



School Supply STEAM Challenges

September 2020

Bridge Building

Directions:

- Start by piercing each egg section on the bottom of an egg carton with scissors. Some children may need help with this, or a grown-up could do this ahead of time.
- Connect markers in pairs with a rubber band. Loop one end of the rubber band around one marker, then twist the band around the end a couple of times. Attach the other end of the rubber band to the other marker in the pair. Repeat this process until you have six pairs of markers.
- Place each markers pair in the holes you made in the egg carton with the rubber band crossing the middle of the carton.
- Open the egg carton. Wrap a rubber band around each pair of markers about two inches from the base of the markers.
- Once you have the rubber bands in place, you will lose up the egg carton and turn it on its side.
- Pop the end of each marker out the vent hole. They don't need to stick out very far; just enough to cause the tops of the markers to pull out and not push in.
- Place the structure on a flat surface with the tops of the markers facing up. Then place a yardstick or ruler on top of the rubber bands.
- Test your bridge by sending a toy car across it!
- You could also use the included bouncy balls to simulate an object in motion, or any other object you think might give you interesting results. Decide what makes a successful test for your bridge and track your progress!

Materials List

- 12 Rubber Bands
- 12 Markers
- Scissors
- Ruler
- Egg Carton* with Top Vents
- Toy Car*

*Not included in the supply bag.

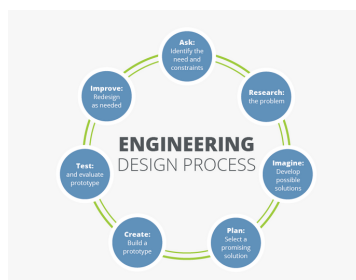
Our inspiration for this STEAM challenge and the directions enclosed may be found at:
<http://jdaniel4smom.com/2016/08/science-experiments-for-kids-with-school-supplies.html>



Modifications and extensions

For a younger crowd...

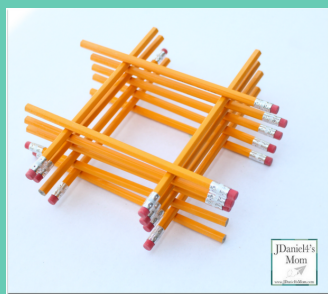
Younger children especially learn best through play. Ask them what they could build with the materials, and watch their new ideas take shape!



For more advanced learners...

Use the Engineering Design Process to tackle this challenge. Track, record and modify your results as you test your theories.

Other experiments to explore:



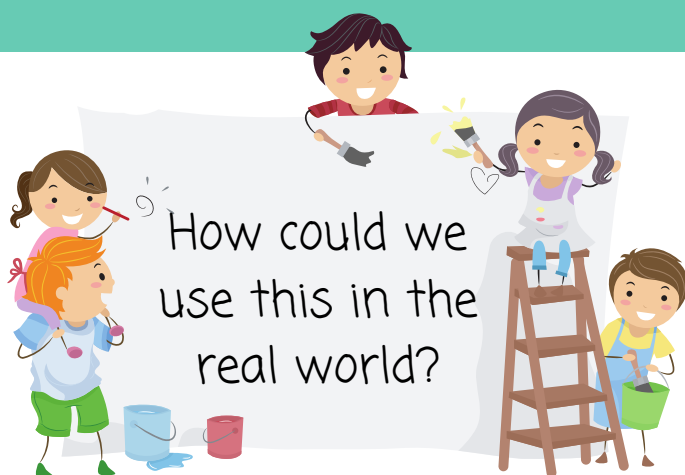
Build towers, shapes and more
with pencils!

<https://jdaniel4smom.com/2016/08/stem-activities-for-kids-with-pencils.html>



Roll it down the road!

<https://jdaniel4smom.com/2016/08/science-project-ideas-moving-balls-down-a-yardstick-road.html>



How could we
use this in the
real world?

These skills used in these projects (building using problem solving, decision-making and organization) are frequently used by

Civil Engineers

"Civil engineers conceive, design, build, supervise, operate, construct and maintain infrastructure projects and systems in the public and private sector, including roads, buildings, airports, tunnels, dams, bridges, and systems for water supply and sewage treatment."

- U.S. Bureau of Labor Statistics

Learn More!

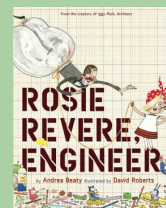
- The United States Department of Labor: Occupational Outlook Handbook
<https://www.bls.gov/ooh/architecture-and-engineering/civil-engineers.htm>
- Career Kids: Civil Engineering
<https://careerkids.com/pages/civil-engineers>
- Crash Course Engineering: Civil Engineering Episode #2 [video]
<https://www.pbs.org/video/civil-engineering-oi61n3/>

Titles to Explore



Tech lab : brilliant builds
for super makers

by Jack Challoner



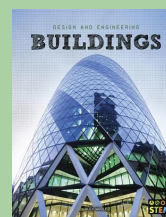
Rosie Revere, engineer

by Andrea Beaty



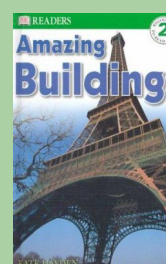
Engineering AT & T
Stadium

by Barbara Lowell



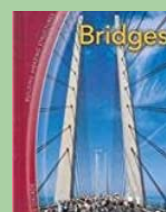
Buildings

by Alex Woolf



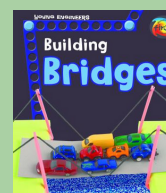
Amazing Buildings

by Kate Hayden



Bridges

by Chris Oxlade



Building Bridges

by Tammy Enz