**Force and Motion-Second Grade**

Goal: Using what you’ve learned about force and motion thus far, design a catapult that will shoot a marshmallow the furthest and/or with the most accuracy.

Day 1: **Investigate**:

* Watch catapult video (YouTube link on SEM website)
* Individually, students search images, videos, etc.. of different kinds of catapults & how to make them

Day 2: **Brainstorm**

* In groups of 2, students share images found and sketch several prototypes for a catapult using brainstorming sheet

Day 3: **Full group planning**

* Students assign group roles: architect, project manager, artist, materials manager/timekeeper, launcher, speaker, notetaker
* In groups of 4, students share brainstorming and decide upon one design for their catapult
* Students design catapult and generate a list of needed materials using the planning sheet

Day 4-5: **Build**

* Students construct catapult based on design
* Students conduct 5 trials, taking notes and making modifications after each trial (trial and modifications recording sheet)

Day 6: **Test and Present**

* Each group shares design, modification process, and tests their catapult for distance and then accuracy (hit the x) Catapult Rubric & Group Work Rubric

Day 7: **Reflect**

Whole group discussion questions after presentations:

* + How did you use what you’ve learned about force and motion in the design of your catapult?
  + What did you learn from your trials and what modifications did you make as a result?
  + Are there any changes you may have made to your catapult if you had seen some of the other groups’ presentations first?
  + What was the hardest part of the process? How did you overcome this obstacle?