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# BUILDING A ROLLER COASTER



*STEAM Activity*

The American Heart Association recognizes the importance of building healthy bodies and minds. This STEAM activity is an introduction to Engineering.

## Objective:

Using common materials, students will build a track for a ball to travel along before landing safely in a cup at the bottom. For older students, you can add more materials and challenges such as increasing the number of turns. Students can conduct experiments with different heights, lengths, and turns.

## Materials Needed:



Scissors



Masking Tape



Ping pong ball or marble



9 oz cup



Materials for a track and supportive structure(s) like newspaper, construction paper, paper plates, toilet paper roll and cardboard.

## Activity:

1. Talk about civil engineering as a STEAM career. Civil engineers are engineers who design structures, from bridges and buildings to train tracks and roller coasters!
  - **Optional:** Watch videos of different types of roller coasters to help with brainstorming.
2. Split students into groups of three to create a roller coaster design. Each group will be given the mission of designing a roller coaster that will carry their ball a distance of 1 foot, ending with a landing in a cup at the end. Give a time limit to build.
  - Increase this distance or require multiple turns or loops for more advanced groups.
3. After the prototype is built, host a reflective class discussion and if time allows have students try again and re-build with what you just learned.

## Discussion Questions:

- Did you plan out your design first or just start building? Would you do it differently?
- Did your ball make it to the end? And if not, why do you think it didn't?
- What materials worked best for your design?
- Discuss why the starting hill has to be taller than any other hills or loops in your coaster.
- What were a few challenges in working in a team?
- What did you learn about communication?

