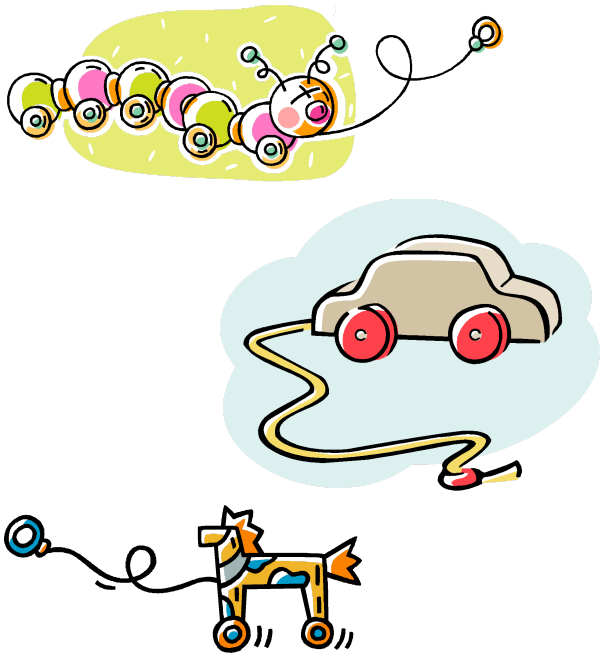
Project 2.2.4 Pull Toy Construction

Introduction

A pull-toy is pulled along the ground and a movement is produced, such as a head nods, a tail wags or a figure bobs up and down. The pull-toys use mechanisms to transfer energy from the wheels to the characters that define them.



Equipment

- Engineering notebook
- Pencil
- VEX kits

Procedure

With your knowledge of mechanisms, you and your partner will use the design process to design and build a mechanism or series of mechanisms that will meet the following criteria:

- The mechanism is to be built entirely from VEX parts provided in the lab.
- The mechanism is to be built on a small 4 wheel chassis capable of being pulled across a table-top surface, the movement of the wheels will make the toy move.
- A gear mechanism attached to the wheels will make another part of the pull toy move.
- An illustration should be added to the output of the mechanism so as to simulate the toy.

Use the templates to document your design process.

- Design Brief Template – Define the problem.
- Decision Matrix Template – Decide which solution you will pursue (each student in the group should sketch and annotate at least one idea).
- My Design Process Solution – Describe what steps your group takes to solve the problem.

Pull Toy Design Brief

Client:	**Mr. Johnson's daughter Layla**
Designers:	
Problem Statement:	
Design Statement:	
Constraints:	
Deliverables:	

1. In the criteria boxes list the criteria from your design brief.

2. Under the ideas boxes put your 3 ideas and your partners 3 ideas – label the sketches A, B, C, D, E, F, G, H, and I.

3. Evaluate the design idea for each criteria. For a yes or no response to the criteria, use 1 if the answer is no, 2 if the answer is yes. When assessing a criteria, use the scale between 1 and 4, 1 -2 means it almost or definitely does not meet this criteria, 3 - 4 means it almost or definitely is the best possible solution to the problem for this specific need.

4. When you finish evaluating your sketches add the numbers across and put your answer in the Total column.

5. The design with the highest total is your Best Solution.

	Criteria						
Ideas							**Totals**
A Designed by:							
B Designed by:							

C Designed by:							
D Designed by:							
E Designed by:							
F Designed by:							
G Designed by:							

H Designed by:							
I Designed by:							

Conclusion

1. What would you have changed if you had time to redesign one part of your pull toy?

2. Which solution to the pull toy problem presented by another group was intriguing to you and why?