

Engineering Design Process Student Activity Sheet 2.3e

Student Name: _____

MSTEM Accel Car Chassis Challenge

Question for Analysis

What is the best toy car chassis design with the most flexibility in function?

Key Concepts

- **Engineering Design Process** – a series of steps that guides engineering teams as they problem solve.
- **Rapid Prototyping** – the fabrication of a physical part, model or assembly using 3D computer aided design or craft products.
- **Thumbnail Sketches** – quick, abbreviated drawings done very rapidly and with no corrections.

Overview

You are tasked with the challenge of designing a toy car chassis that will accept the EUDAX components from the MSTEM Accel Car Component Dimensions activity. This worksheet will be completed during a discussion of the Engineering Design Process. As you work your way through the Engineering Design Process, you will use engineering tools to generate ideas. By the end of this activity you will have a 2D pencil sketch as a prototype.

Chassis Constraints

- Must be no wider than 2.25 inches
- Must be no longer than 7 inches
- Cannot be paper thin (1/4-in thickness min)
- Must allow for addition of pulleys on one axle
- Must allow for attachment of 1.5V-3V motor
- Must allow for attachment of AA Battery Box
- Profile must allow for attachment of 16oz water bottle
- 3 D printing capable high recommended
- Future “topper” attachment will need to be accommodated for in design

Brainstorming

With your group, generate a list of at least 15 questions that relate to the design of the MSTEM Accel Car Chassis.

SCAMPER Activity

With your group, use the SCAMPER tool to help you generate as many possible designs of your MSTEM Accel Car Chassis as you can. There are specific parts/components that will be added to your chassis. Make sure your designs account for these. Be creative!