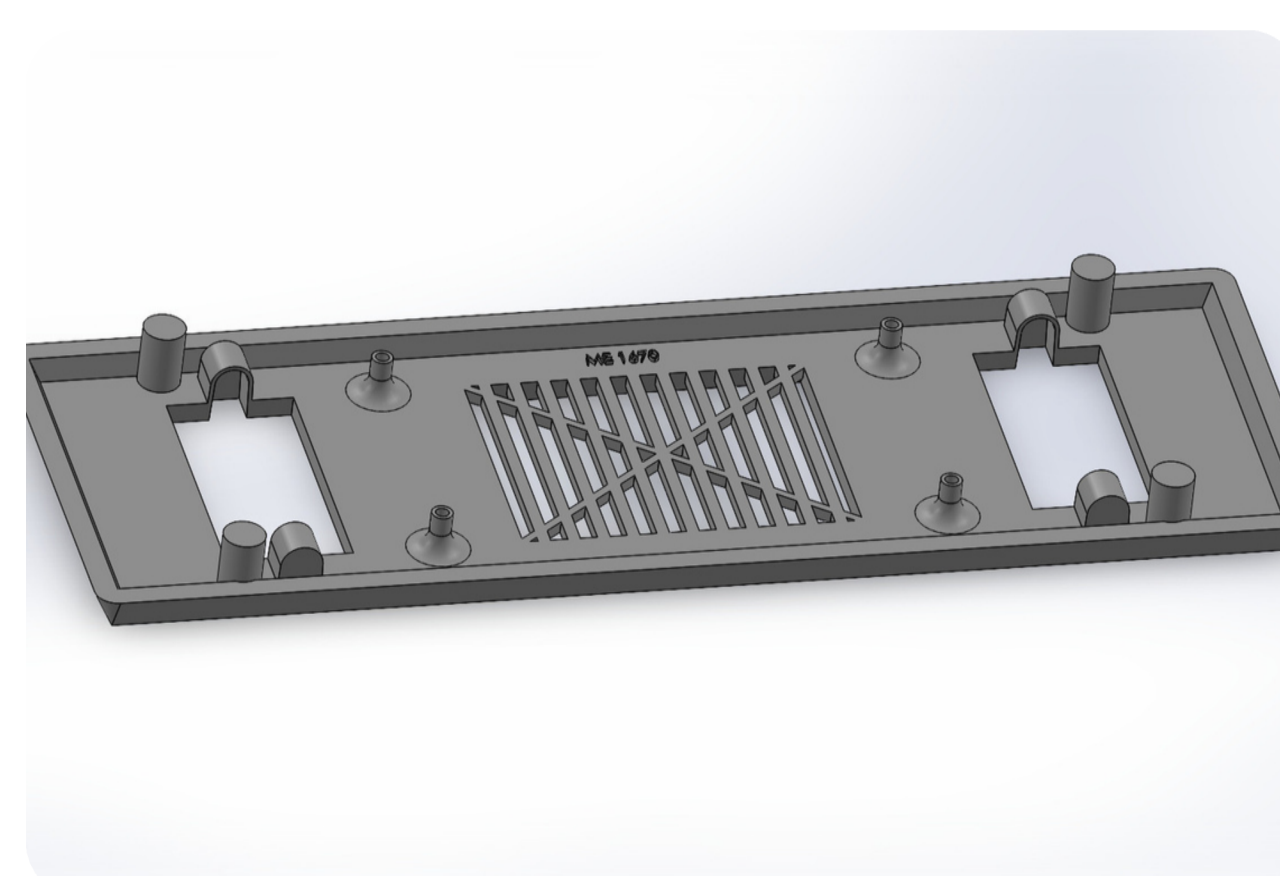
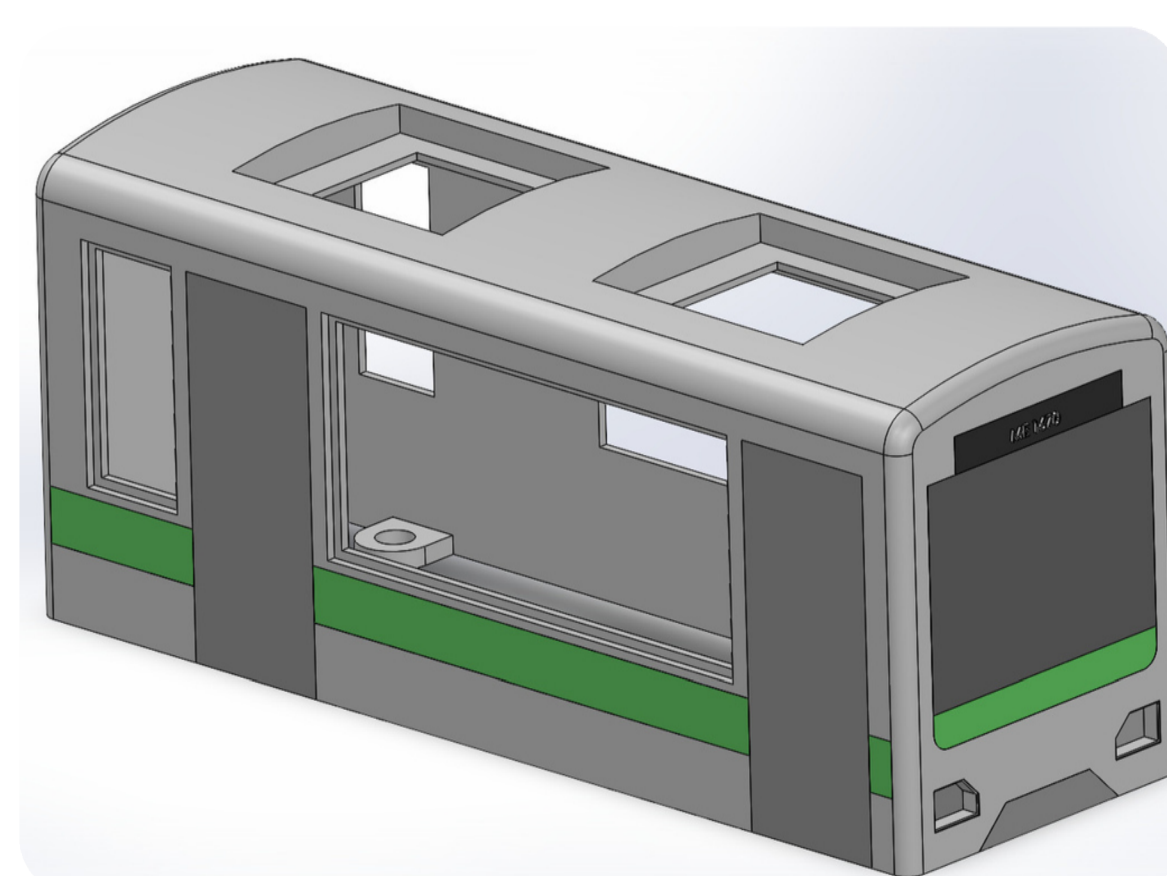
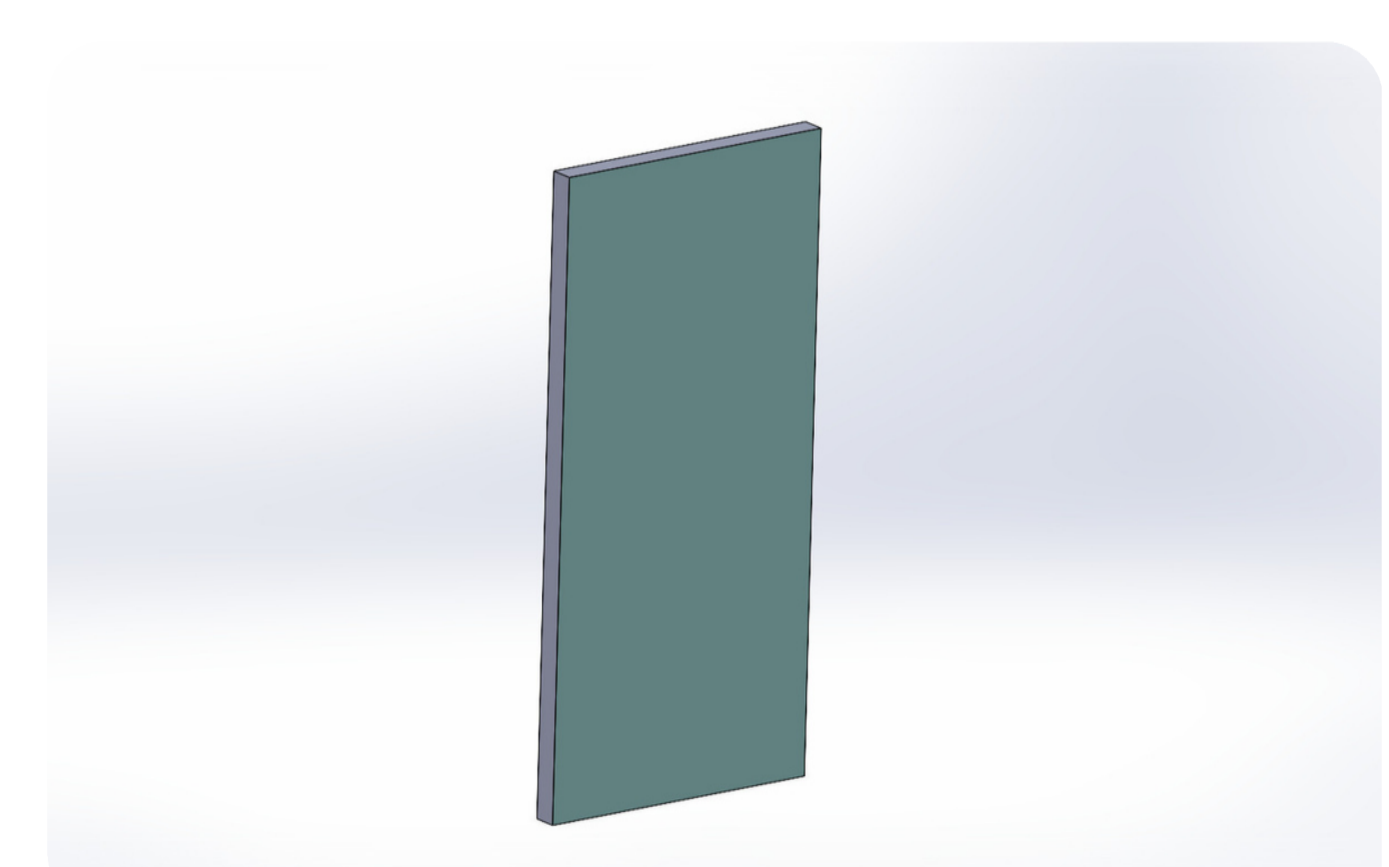
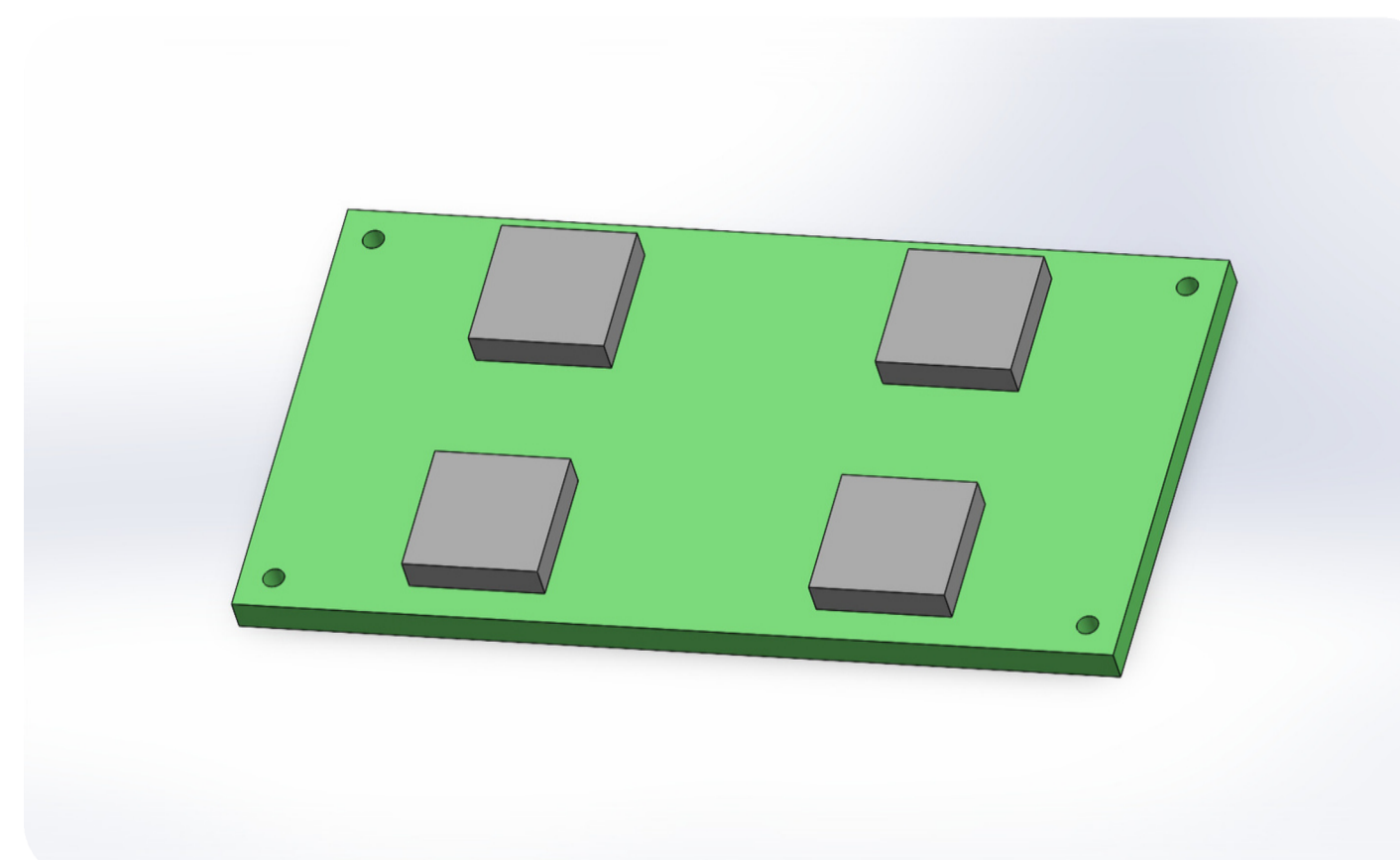
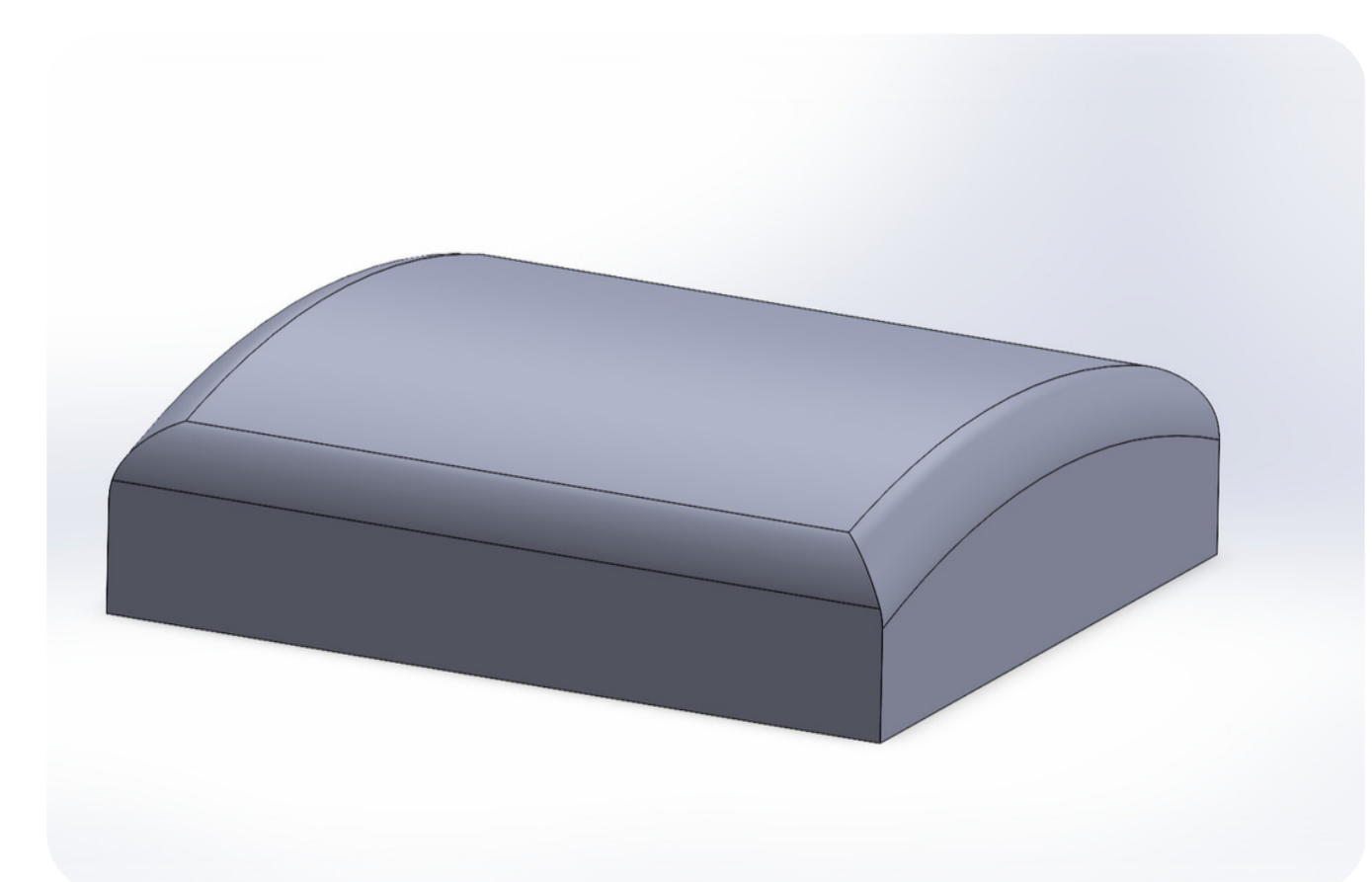
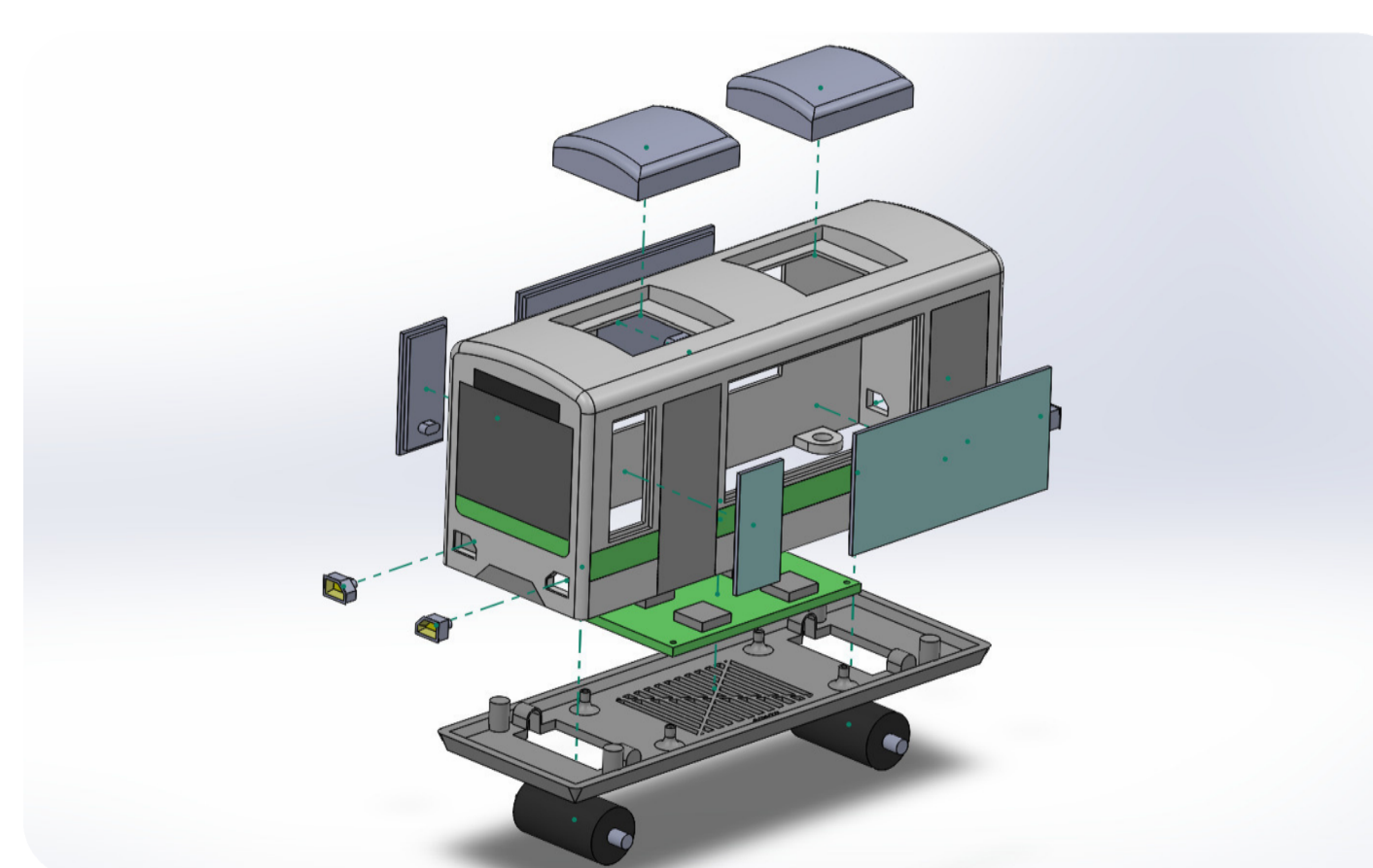
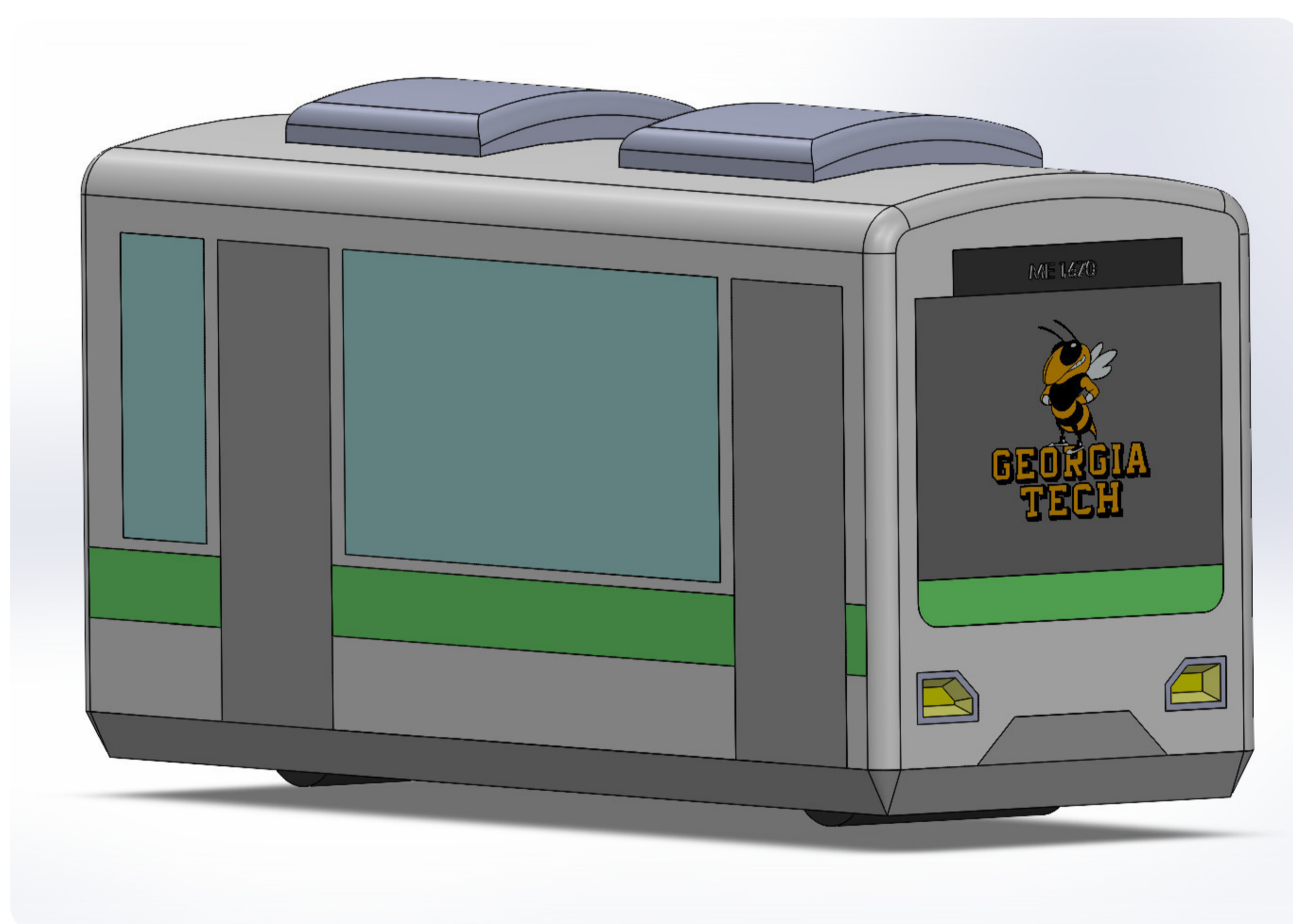


Tokyo is recognized for its high-rise buildings and shopping. The design concept began with a building in Ginza, then shifted to Shibuya 109 which is known for its more modern fashion. Then came the consideration for the Tokyo Tower, focusing on sightseeing. Ultimately, the final design was on the Yamanote Line train, which connects all of Tokyo, and thus all my previous designs.

## Multi-views, Section Views and Assembly Drawings



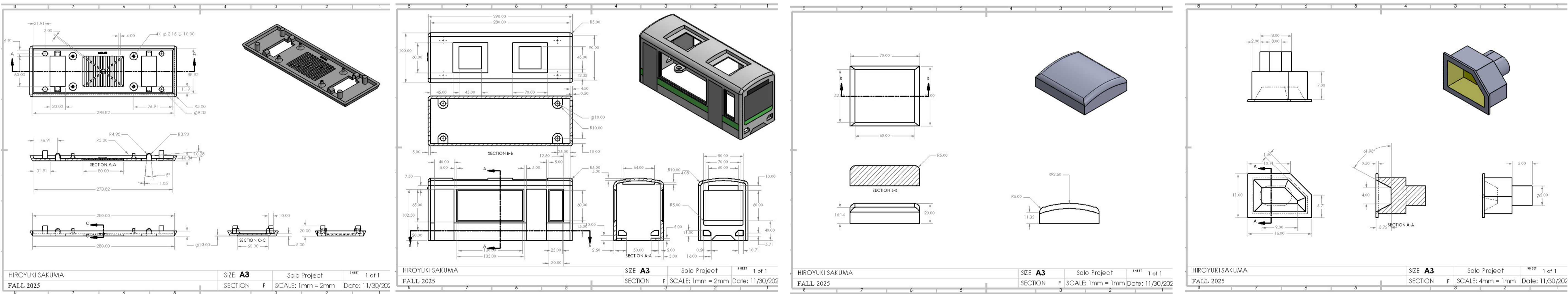
## Rendered Part and Assembly Views







Part Working Drawings

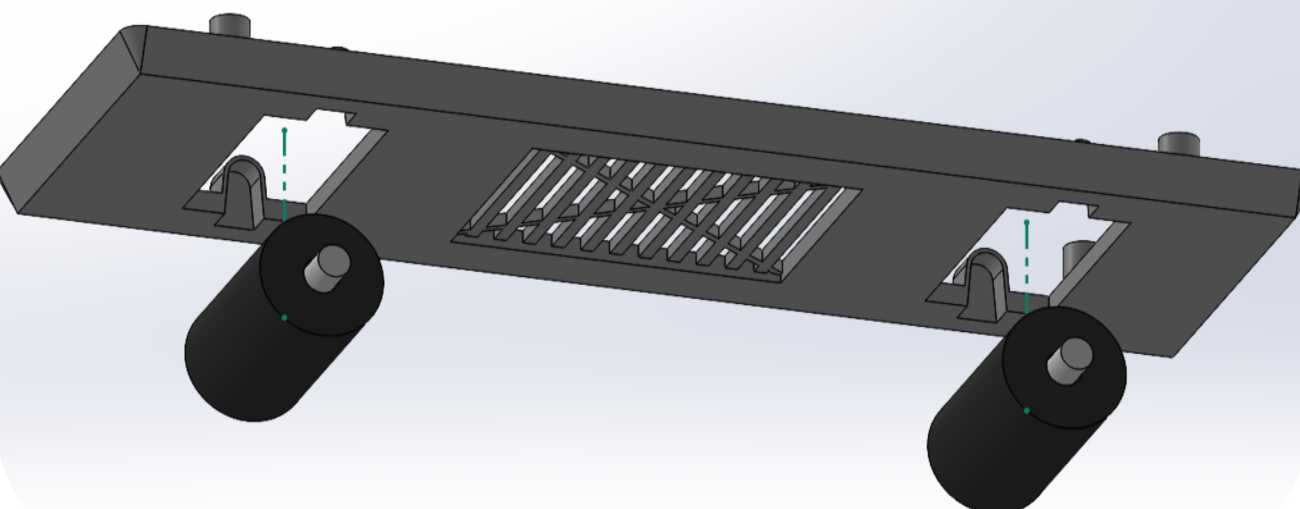


Dimensional Tolerance and GDT Tables

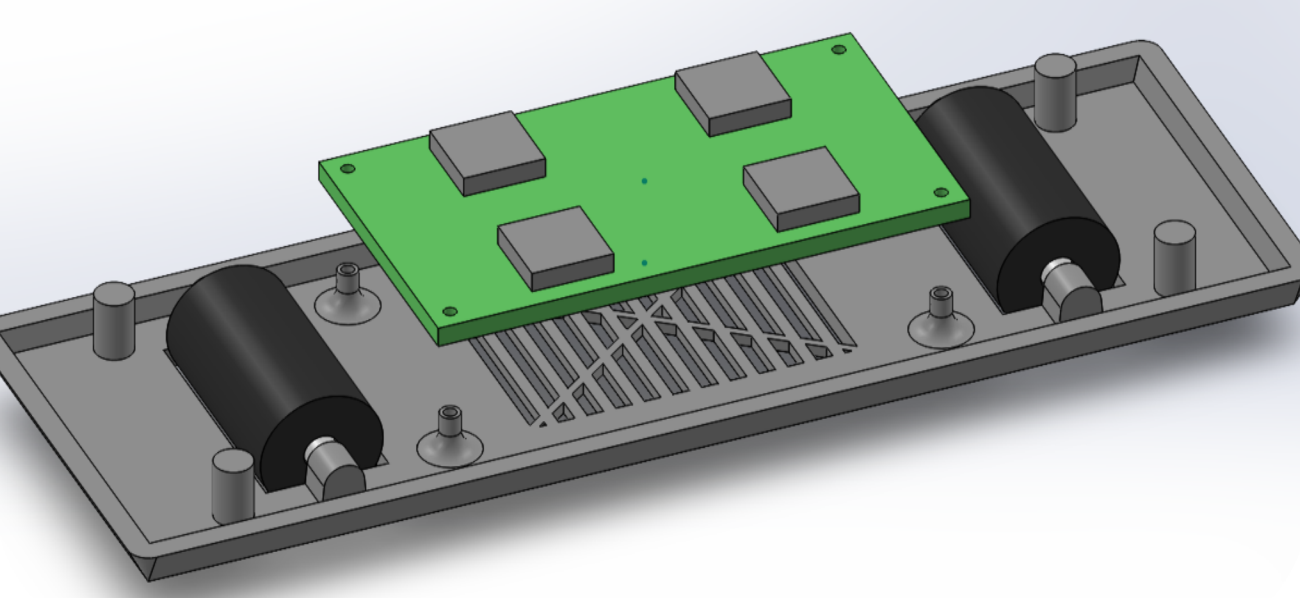
Parts in the Assembly	Fit Type	Dimensional Tolerance Limits	Dimensional Tolerance Limits	MMC/LMC (mm)	Part Name	Modeling Approach	Manufacturing Process	GD&T Parameter to Control	Tolerance With Symbol
Part 2 (Buttons) & Part 1 (Body)	Clearance	Hole (Body) 5.00±0.05	Shaft (Button) 4.90+0.03	Clearance 0.02 MMC 0.18 LMC	Part 1 (Body)	Extrude, Fillet, Chamfer	Injection Molding	Symmetry	0.20 mm
Part 3 (Time Display) & Part 1 (Body)	Interference	Recess (Body) 40.00±0.05	Display 40.10±0.03	Interference 0.18 MMC 0.02 LMC	Part 2 (Buttons)	Extrude, Extrude-cut, Fillet	3D Printing	Parallelism	0.10 mm
Part 4 (Weather Display) & Part 1 (Body)	Interference	Recess (Body) 20.00±0.05	Display 20.10±0.03	Interference 0.18 MMC 0.02 LMC	Part 3 (Time Display)	Extrude	Photolithography	Flatness	0.05 mm
Part 5 (Axle) & Part 1 (Body)	Interference	Hole (Body) 4.00±0.02	Shaft (Axle) 4.05±0.02	Interference 0.09 MMC 0.01 LMC	Part 4 (Weather Display)	Extrude	Photolithography	Flatness	0.05 mm
Part 6 (Wheel) & Part 5 (Axle)	Clearance	Hole (Wheel) 4.15±0.03	Shaft (Axle) 4.05±0.02	Clearance 0.05 MMC 0.15 LMC	Part 5 (Axle)	Revolve, Extrude	Injection Molding	Cylindricity	0.05 mm
Part 7 (Base) & Part 1 (Body)	Interference	Hole (Body) 10±0.05	Cylinder (Base) 10.10±0.03	Interference 0.18 MMC 0.02 LMC	Part 6 (Wheel)	Revolve, Extrude	Injection Molding	Cylindricity	0.10 mm
Part 8+9 (Lights) & Part 1 (Body)	Interference	Recess (Body) 40.00±0.05	Lights 40.10±0.03	Interference 0.18 MMC 0.02 LMC	Part 7 (Base)	Extrude, Fillet, Chamfer	Injection Molding	Symmetry	0.20 mm
Part 7 (Base) & Part 10 (Computer)	Interference	Hole (Body) 3.15±0.05	Hole (Computer) 3.30±0.03	Clearance 0.23 MMC 0.07 LMC	Part 8 (Left Light)	Extrude, Cut-loft	Photolithography	Flatness	0.05 mm
					Part 9 (Right Light)	Extrude, Cut-loft	Photolithography	Flatness	0.05 mm
					Part 10 (Computer)	Extrude	Soldering	Symmetry	0.10 mm

Assembly Instructions

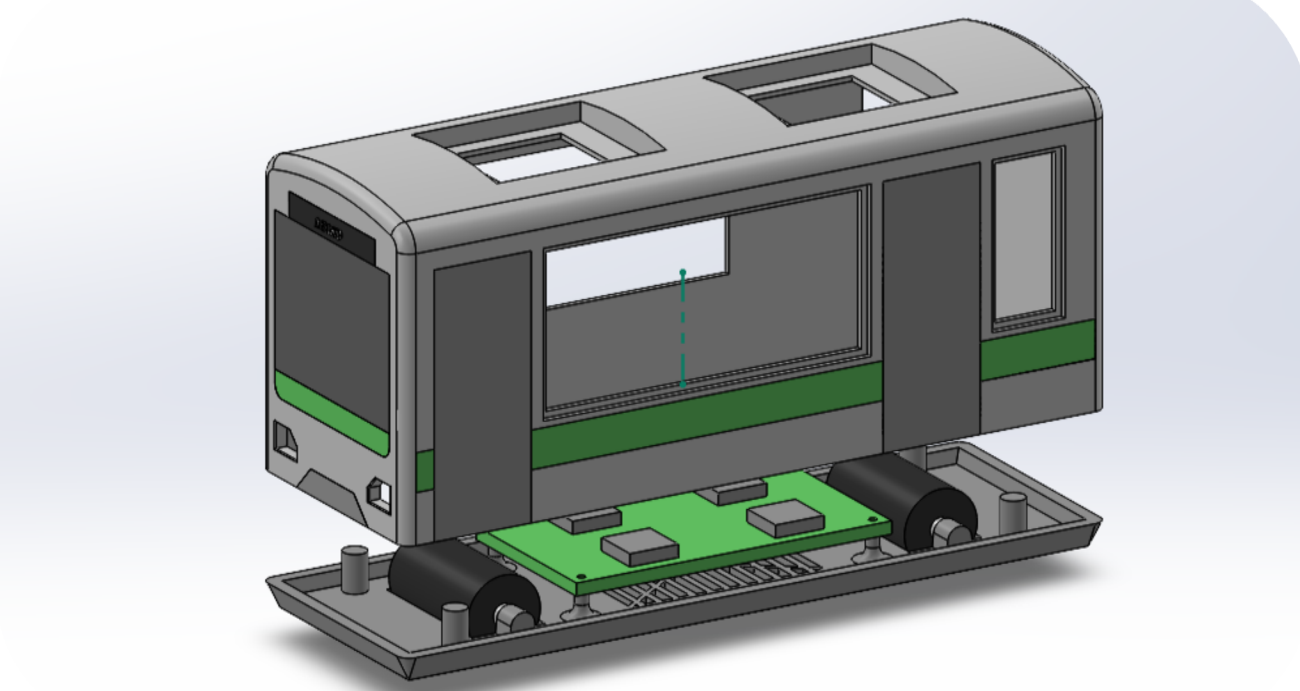
Step 1



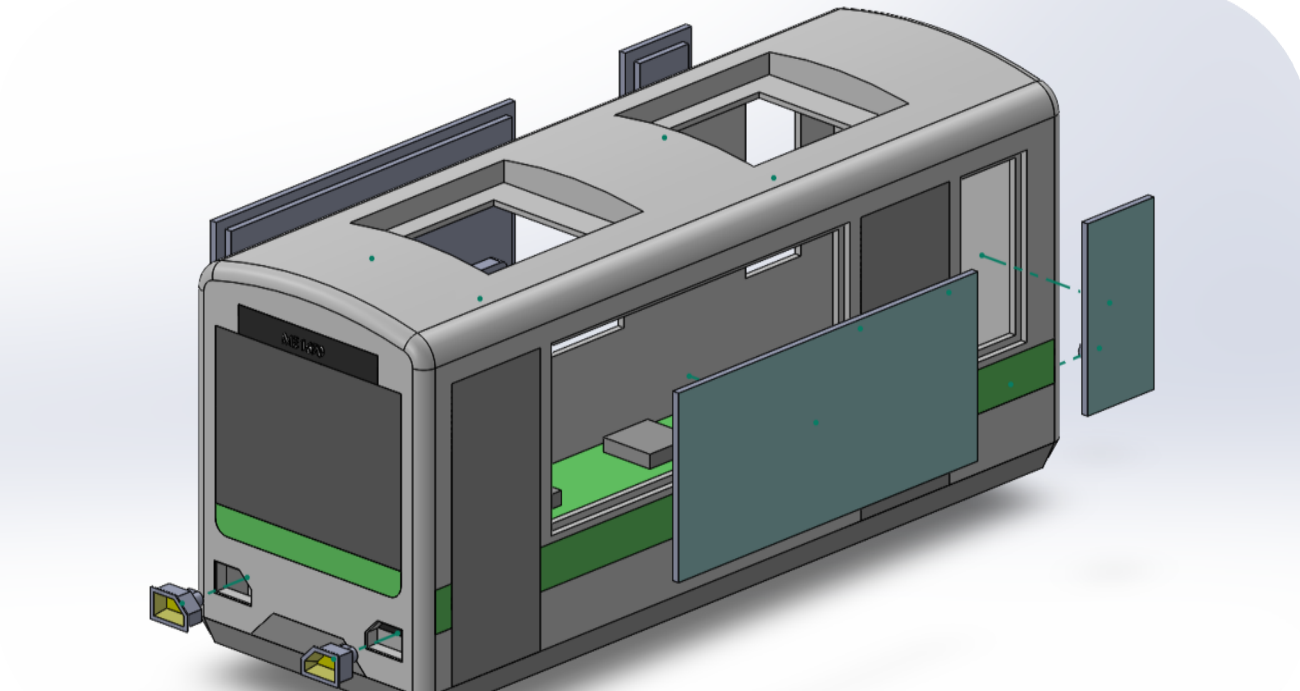
Step 2



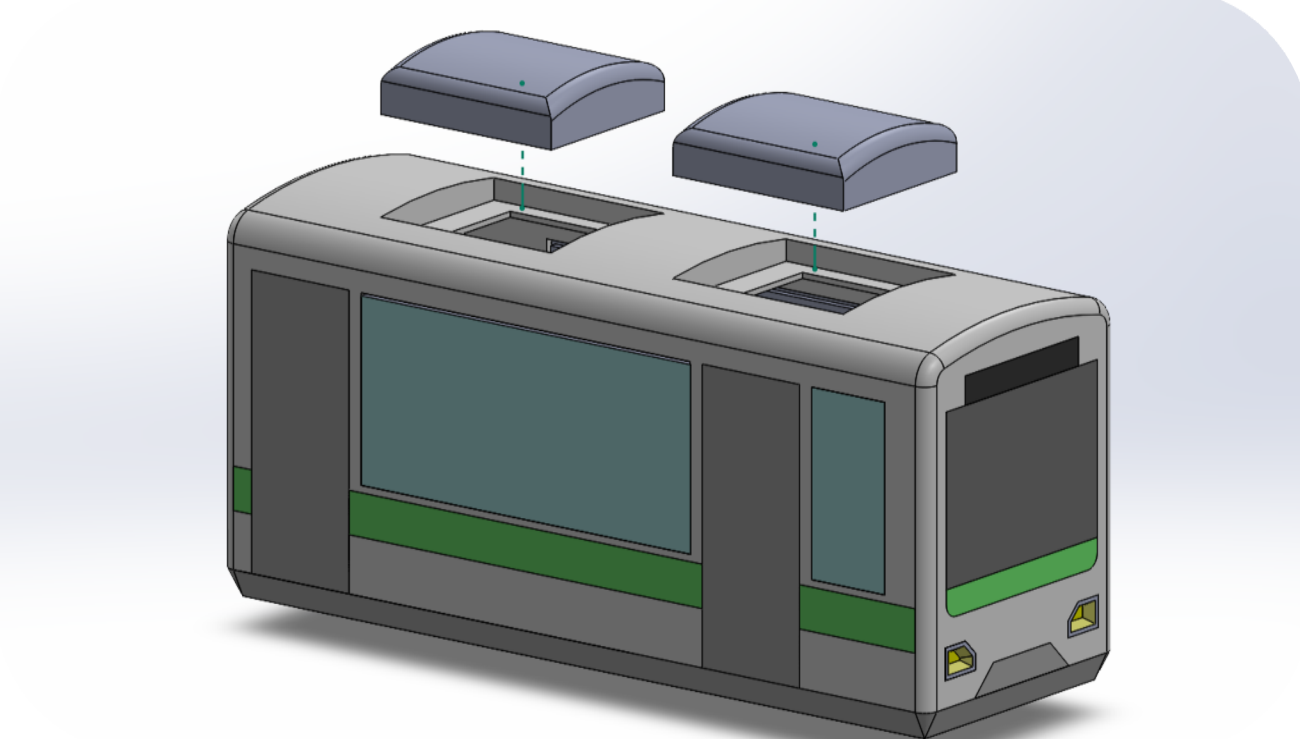
Step 3



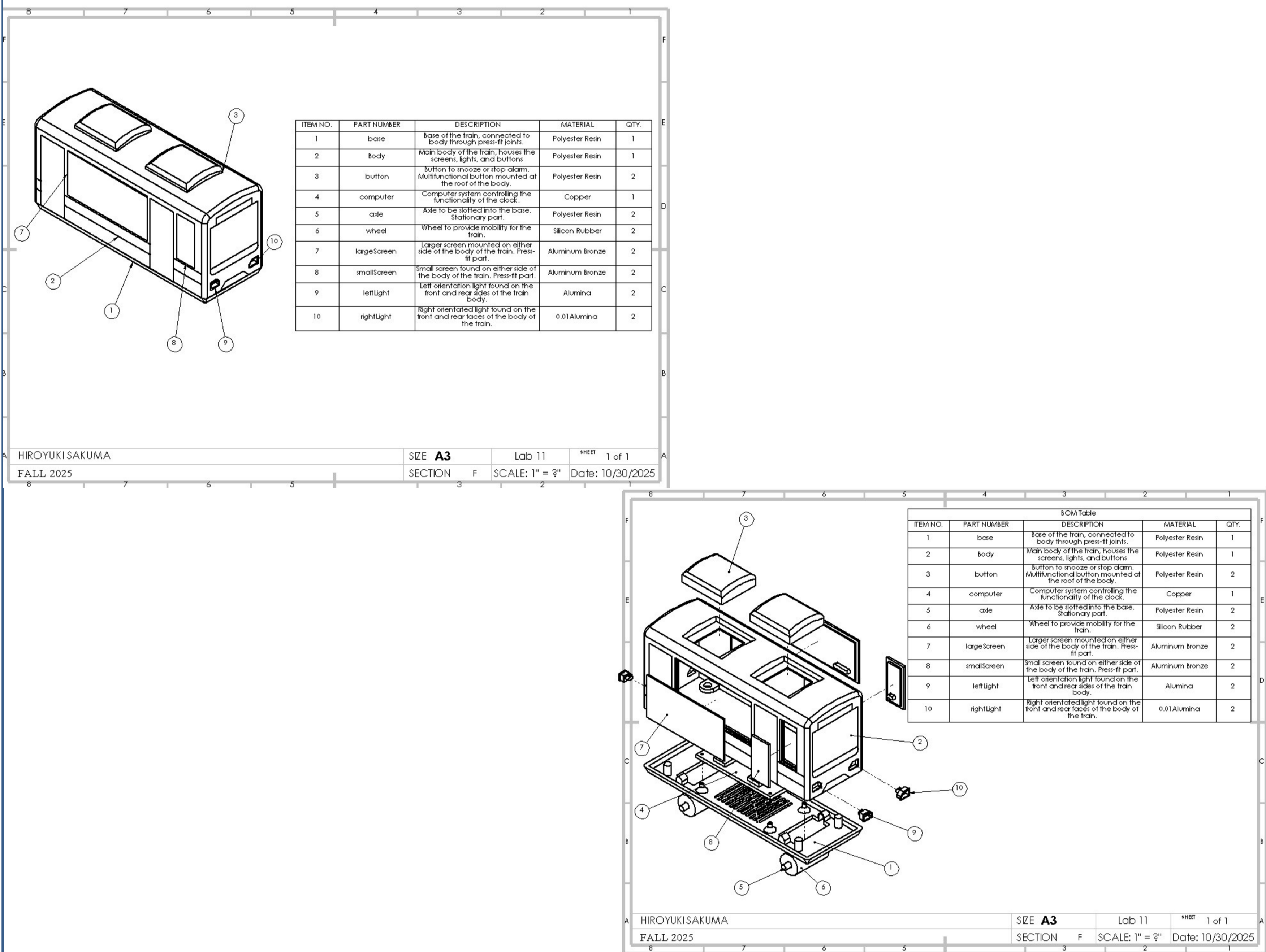
Step 4



Step 5  
(Final)



Exploded view with BOM Parts List







### The Yamanote Clock

