

STEM OUTREACH PRESENTS:
**STEM EACH DAY KEEPS
THE BOREDOM AWAY**

MOVIE EDITION

FAMILY NIGHT AT THE MOVIES



THE LEGO MOVIE 2:THE SECOND PART



- <https://www.steampoweredfamily.com/activities/wind-powered-stem-challenge/>
 - Supplies – Shoe Box, Skewers, String, Construction Paper, LEGO
 - This is a pure engineering challenge, so find things around the house that can help you make your windmill work more efficiently.
- <https://lifeovercs.com/lego-stem-challenge-cards/>
 - Supplies – LEGO
 - Work with your children to come up with build ideas; older children can come up with designs on their own. Designs can be as simple or complex as your family would like, examples: cat or cat rescue building; bridge or drawbridge; car or parking garage.
 - Bonus points if you can come up with a transforming design!
 - Try playing a *Pictionary* style game with the design ideas.
- <https://leftbraincraftbrain.com/storytime-lego-building-challenge/>
 - Supplies – LEGO
 - If you have younger children or you want to get away from the screen, this may be this best experiment for you.
 - There is a great list of books to build from, but if you do not have them try looking for one around this house that you can use. Most books should have a thing or two that would be fun to build!

SPIDER-MAN: INTO THE SPIDER-VERSE

- Spider Web Challenges
 - Novice – <https://handsonaswegrow.com/spider-web-halloween/>
 - Supplies – Painters Tape and Newspaper
 - Beginner – <https://jdaniel4smom.com/2016/10/stem-challenge-spider-web-hanger.html>
 - Supplies – Plastic Hanger, Floss, and Rocks
 - The level of difficulty on this can be increased by having you child build the web themselves or limiting the amount of floss they are allowed to use.
 - Intermediate – <https://www.primarythemepark.com/2017/09/spider-unit-for-kindergarten-and-first-grade/>
 - Supplies – Mason Jar Lid, Floss, and Dry Bean
 - This link contains several spider activities, but we are focused on the Day 4 activity.
 - To increase the difficulty have your child build a web that traps the “bug” inside even when the web is turned upside down.
- Gravity Challenges
 - <https://buggyandbuddy.com/gravity/>
 - Supplies – Stick, String, Paperclips, Strong Magnets, Ruler
 - Introduce the concept of gravity.
 - There are also some other gravity experiments listed at the bottom of this link.
 - <https://www.lottie.com/blogs/stem-activities/19061807-model-of-a-black-hole-activity-for-kids>
 - Supplies – Elastic Bandage (semi-stretchy material), Marble, and a Heavy Ball
 - Introduce the concept of gravity and black holes. You can also introduce the concept of Space-time.
 - <http://www.arvindguptatoys.com/toys/blackhole.html>
 - Supplies – Paper, Cup, Very Small Ball
 - Introduce the concept of gravity and black holes.



BIG HERO 6

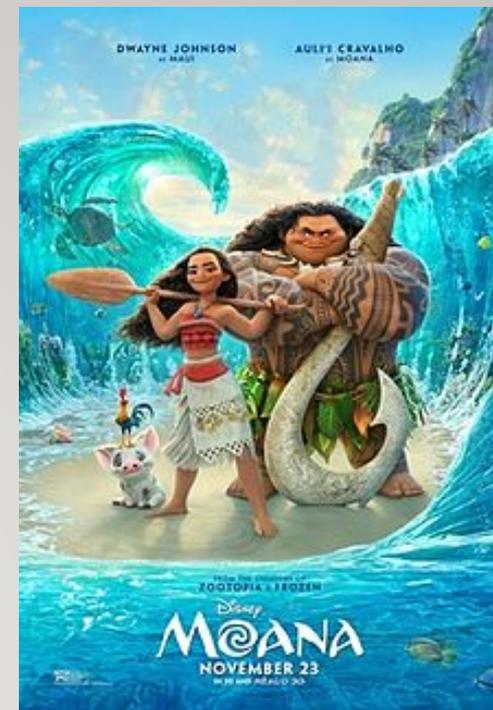
SUPPLIES: POOL NOODLE, ELECTRIC TOOTHBRUSH, STICKERS



- Pre-K to 2nd grade
 - <https://teachpreschool.org/2015/07/21/steam-moving-noodle-robots/>
- 3rd to 6th grade
 - <https://kidssteamlab.com/art-bot-art-projects-kids/>
 - Supplies - Markers
- 7th to 12th grade
 - Learn how vibrating motors work: <https://www.instructables.com/id/Vibrating-Motors/>
 - Find an old toothbrush/toy/phone/pager with a vibration feature; take them apart and explore the insides.

MOANA

- <https://viewsfromastepstool.com/stem-challenge-moana/>
 - Supply Suggestions - Popsicle Sticks, Rubber Bands, Straws, Clothespins, Paperclips, and Moana
 - This is a pure engineering challenge, so use items you have around the house. You might be surprised what your children come up with! Also, you just need something to represent Moana.
 - If your design fails, discuss the issues and re-design.
 - For a more difficult challenge try <https://www.feelgoodteaching.com/2017/05/stem-challenge-boat-building.html>.
- <https://meagangetsreal.com/moana-inspired-stem-challenge-free-printables/>
 - Supply Suggestions - Small Sticks, Acorns, Leaves, Hot Glue Gun
 - This is a pure engineering challenge, so use items found outside in the yard. If your child is old enough, have them gather their own supplies.
 - If your design fails, discuss the issues and re-design.
 - Discuss the scientific method and have your child try follow its steps for this experiment.
- <https://ourfamilycode.com/moana-balloon-tower-stem-challenge/>
 - This consists of six STEM challenges. If you have done any of the previous three links you will skip challenge #1.
 - Supplies vary from challenge to challenge, but really you can use whatever is around the house and/or yard!



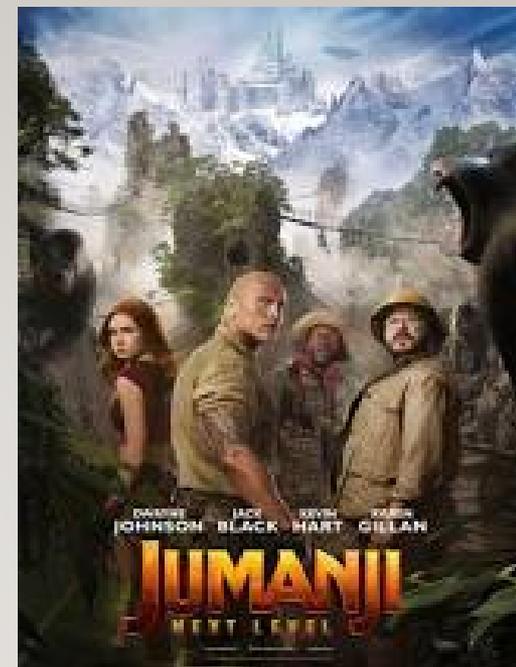
JUMANJI: THE NEXT LEVEL

• Ramp Activities

- <https://alittlepinchofperfect.com/cereal-box-ramps-hands-science-activity-kids-play/>
 - Supplies – Cereal Box, Blocks and Object to go Down the Ramp (ball or car)
 - Try changing angles and heights; discuss how the changes affected your object.
- <https://www.science-sparks.com/rolling-eggs/>
 - Supplies – Eggs, Ramp, and Materials to Wrap the Egg
 - You can use ramps created in the other two Ramp Activity links or a slide.
- <https://frugalfun4boys.com/easy-science-experiments-with-momentum/>
 - Supplies – Two Different Sized Marbles, Ruler with a Groove, and an Index Card
 - Supplies can be adjusted based on what is around your house. For example, you could use balls and a half a pool noodle.
 - For older children chart the differences in a data table. For the younger kids, talk about why the changes are happening.

• Geometry Activities

- <https://babbleddabledo.com/science-engineering-kids-tensile-bubbles/>
 - Supplies – Straws, Pipe Cleaners, and Bubble Solution
 - For older children have them design and make more shapes.
- <https://stressfreemathforkids.com/members-only/how-to-teach-key-math-concepts/teaching-lines-and-angles/>
 - Supplies – Craft Sticks or Tape and Markers
 - Work through the geometric vocabulary



GET CONNECTED.

Science: <https://ed.ted.com/> ; <https://www.skypeascientist.com/for-families.html>

Technology: <https://thinkable.com/#/> ; <https://education.ti.com/en/resources/online-learning-program>

Engineering: <https://educationblog.microsoft.com/en-us/> ; <https://www.iste.org/>

Mathematics: <http://studyjams.scholastic.com/studyjams/> ; <https://www.prodigygame.com/>

Children's Health and Wellbeing:

- <https://www.theottoolbox.com/about-us/>
- <https://storytimefromspace.com/>
- <https://www.shapeamerica.org/>

* Some links throughout this document are not accessible on government computers or Internet Explorer. If you are experiencing difficulty opening a webpage try changing to Chrome or Firefox.

FOR QUESTIONS OR HELP PLEASE
CONTACT

STEM@MDA.MIL

WE WOULD ALSO LOVE TO RECEIVE
PHOTOS OF YOU AND YOUR CHILDREN
“STEM-ING OUT”!