Technology Education
Engineering Project Package

Team Name: ____________________________________________________

Class Id: ___________________________ Member Name: ______________________________

Member Name: ___________________________ Member Name: ______________________________

Member Name: ___________________________ Member Name: ______________________________

Business Meeting: (Recorder)
1. As a team, hold a business meeting to explore all design possibilities for a catapult. (Follow the attached agenda on page 3.) Minutes of the meeting must be typed and follow the format on the example on page 4.

Design Proposal:

2a. Cover Letter (Recorder)
Write a cover letter for the Design Proposal using the format as provided on the example on page 5. The letter should be addressed to Mr. Kat E. Log and be persuasive in style. Introduce the reader to you as a team of students and highlight design aspects that would promote your design favorably.

2b. Specification Sheet (Facilitator)
Write a specification sheet to reflect the overall project and your team’s design. The Specification sheet should contain a general problem statement, project goals and the physical specifications. See the example on page 7 for content and format.

2c. Design Plan (Designer)
Draw an orthographic projection in half scale of the proposed catapult.

2d List of Material (Designer)
Develop a list of material for all of the parts in the catapult’s design. All dimensions should be actual size.

Build and test a prototype of the team’s design.

Reflective Essay:
3. When the catapult is finished, each team member is to write a reflective essay on the project. The instructor will issue the specific writing prompt prior to the completion of the project.
Catapult Scoring Matrix

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Catapult Goals:

1. The ball must travel in the air ten feet or more.
2. The ball must go directly into the can. The ball can not hit the floor or ceiling.
3. The device must be freestanding and designed to shoot directly from the floor.
4. The device must be strong enough to withstand ten consecutive shots.
5. Each shot must be consistently accurate.
6. The design must have a triggering device.
7. The design must be cost effective.
8. The device must be manufactured from available material.
9. The device must be manufactured in the school’s shop.
10. Must fit into shop’s designated project storage.

Business Meeting Agenda

1. Call the meeting to order: Select a facilitator, recorder and designer for the team.

2. Set Group Norms: Discuss how decisions will be made in your group. Decisions should be made by: 1) the leader, 2) majority vote or 3) consensus.

3. Division of Labor: Divide the work amongst your group by reading and discussing each item. (A recommended division of labor is: Facilitator does item 2b; Recorder does items 1 & 2a; Designer does items 2c & 2d and all members do item 3.)

4. Company Name Selection: Discuss and select a company name for your team. Keep in mind the name will be used in your advertising and will become public knowledge.

5. Team Presentations: Each team member presented their own ideas to the team using thumbnail sketches.

6. Brainstorm Session: As a team, brainstorm for any other ideas that may have spawned as a result of the individual ideas. Discuss and then select a conceptual idea. Draw a full sized thumbnail sketch and share with the instructor prior to drawing the rough draft.

7. Project Approval: Catapult Goals Officially meet with the teacher for project approval prior to beginning construction.
Minutes of Design Meeting

Meeting Date: Tuesday, May 10, 2010 - Monday, May 16, 2010
Location: ELMS Technology Education Facility
Time: 8:40 - 9:26
Members Present: Johnny Appleseed, Ben Franklin, & Jimmy Carter
Members Absent: None

1. **Meeting called to order:** The positions of facilitator, recorder and designer were discussed and the outcome is as follows:
   - Ben Franklin ........................................ Facilitator
   - Jimmy Carter.......................................... Recorder
   - Johnny Appleseed..................................... Designer

2. **Set Group Norms:** The group decided to make all decisions based on consensus.

3. **Division of Labor:** The items from the assignment sheet were discussed and the team decided to proceed with the recommended division of labor.
   - Ben Franklin .................. (Facilitator) ..................... Item: 2b & 3
   - Jimmy Carter .................. (Recorder) ..................... Items: 1, 2a & 3
   - Johnny Appleseed .............. (Designer) ..................... Items: 2c, 2d & 3

4. **Company Name Selection:** The team discussed several names. The final decision was: Cantankerous Catapults Inc.

5. **Team Presentations:** Each team member presented their ideas on how the catapult should be designed. Ben’s idea was to use a conventional design similar to Mr. Miner’s. Jimmy’s idea was to use a paddle similar to a Ping-Pong paddle and hit the ball into the can. Johnny’s idea was a complicated series of weights and pulleys to throw the ball.

6. **Brainstorm Session:** The team tried to brainstorm but did not come up with any really new ideas. The team discussed the merits of each others’ ideas and decided to use Ben’s with some minor modifications. The team felt Johnny’s idea was too complicated and Jimmy’s idea would never work well enough to be accurate.

7. **Project Approval:** A meeting was held with Mr. Miner and he approved the project.

Respectfully submitted,

Jimmy Carter

Jimmy Carter, Recorder
Mr. Kat E. Log  
Hearthsong Products, Inc.  
c/o: Mr. Miner  
East Lyme Middle School  
31 Society Road  
Niantic, CT 06357

Dear Mr. Log:  

This letter is in response to the request for new catapult designs to be published in your Hearthsong catalog. My colleagues and I are students in Mr. Miner’s Technology Education engineering class at East Lyme Middle School. We would like to take this opportunity to present you with a very new and innovative design.

Our Catapult … Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi nesciunt. 

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I personally want to thank you for your interest in Cantankerous Catapults Inc. and our catapult design. If you need additional information, please don’t hesitate to call. It is our goal to meet your specific needs.

Sincerely,

Jimmy Carter, Recorder

November 8, 2011
Writing prompt for the business letter:

The purpose of the business letter is to serve as a cover letter for the team’s Design Proposal. It is to be addressed to Mr. Kat E. Log, as demonstrated in the preceding example, and should introduce the students’ team and their design concept.

The above example is to demonstrate the format of a business letter and to start the letter for its ensuing content. The additional 4 paragraphs should detail innovative design concepts and/or the team’s quest for customer friendly service.
I. Problem Statement

The purpose of a problem statement is to briefly define the problem you are trying to resolve.

II. Project Goals

1. The ball must travel in the air ten feet or more.
2. The ball must go directly into the can. The ball cannot hit the floor or ceiling.
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8. The device must be manufactured from available material.
9. The device must be manufactured in the school’s shop.
10. Must fit into shop’s designated project storage.

III. Physical Specifications

Overall Height ........................................................................................................ 8”
Overall Length ........................................................................................................ 14”
Overall Width ......................................................................................................... 4.5”
Shipping Weight ................................................................................................. 1 lb. 3 oz.
Propulsion ............................................................................................................. Rubber Band
Type...................................................................................................................... Swing Arm
Primary Material................................................................................................... Wood
*** This page is left blank intentionally ***
Available Material List

Lumber (Thk’ness X Width X Length)
- ¾” x 5 1/2 “ X 10 Feet Pine
- ½” X 5 1/2” X 10 Feet Pine
- 1 1/2” X 2” X 8 Feet Pine
- 2” X 8” X 8 Feet Pine

Hardwood Dowels (Dia. X Length)
- ¼” Dia. X 36” Long Birch
- 3/8” Dia. X 36” Long Birch
- 1/2” Dia. X 36” Long Birch
- 3/4” Dia. X 36” Long Birch
- 1” Dia. X 36” Long Birch

Aluminum (Dia. X Length)
- ¼” Dia. X 36” lon

Brass (Dia. X Length)
- 1/8” Dia. X 36” long

Steel
- Assorted sizes and shap
- Sheetmetal – Cut to siz

Hardware, FH Wood Screws
- #6 X 3/4” Lg. Steel
- #6 X 1” Lg. Steel
- #6 X 1 1/4” Lg. Steel
- #8 X 1” Lg. Steel
- #8 X 1 1/4” Lg. Steel
- #8 X 1 1/2” Lg. Steel
- #8 X 1 3/4” Lg. Steel
- #10 X 1” Lg. Steel
- #10 X 1 1/2” Lg. Steel
- #10 X 2” Lg. Steel

Hardware, Miscellaneous
- ¼” Cup Hook Brass
- 3/8” Cup Hook Brass
- ½” Cup Hook Brass
- 3/4” Shoulder Hook Brass
- 1!/2” Shoulder Hook Brass

Rubber Bands
- 1/8” X 3”
- ¼” X 3 ½”
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