

# Engineering Explorations 5-6

**Project Equipment** (tools used throughout week or common household items)

REQUIRED:

- 1 pair of scissors (daily use)
- 1 box cutter (adult help recommended - to cut foam board or cardboard)
- 1 strong adhesive tape - (e.g. duct tape, packing tape, etc.)
- 1-2 other adhesive tapes - (any two types, e.g. masking tape, scotch tape, electric tape, painter's tape, etc.)
- 1 marker, black (permanent preferred)
- 1 pencil with eraser, sharpened
- 1 notebook (can be partial) (*substitutions: copy paper, scrap paper*)
- 2 hand towels (*substitutions: paper towels, old rags*)
- 1 medium-sized container to fill with water (e.g. tub, kitchen or bathroom sink)
- 1 plastic card (such as a library card, old credit card, rewards card, etc)
- 100 small items with some mass (e.g. pennies/coins, BBs, buttons, pebbles, legos--these will be getting wet)
- 10 balls (small sports balls such as racquetball, golf ball, tennis ball, etc., or any combination of these; basically, anything that rolls)
- A designated space for building/creating (can be a table, chair, garage, wall or some combination)

**Activity Supplies** (things that could be used-up or incorporated into a project)

REQUIRED:

- 20 balloons, 12" (size is important)
- 10 balloons, small/dart (3-5")
- 15 straws, bendy/flexible, standard size
- 2 sheets aluminum foil (10-12")
- 10+ craft sticks, any size/color (aka popsicle sticks) (*substitutions: wooden skewers, wooden coffee stirrers, etc.*)
- 15 rubber bands
- 10 plastic cups, clear, 9-12 oz, with a rim and should be pretty sturdy (*substitutions: clear plastic water bottles ~12-20oz*)
- 1 piece foam board, 12"x18", (*substitutions: yard-sale type signs, flat plastic that can be cut with scissors*)

OPTIONS FOR ENGINEERING PROJECTS & RUBE GOLDBERG (MAKE USE OF WHAT YOU CAN FIND)

- Track-building ideas:
  - Spatulas (*substitutions: anything with a groove, on which a small marble can roll*)
  - Hardcover books
  - Empty boxes from plastic wrap/aluminum foil/parchment/wax paper
  - Paper towel and toilet paper tubes (*substitutions: roll-up paper or thin cardboard & secure with tape*)
  - 1 foam insulation piece (3-6ft) (*substitutions: pool noodles*)

- Option 1: Pop a balloon
  - Push pins (*substitutions: thumbtacks, small nail*)
- Option 2: Raise a flag
  - Mini-flag (can make these out of pencils and paper or fabric at home, too)
  - String, 5ft (*substitutions: yarn, shoelaces, etc.*)
- Ideas for general items that can be used for Rube Goldberg:
  - Binder clips (any size)
  - Funnels (any size)
  - Pull-back toy cars, matchbox cars
  - Dominoes (*substitutions: lego pieces, chocolate candy bar, small food coloring bottles, etc.*)
  - Marbles (any size; grab some from board games, etc. make sure they are smaller than the sport-sized balls mentioned above)

**Shopping List for some items that may not be easily available at your local store!**

[https://www.amazon.com/hz/wishlist/ls/2A124K21ZUWMV?ref\\_=wl\\_share](https://www.amazon.com/hz/wishlist/ls/2A124K21ZUWMV?ref_=wl_share)