

**Pre-KSC Trip: Paper Truss Design Challenge Engineering Report**

**Phase 1: Initial Design**

1. What is the challenge? \_\_\_\_\_

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2. What do we need to consider when solving the problem (challenge)?  
These are the specifications that our solutions must meet.

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3. What are some possible solutions? \_\_\_\_\_

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**Materials:**

- old newspaper (Roll and tape newspaper girders for truss beams.)
- masking tape
- paper cup
- string
- weights such as coins or washers

**Specifications:** Tape girders together to be 1 meter (39 inches long).

Glue or tape this side down in your  
interactive science notebook.

4. This is the solution we plan to build. (Make sure to include words to clarify the plan and describe the materials to be used.)

5. Why do I think it will work? \_\_\_\_\_

\_\_\_\_\_

***Design approved by Project Head*** \_\_\_\_\_

**Phase 2: Testing (This is recorded in your Science Notebook)**

Step 1: **Testing**- How will I record the data from our tests? (Make data chart—remember to leave room to record multiple tests.)

Step 2: **Test Analysis**—In your science notebook, answer these questions every time you test your prototype.

- Describe what happened when you tested your truss. Include data that provides evidence of your description.
- What makes your truss work well?
- What needs to be improved?
- How will I modify my prototype?
- Why do I think that will work?

*Remember to get each Analysis approved by the Project Head before beginning modifications.*

Step 3: **Modify** your prototype.

***Repeat Phase 2 steps until you have a final design that you will present in Phase 3.***

**Phase 3: Presentation**

You will present at an Engineers' Conference/Community Meeting to NASA. You are trying to win the contract to build the next truss section for the ISS. With your team, decide how you are going to present your design. Consider these questions:

- Who will explain how the design works?
- Who will give evidence on the effectiveness of the design?
- Who will answer questions from the audience?

**Practice your presentation. You are trying to “sell” your design as the most effective. Remember to use evidence from your tests to back up your claims of effectiveness. Keep in mind the specifications for the design.**