



Building Buildings



**The design process
and decision matrixes**

Video (end at 4:45)

The building of the Burj Kalifa





Activity

Today you will be competing to see what group can make the best paper tower. You will be given 5 sheets of paper and 2 feet of tape. You will have to present your tower at the end, and we will decide who we “hire” based on our design criteria.



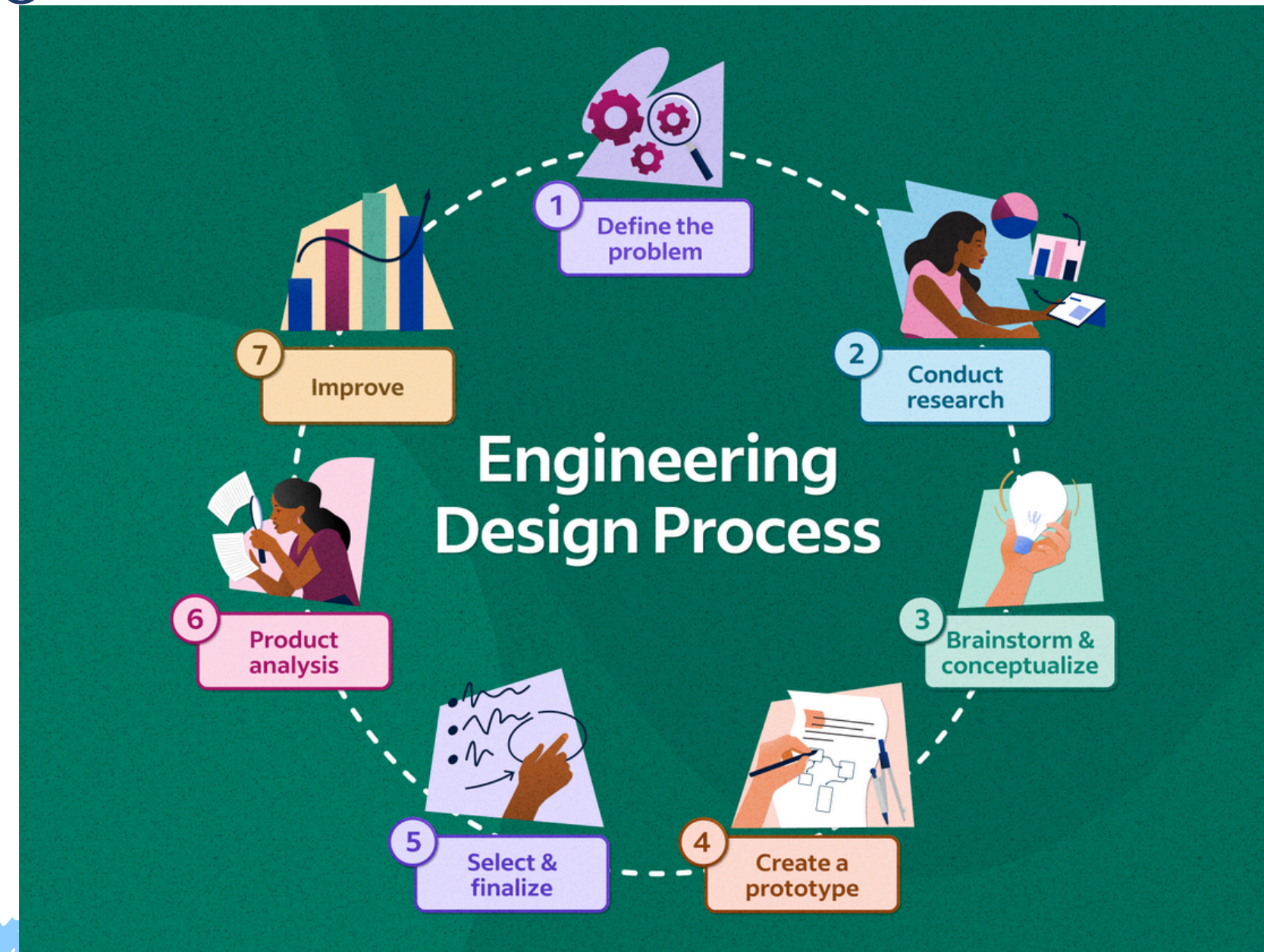
Design Brief

We would like a tall, elegant tower for our city. Our citizens love the city, so we want a tower that is tall enough for them to look out at the whole city and that looks nice in our skyline. We are a very windy coastal city right by the ocean, so we need a structurally sound building that can withstand lots of water and wind. Our budget is only \$1 billion (6 sheets of paper).

Concept

Today we are building paper towers to learn about the **Design Process!**

The Design Process is






Decision matrix

In order to figure out how to get designs with the best combination of features, engineers use decision matrixes.

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Overall
Idea 1	4	3	2	1	10
Idea 2	2	2	5	4	13
Idea 3	3	1	2	5	11
Idea 4	4	3	4	4	15

Idea 4 is the best choice!



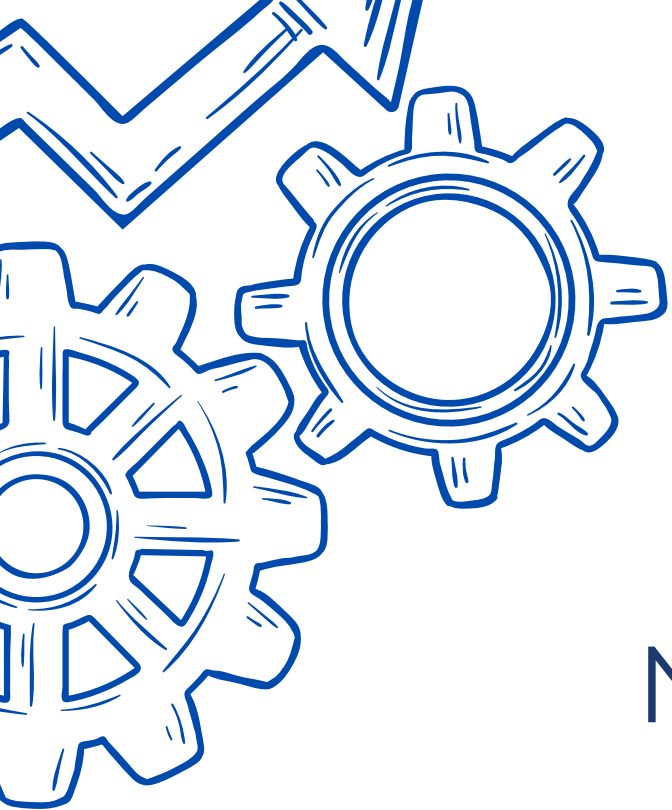
Now make your own!





Brainstorm and Sketch

Before getting materials, brainstorm with your group for 10 minutes. When brainstorming, say all your ideas and write them down in bullet points, then, once you don't have any ideas left, figure out which ideas you like most and use a decision matrix to decide which one to use. Then sketch out your design for ~10 mins.

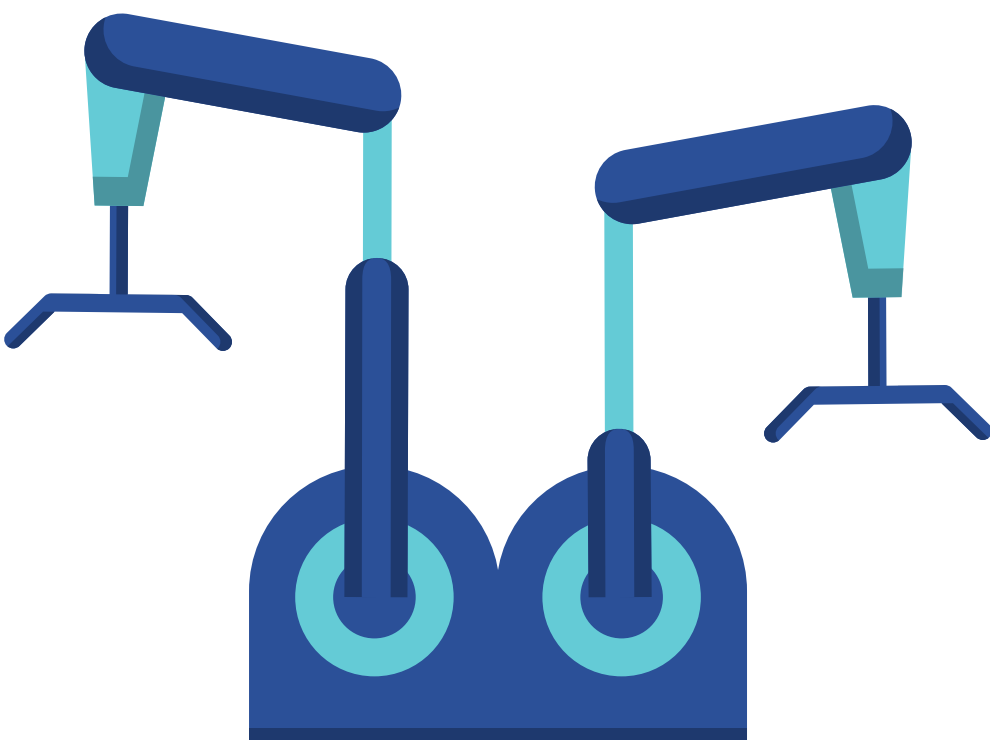
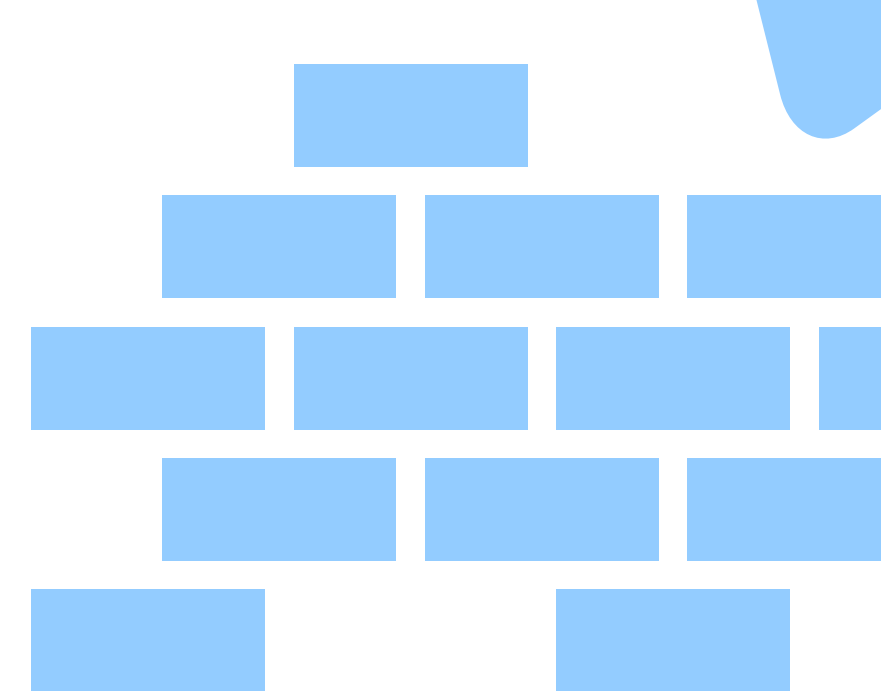


Prototype

Now build your tower!

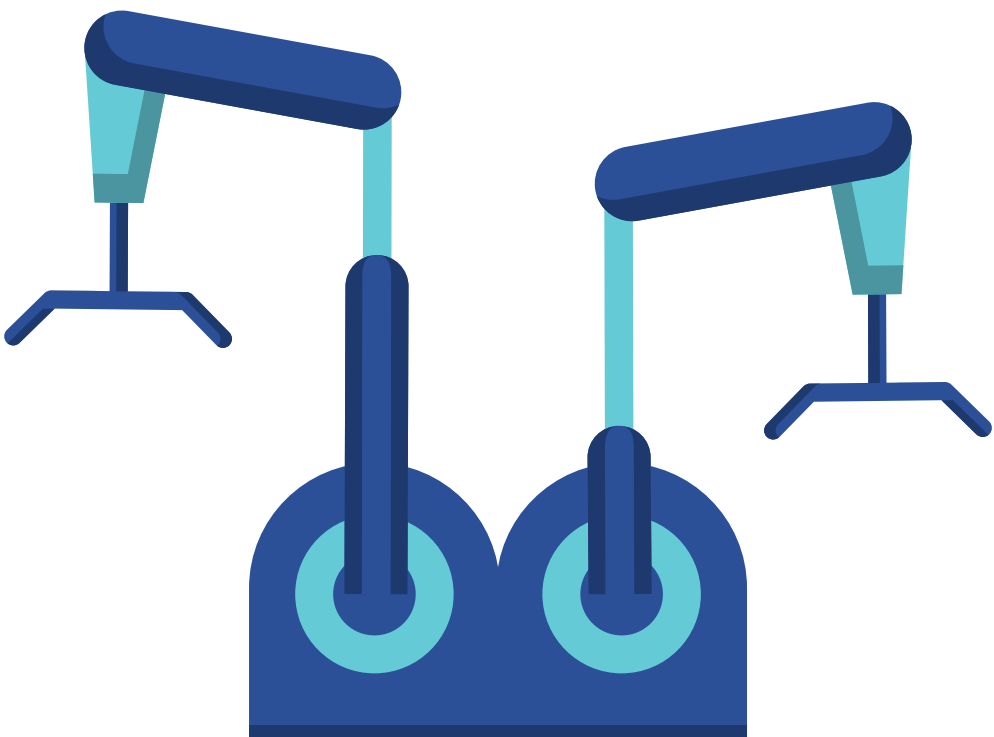
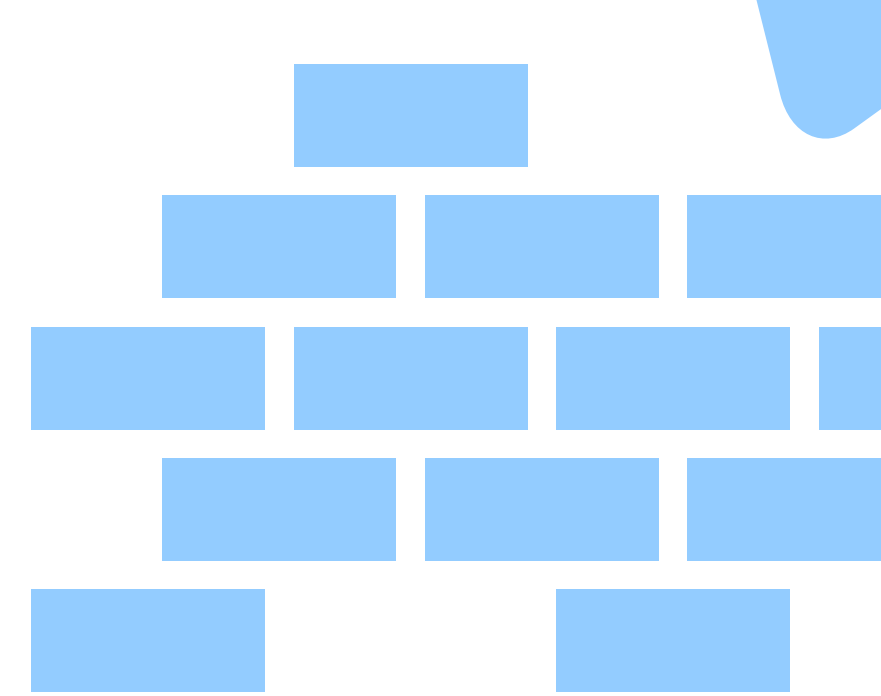
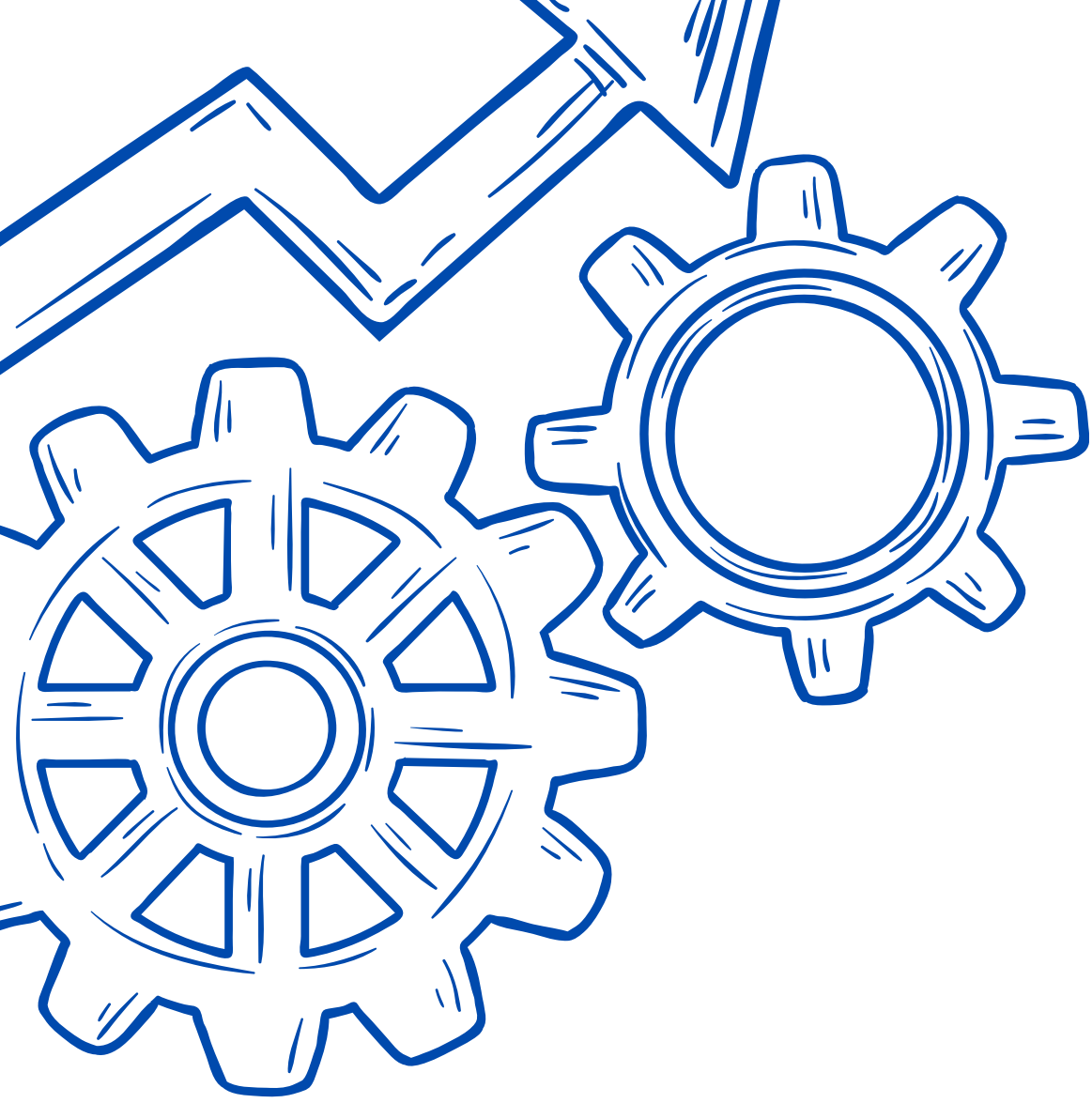
Materials (that fit the city's budget):

- 6 sheets of printer paper
- 1 foot of tape

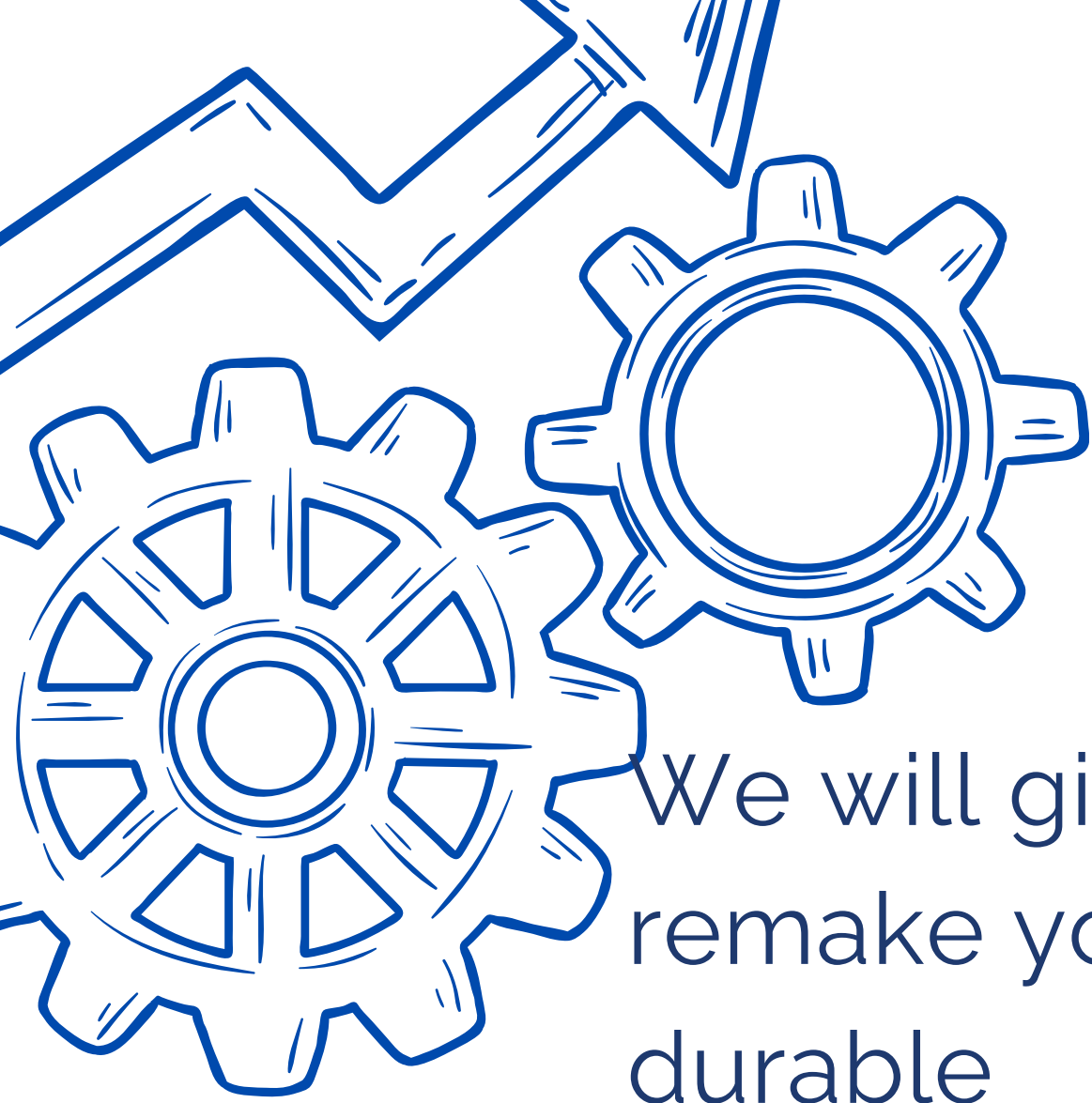


Test!

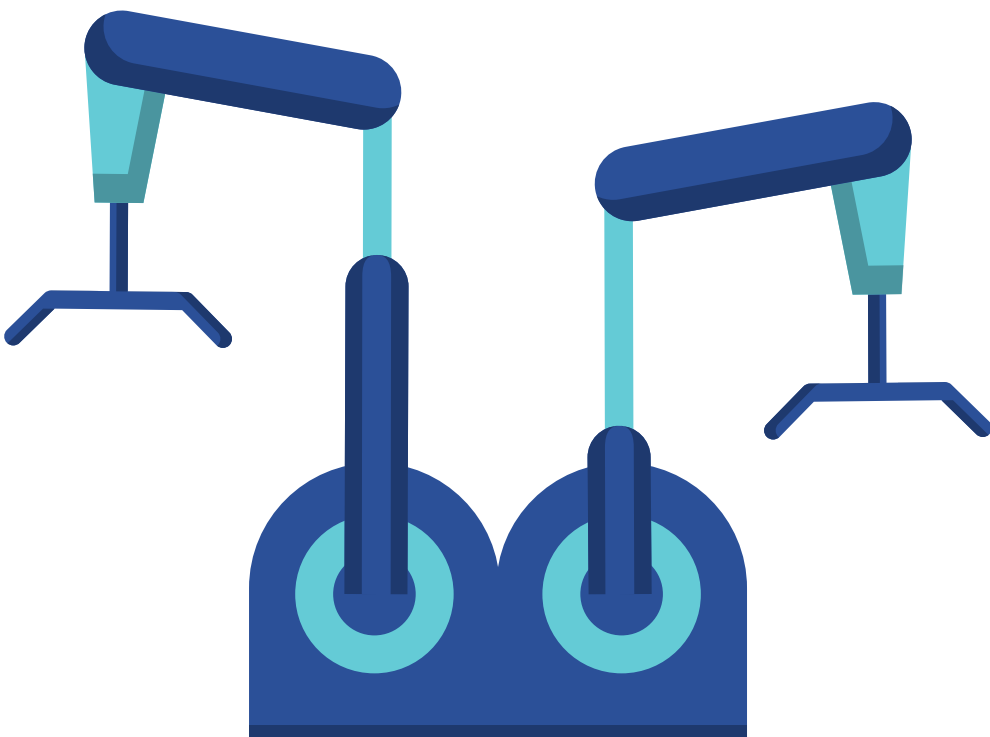
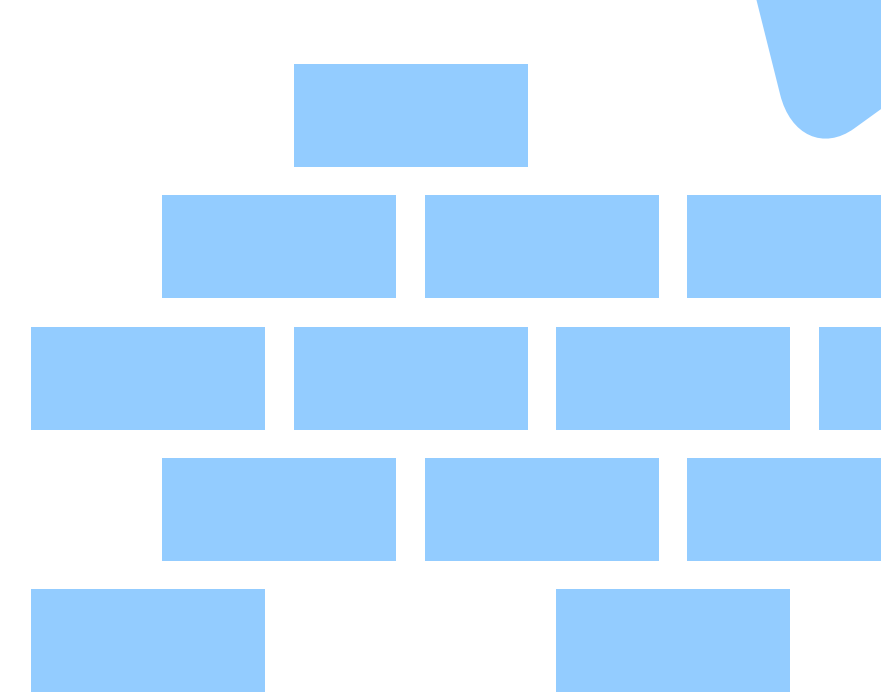
- Earthquake test
- Wind test



Prototype 2



We will give you more materials, and you will remake your tower so that it's better and more durable



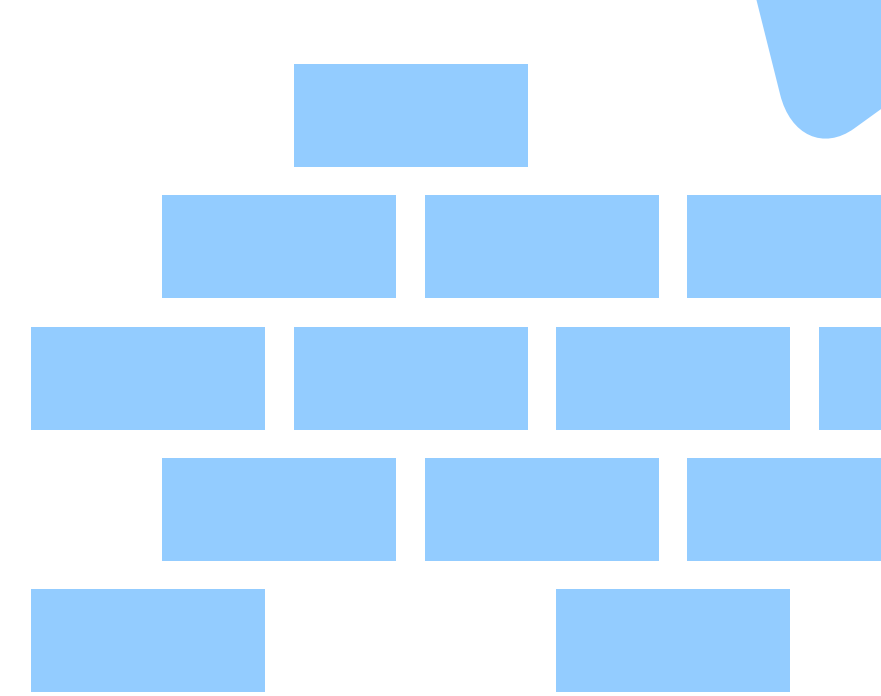
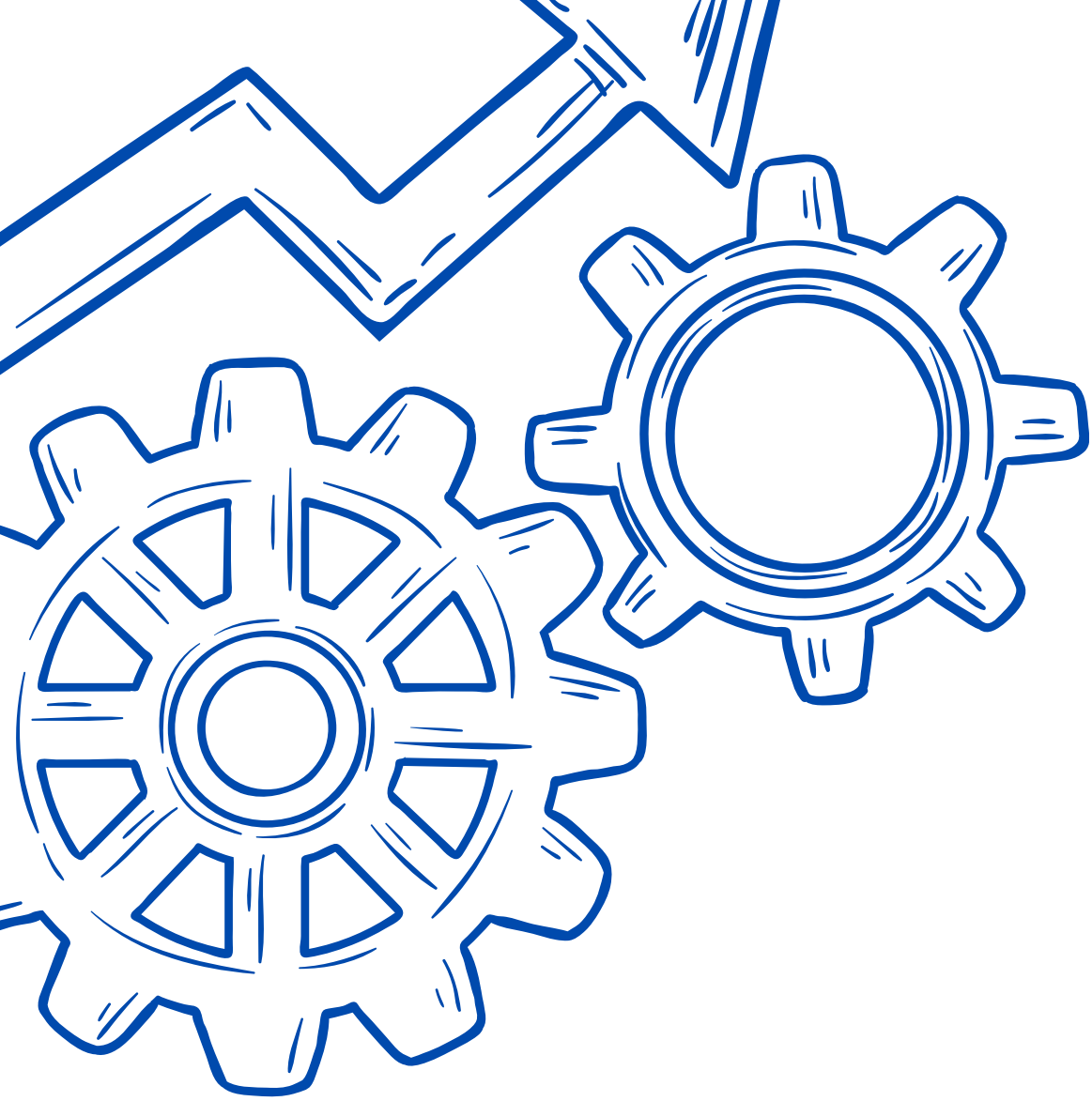


Pitch and final test time!

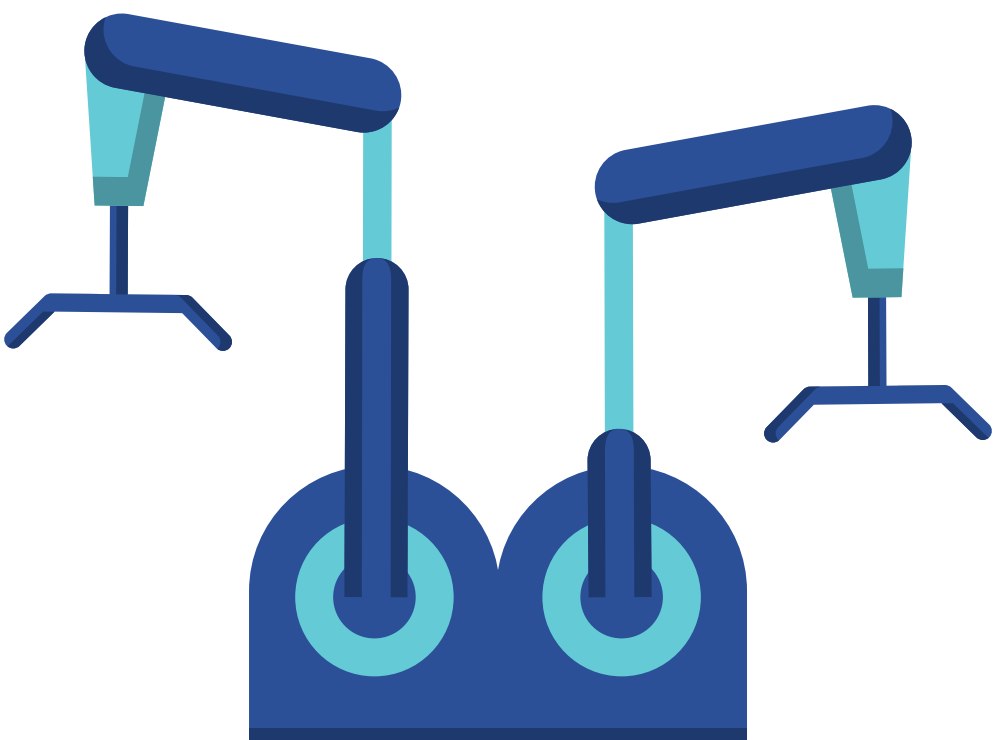
We will give you 5 mins to plan your pitch.

Pitch your tower to us (city officials) by highlighting all of its great qualities and how they match our priorities. We will then test your tower again to ensure that it is stable, and choose who we will hire to build our tower.





***Thank
You***



Who are we?

We are members of Brooklyn Technical High school's FRC robotics team: Team 334. We compete in yearly robotics competitions. This was our robot last year:

