Engineering Challenges:

While at home we are asking you to create a solution to one of the below challenges. In doing so, you'll become an engineer that needs to design and test your solution, working within the restrictions laid out for you.

Challenges:

1. Build a sailboat large enough to transport a small ball (golf ball, baseball, soft ball, or an orange/apple) over a distance of 3 feet.
2. Build a bridge that is wide enough for a soup can to roll across and will span a 5 foot gap.
3. Build a paper airplane that will fly a small plastic toy (about 2 inches tall) a distance of 10 feet.
4. Create a balloon powered car move a small toy (barbie, g.i. Joes, etc) across a room.
5. Build a water slide that is 3 feet tall that will transport a small toy (about 5 inches tall) into a tub and won't leak.

Engineering Restrictions:
As engineers it is important to build your models without overspending or using more supplies than you have access to.

- These models must be built from scratch, the materials you use cannot be from something that has a similar purpose to what you are building.
- You have up to 1 hour to build your first design and up to another hour to build your second design.
- Please get your parent's approval for your testing space prior to building.

Instructions:

- ❏ Pick your challenge from above and put it on your engineering worksheet
- ❏ Determine what you already know about the subject and what questions you have
- ❏ State a claim about what will happen.
    - ❏ Example: my boat will transport a golf ball across my bathtub (about 5 feet) using the materials I selected.
- ❏ Make your model:
    - ❏ List your materials
    - ❏ Create a model of your design on paper
    - ❏ Gather your materials
    - ❏ Create you model out of your materials
    - ❏ Post a picture of your model on See Saw
- ❏ Test your model:
    - ❏ Create the space needed to test your model with the challenge:
        - ❏ A bathtub full of water
        - ❏ Couches spaced 10 feet apart
        - ❏ Starting line and finish line
        - ❏ Post a picture of your testing space on SeeSaw
    - ❏ Test your model, post a video on the test on SeeSaw
    - ❏ Gather data
        - ❏ How far did your model go?
        - ❏ Did it stay intact? If not, when did it fall apart?
        - ❏ Write down what you saw in the results section of your Engineering Worksheet
- ❏ Write down your results
    - ❏ Use the data gathered to fill in the results section of your Engineering Worksheet
- ❏ Re-design your model:
    - ❏ Make any changes in your materials
        - ❏ Items added or deleted
    - ❏ Re-design the model of your design on paper
    - ❏ Gather any new materials
    - ❏ Create/fix your model out of your materials
    - ❏ Post a picture of your model on See Saw
- ❏ Re-test your model:
    - ❏ Re-test your model, post a video on the test on SeeSaw
    - ❏ Gather data
        - ❏ How far did your model go?
        - ❏ Did it stay intact? If not, when did it fall apart?
        - ❏ Write down what you saw in the results section of your Engineering Worksheet
- ❏ Write down your results
    - ❏ Use the data gathered to fill in the results section of your Engineering Worksheet

Engineering at Home

Name_____ Class _____

Challenge:

_____

_____

_____

_____

What I already know about my challenge:

_____

_____

_____

Questions I have about my challenge:

_____

_____

_____

Claim Statement:

Make a statement of what will happen based on what you know of the subject.

_____

_____

_____

Model Design:

Materials:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Model Design
Draw the design, include any instructions needed for building.

Did you post to SeeSaw: _____

Testing:

Were you able to post a video or picture to SeeSaw: _____

Results:

Describe what happened:

_____

_____

_____

_____

Do your results support the claim you made? Describe:

_____

_____

_____

Re-Design:

Describe any changes needed to the model to achieve the goal of the challenge:

_____

_____

_____

Describe how those changes could be implemented:

_____

_____

_____

_____

_____

_____

Will any new materials be added? Which and why?

_____

_____

_____

Will any materials be removed? Which and why?

_____

_____

_____

Model

Draw the design, include any instruction necessary

Results:

Describe what happened:

_____

_____

_____

_____

Do your results support the claim you made? Describe:

_____

_____

_____

Conclusion:

Was the model successful? Why?

_____

_____

_____

Would you do anything differently next time? What?

_____

_____

_____