



Cardboard Chair Competition



Situation

Core E. Gated, the CEO of a local furniture company, has asked for several designs for a cardboard chair. During the process of researching for a more profitable piece of furniture, the company found that the most promising type of furniture would be a reclining/lounge chair. The company has asked the honors physics classes to come up with several design options. In order to be marketable, the chair must meet the guidelines listed below. In addition to designing the chair, the company has asked for proof of its integrity. All parts of the project are due on _____.

Design Requirements

1. The chair must be made entirely of corrugated cardboard (supplied by Core E. Gated), white glue, and/or hot glue.
2. The glue may only be used to glue layers of cardboard together.
3. Combined or glued layers of cardboard cannot exceed 3 pieces in thickness.
4. The chair must be fully functional and be able to support a 250 lbs. person in the sitting position.
5. The back of the chair must be set in a reclining position (60 degrees to the horizontal) and must be sturdy enough to support a person's back in this position.
6. Arms are required.
7. Seat dimensions should be no smaller than 20" x 20" and should be no less than 12" from the floor.
8. The chair must be able to be disassembled and fit in a box with the dimensions of 36" x 24" x 12".
9. Complete detailed assembly instructions with diagrams must be supplied with the chair.

Documentation/Presentation

1. To insure the safety of the consumer, Core E. Gated requires that the design of the chair be well documented and the integrity of the chair must be tested. The documentation should show the progression of ideas leading to the final design.
2. To help the company sell your chair, you should design a marketing brochure describing the specific benefits of your chair. This flyer should be designed using Microsoft Publisher or other desktop publishing program.
3. Complete detailed assembly instructions with diagrams must be supplied with the chair.
4. As a final step to creating your chair, you will present your design concept to the company in the attempt to sell the design to the company. This presentation must use Microsoft PowerPoint.

Grading

If any of the design requirements are not met, the furniture company has no use for the design. Therefore, any design not meeting any of the above design requirements may not receive any credit. **Your grade will be evenly distributed between the homework and lab categories when calculated in your class grade.**

Chair Construction (30 points - 50% of total)

Strength (9 pts)

How does the base respond when occupied?

Major movement	Minor movement	No Movement
1 pt	2 pts	3 pts

How does the back respond when occupied?

Major movement	Minor movement	No Movement
1 pt	2 pts	3 pts

Are the joints strong?

Loose and ready to fall apart	Sturdy, but may slide apart	Very strong/no movement
1 pt	2 pts	3 pts

Appearance/Comfort (6 pts)

Is the chair comfortable to sit in?

Collapsed	Desk chair	Lounge chair
1 pt	2 pts	3 pts

Does the chair look like a chair you would find being used in a home?

No concern for looks	Some concern	High concern
1 pt	2 pts	3 pts

Assembly (9 pts)

Is the chair easy to assemble?

Takes a brain surgeon	College education	No problem
1 pt	2 pts	3 pts

Are chair parts clearly labeled for easy assembly?

No labels	Missing several labels or labels are hard to find	No missing labels/All easy to find
1 pt	2pts	3 pts

Do the joints fit easily together?

Struggled with most of them	Some caused problems	No problems
1 pt	2pts	3 pts

Originality (6 pts)

Are there any unique features on the chair?

No unique features	Extra features, but not very unique	Extra, unique features included
1 pt	2 pts	3 pts

Are the materials used in a unique way?

No uniqueness	Somewhat unique	Very unique
1 pt	2 pts	3 pts

Documentation / Presentation (30 points - 50% of total)**Design Documentation (5 pts)**

This is a dated journal documenting each meeting of the design team. Each meeting should be summarized to describe the purpose of the meeting and the progress of the design process. The summary should include the date, time, and team member attendance. The summary should also include a log of the ideas considered in the design process. In addition, the reasons for choosing the actual designs over the other ideas should be explained. During the design process, the team should construct small models from note cards or cereal boxes to test design concepts. Pictures (digital, Polaroid, 35mm, etc) of these models and of the design/construction process should be included in the documentation, including a picture of the finished chair occupied by one of the team members.

Hardly any documentation	Poor documentation, ideas and reasons only listed.	Somewhat documented, poor explanations and reasoning	Good documentation, missing detailed reasoning	Well documented, includes all aspects required
1 pt	2 pts	3 pts	4 pts	5 pts

Instructions (5 pts)

Are the instructions for assembly easy to follow? The instructions should include a parts list and a step-by-step procedure using labels, including diagrams describing how the chair should be assembled.

Instructions are missing several ingredients leading to the inability to construct the chair	Missing one aspect of the instructions, or the chair cannot be constructed using the instructions	Missing several aspects of the instructions, leading to difficulty in constructing the chair	All aspects of the instructions are present, but the instructions are somewhat confusing.	All aspects of the instructions are present and the chair can be easily assembled using them
1 pt	2 pts	3 pts	4 pts	5 pts

Brochure (10 pts)

The brochure should be an eye-catching advertisement to sway the company to purchase your chair. It should be able to be used by Core E. Gated as a marketing tool to sell the chair to its customers. The brochure should include a company logo, a company slogan, contact information, suggested retail price, a description of the product including the theme and/or target market, special structural advantages to your particular chair, any accessories that may be available, and pictures pertaining to the project. Be careful with the use of pictures. Be sure they add to the brochure, not distract from the purpose of the brochure.

Brochure is missing several ingredients leading to the distrust of the product or company	Missing one aspect of the brochure, or the brochure leads to the distrust of the product or company	All aspects of the brochure are present, there is difficulty understanding the benefits of the product	All aspects of the brochure are present, but do not quite convince the reader to purchase the product.	All aspects of the brochure are present and is very convincing in selling the product
2 pts	4 pts	6 pts	8 pts	10 pts

Presentation (10 pts)

The presentation should convince the Core E. Gated company that they should purchase the group's chair design. The presentation should be a brief sales pitch (between 5 and 15 minutes) to convince the company to purchase the chair design. Points that should be covered in the presentation include: safety, structural integrity, production cost and retail price, special features and accessories, and target market. Part of the presentation should address the assembly of the chair including a demonstration of the assembly process. Be sure to include possible safety concerns that have been addressed in the design of the chair. The presentation should be given with the understanding that it is being given to a panel from Core E. Gated, not a room full of classmates (presenters' apparel should demonstrate this). A printout of the final presentation must be turned in the date the chairs are brought to school.

Presentation is missing several ingredients leading to the distrust of the product or company	Missing one aspect of the presentation, or the presentation leads to the distrust of the product or company	All aspects of the presentation are present, there is difficulty understanding the benefits of the product	All aspects of the presentation are present, but do not quite convince the audience to purchase the product.	All aspects of the presentation are present and is very convincing in selling the product
2 pt	4 pts	6 pts	8 pts	10 pts