STEM Activity
"You Want Me to Do What?"

SuperFuture Design & Engineering
(Part 1)

Problem:
You and your design team must create a prototype for a teleporting vehicle of the future. You will then send the building instructions and supplies for the prototype to the team of supervisors at SuperFuture Headquarters to approve. The supervisors will replicate your design based on your written instructions. **If the supervisors cannot successfully re-build your design, you fail the project and you may lose your job.**

Design Criteria:
Your design must be made only out of the supplies found in your team's design bag. Your design must include:

1) A solid, flat base
2) Barriers to constrain the occupant(s)
3) A seating (or standing) area large enough for the "people" found in your design bag
4) Some sort of roof (can be minimal)

Pre-Design:

1) Carefully consider all of your available resources before you build your prototype.
2) You do not have to use all of your resources.
3) Before you build, sketch a model of your vehicle.

Process:

1) Design and build a prototype within a 10-15 minute time frame.
2) Utilize the design criteria listed about to create a unique, efficient vehicle.
3) Be sure to write a step-by-step set of instructions so that your vehicle can be re-built by a design team. Only the size, style, and placement of the building blocks are important. The color used in your design does not matter. You will have a 15 minute time limit for writing your step-by-step directions.
4) When complete, notify your area supervisor (your teacher).
5) Once given the directive by your area supervisor, you must disassemble your vehicle and put all of the pieces back into your design bag and place any unused supplies from your bag into the plastic bag in your design bag.

SuperFuture Design & Engineering

(Part 1 - continued)

Instructions for building the Design Prototype for Team #_____ :

1) _____

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2) _____

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SuperFuture Headquarters

(Part 2)

Assignment:
As a SuperFuture Supervisory Team, your job is to test and approve the designs sent to you from the SuperFuture Design Team. The designers have provided the supplies and instructions for you to replicate their teleporting vehicle prototype.

You must carefully follow the instructions to re-create the design that the team made. This step is crucial because it will demonstrate if the design can be put into mass production. If you cannot re-create the design, the designers may lose their jobs AND you may face a demotion from your supervisor position. This is a critical step in the design and building process.

When you have completed your task, you must call over one of the presidents of SuperFuture Technologies to take a picture of the completed prototype. That picture will be compared to the picture taken in the design lab to determine if the process was successful.

Feedback:
"Supervisor" Team number: _____ (your team number)

"Design" Team number: _____ (the team you are evaluating)

Please evaluate how well the design team followed the required design elements. Grade each element on a **scale of 1-5**, with 1 not meeting the requirements and 5 fully meeting the requirements.

1) A solid, flat base _____
2) Walls to constrain the occupant(s) _____
3) A seating area large enough for the number of "people" found in your design bag _____
4) Some sort of roof (can be minimal) _____

Total Points Given out of 20 possible: _____

Results and Reflection:

1) Think about all the aspects of this project – design, building, spoken communication with your group, written communication of directions.

   Which things did you think you and your team did well? Why do you think that?

   _____

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   Which parts of the activity were you and your team not as successful with? What could you do to improve on those things in the future? _____

   _____

   _____

   _____

2) What would you change about the way this activity is done to make it better? Why would you make that change? _____

   _____

   _____

   _____

3) What grade (A→F) would you give YOUR TEAM on cooperation? _____

   on successful design? _____

   on successful instructions? _____

   on re-building the other design? _____

- Explain why you would give your team those grades. _____

  _____

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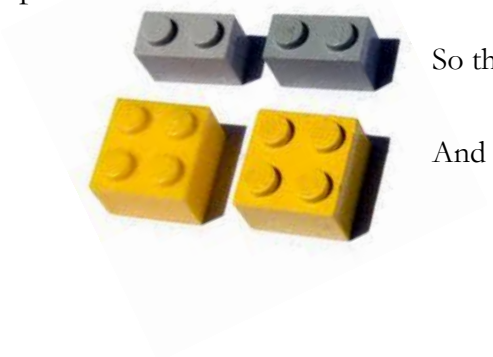
How to Identify Building Pieces

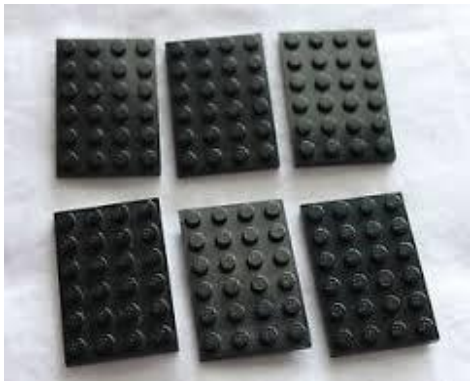
- The best way to identify a building block is by giving the dimensions of the piece.
- For example, the pieces shown below would be 2x1 (top) and 2x2 (bottom)
- The pieces shown below should be called BLOCKS



So this piece is a 2x1 BLOCK

And this piece is a 2x2 BLOCK

- The pieces shown below should be called FLATS



- These should be called WEDGES (with one peg on top, it should be 1x1)