



## Virtual STEAM Mobile—Master Builders Engineering Challenge!

### Badge Requirements:

- Think Like an Engineer Journey, elements of Step 1 (Learning about the engineering design process)

### Materials

- Paper
- Pencil
- Markers, crayons, colored pencils
- Building materials
  - Paper (newspaper, scrap paper, etc.)
  - Cups (plastic or paper)
  - Cutlery (plastic)
  - Straws
  - Popsicle sticks
  - Clothespins
  - Anything that might be useful for building—think creatively and outside the box!
  - Various types of building kits
    - LEGOS
    - KEVA planks
    - K'Nex
    - Brain Flakes
    - Any building toys you have!

### Introduction

- What is engineering?
  - Engineering is the branch of science and technology concerned with the design, building, and use of engines, machines, and structures.
  - What are some examples of things created by engineers?
    - Buildings, cars, kitchen appliances, etc.
  - There are many different kinds of engineering!
    - Civil, mechanical, electrical, chemical, aerospace, structural, genetic, biomedical, computer, software, military, nuclear, forensic, and environmental to name a few!
    - Research each of these to find out more!
  - Every engineer follows an Engineering Design Process
- Engineering Design Process
  - Ask—what are the problems?
  - Imagine—brainstorm ideas
  - Plan—draw a diagram, gather materials
  - Create—follow the plan, test it out
  - Improve—talk about what can work better, repeat steps again to make changes

### Activity

- You will follow the Engineering Design Process while building new things!
- Grab paper and pencil to get started
  - Close your eyes and think of a building
    - Are there any problems?

- What are your ideas for this building?
- Brainstorm ideas and plan your diagram
- Gather building materials and start creating!
- Present your creation and talk about it—how can you improve your design?
- Add improvements!
- Once you have brainstormed ideas for your building, gather materials to build with. Don't have any building kits like LEGO's? No problem—now is the time to be creative! Use straws and tape, paper, plastic cups, Popsicle sticks, etc.!

Examples of structures built by Girl Scouts in your council:

