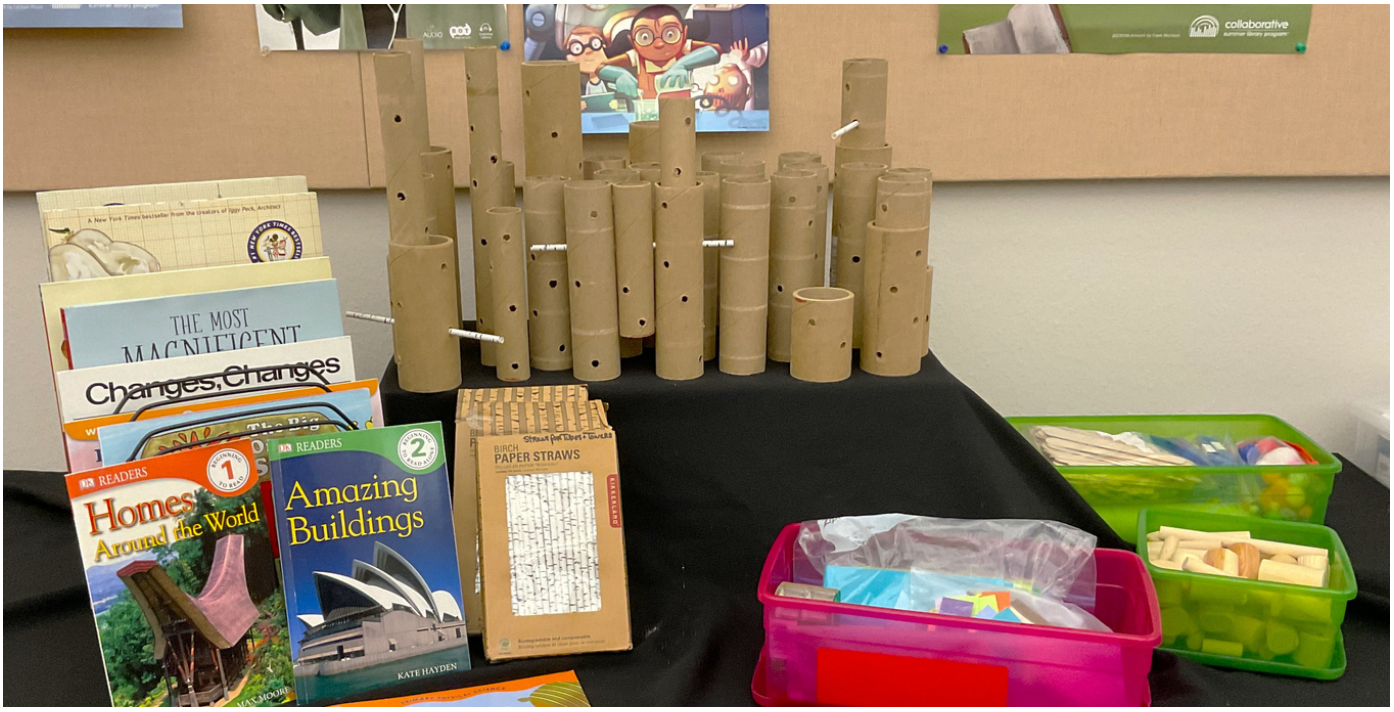
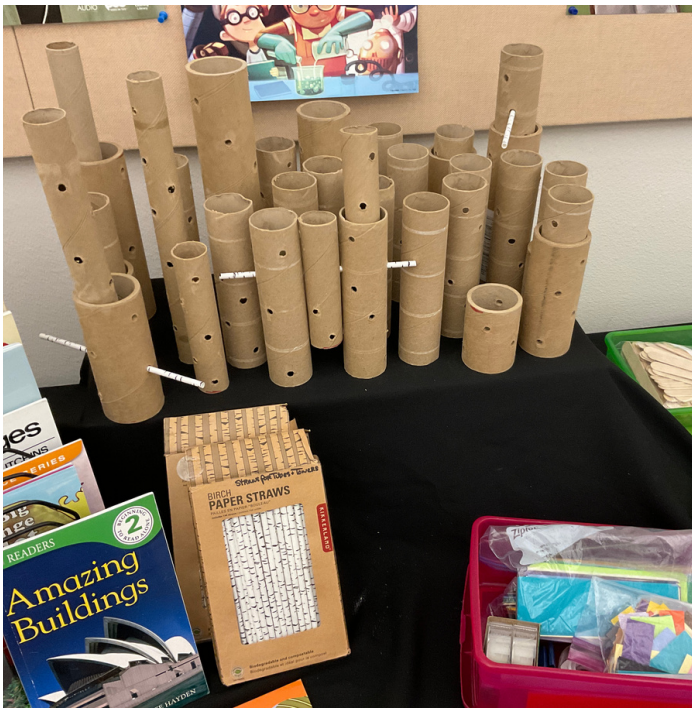
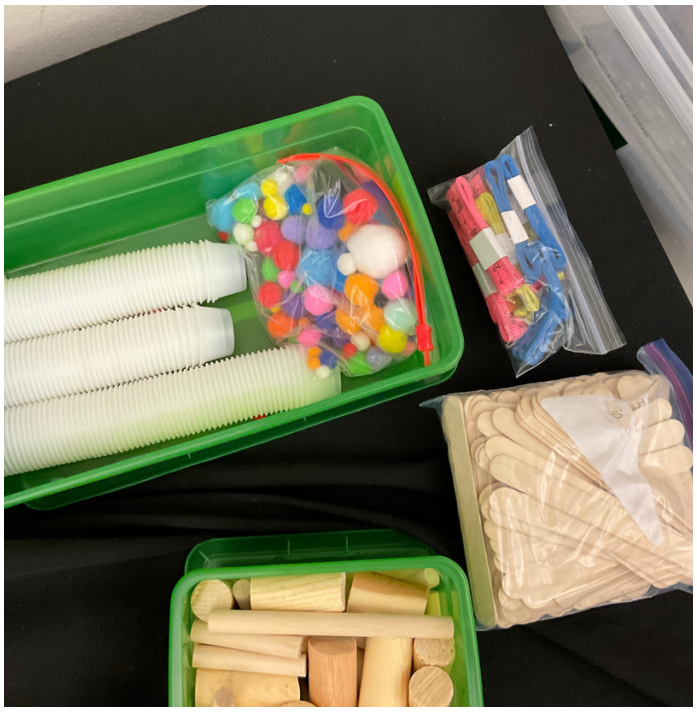
stem to Read

Towers and Triangles







Harness the power of triangles with this kit! Create triangles and learn to launch items and build with them. Feed your inner engineer with these three fun activities.

NEW MEXICO STATE LIBRARY

INVENTORY OF TRUNK

Towers and Triangles

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		<u>Books</u>
❑	❑	*Rosie Revere, Engineer* by Andrea Beaty
❑	❑	*Iggy Peck, Architect* by Andrea Beaty
❑	❑	*The Most Magnificent Thing* by Ashley Spires
❑	❑	*How Do You Lift a Lion?* by Robert Wells
❑	❑	*Changes, Changes* by Pat Hutchins
❑	❑	*Architecture Shapes* by Michael J. Crosbie
❑	❑	*Move It: Motion, Forces, and You* by Adrienne Mason
❑	❑	*The Big Orange Splot* by Daniel Manus Pinkwater
❑	❑	*Roberto, the Insect Architect* by Nina Laden
❑	❑	*Amazing Buildings* by Kate Hayden
❑	❑	*Homes Around the World* by Max More

Over →

Launching Levers

- ❑ ❑ Small plastic containers
- ❑ ❑ 12 measuring tapes
- ❑ ❑ Pom-poms of various sizes
- ❑ ❑ Large craft sticks
- ❑ ❑ Wooden cylinders of various sizes

Tubes and Towers

- ❑ ❑ Numerous tubes of various sizes with holes
- ❑ ❑ 2 boxes of birch paper straws

To Be Provided by Borrowing Library*

- ❑ ❑ Scotch tape
- ❑ ❑ Bag of large rectangle pieces of cardstock
- ❑ ❑ Bag of small rectangle pieces of cardstock

* Some of these materials are provided in the kit but may be recommended to purchase as they will not be restocked by NMSL in the future.

Checked by _____ Date _____

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Launching with Levers

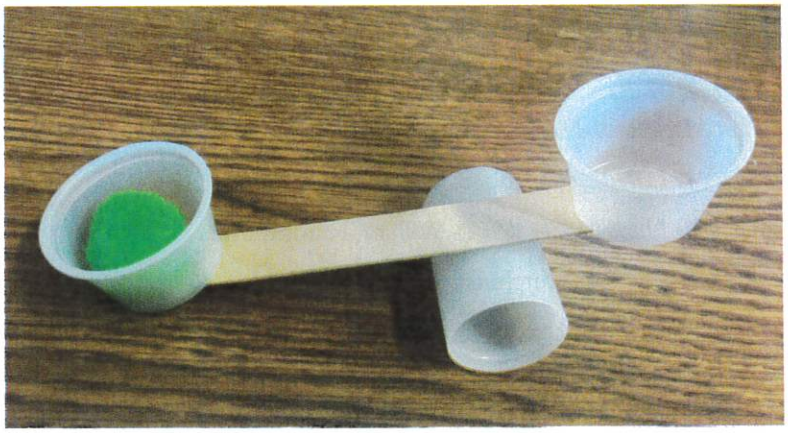
Discover how levers work, and how they can make our lives easier or even more fun!

Beforehand

Make sure that levers are in good repair, replace with new craft sticks as needed. Add new plastic cups to craft sticks or re-attach as needed.

Materials

- Craft sticks
- Small plastic containers for baskets on catapults
- Pom poms
- Measuring tapes
- Various fulcrums (dowels provided - found objects encouraged, for example: empty film canisters, toy blocks (plastic or wood), pens or pencils, various clean caps and lids)
- Targets



Setup

Set out levers and a variety of fulcrums. Have a lever/catapult set up as an example to invite participants to try making their own. Provide a small assortment of pom poms to act as a payload for the levers, and to launch using the lever as a catapult. Set out targets and measuring tapes. Set out prompt(s). Set this activity up in an area with as much open floor space as possible for participants to test catapults.

Questions to Extend Discoveries

Invite participants to see how they can use a lever to make a catapult that launches pom poms. Participants can test a variety of fulcrums and placements. Use questions to extend discoveries.

"How far can you launch a pom pom?"
"Which fulcrum helps you launch the farthest?"
"Does it matter where you put the fulcrum under your lever?"
"Can you make your catapult accurate, or able to hit a target?"

Tubes and Towers

Try making structures using cardboard tubes and paper straws. What can you create?

Beforehand

Check to make sure that the cardboard tubes and paper straws are in good repair. Replace as needed.

Materials

- Cardboard tubes (paper towel and or toilet paper) with pre-punched holes in various locations. Some tubes provided, adding additional tubes from donations or materials available at your site encouraged.
- straws (paper or plastic - cut in half or thirds if desired for variety)

Setup

Set out as many straws and cardboard tubes as space allows. Set up a small structure in advance to invite participants to create their own. Set out prompt(s).

Questions to Extend Discoveries

Invite participants to create structures out of tubes and straws. Encourage them to try combining and connecting tubes using the materials provided. What kinds of structures can they create? Extend discoveries with questions.

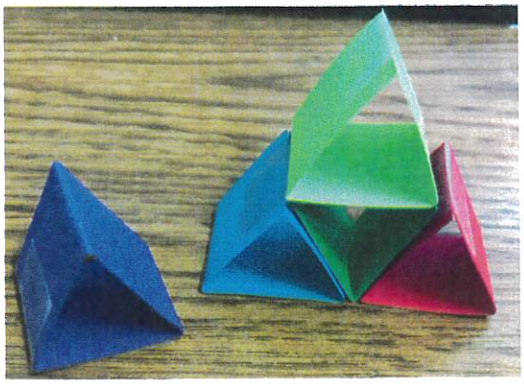
"Does your building or structure remind you of anything you've seen before?"
"How tall (or strong or wide) can you make your structure?"
"What other ways can you think of to make a structure with the materials?"

Triangle Power

Investigate the power of the humble triangle. What can you build with triangle shapes?

Beforehand

Check to make sure triangles are in good shape. Make more and repair as needed. To make new triangles, cut cardstock into strips approximately 2"x6". Fold strips lengthwise into thirds, and tape to make triangle shape. Experiment with various triangle sizes if desired (i.e.; 1"x3" strips for smaller triangles).



Materials

- Cardstock triangles
- Tape
- Books or small objects for extension if desired

Setup

Set out pre-made triangles and prompts. Build a small structure near the prompt to invite participants to construct their own triangle creations. Extension: If desired, set out small books or other child safe objects for participants to set on top of their triangle structures to test their strength.

Questions to Extend Discoveries

Invite participants to make their own triangle structures. Extend thinking by asking questions:

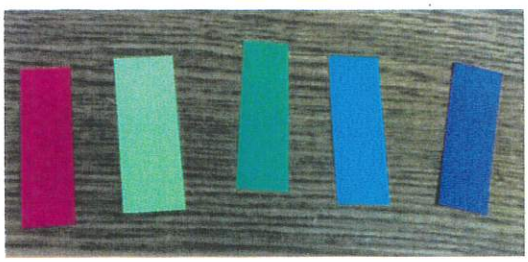
"What kind of structure are you making?"
"Does your structure remind you of anything you've seen before?"
"Can you make a structure strong enough to hold up a book (or other object)?"

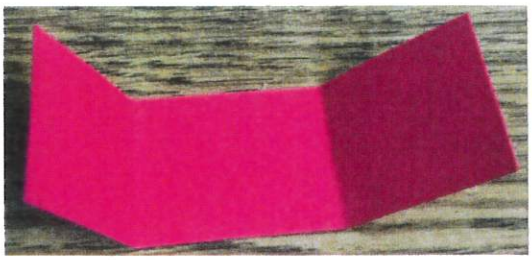
Making the Triangles:

1. Using an Exacto knife, paper cutter, or scissors cut strips into rectangles of desired dimensions. 2" x 6" and 1" x 3" work well for small and medium sized triangles.

2. Fold the strips of paper into thirds, if using heavy paper you may want to score the thirds before folding.

3. Tape the two open ends of the folded paper strip together.





Created with support from IMLS

Extension Activity Ideas

Pool Noodles and Shaving Cream Construction

Materials

Foam pool noodles
Scissors or knife for cutting pool noodles
Shaving cream
Newspaper or plastic for covering work surface
Plastic silverware and bowls if desired

Directions

1. Cover tables with plastic or newspaper as needed/ wanted.
2. Cut pool noodles into 'donuts' or cross sections of various sizes. Experiment with half and quarter segments of noodles for variety.
3. Make shaving cream cans available, or put shaving cream and plastic utensils in bowls on work surface.
4. Stack pool noodle pieces together with shaving cream!
5. Rinse and dry noodle pieces before putting away.

Photo Source: https://littlebinsforlittlehands.com/pool-noodles-and-shaving-cream-summer-steam-activity/

Bridge Building Challenge

Materials

Tape
Yarn
Scissors
Paper clips
Straws
Small paper or plastic cups
Pennies, marbles, washers or other small objects for weights

Directions

Place materials on table, and challenge participants to use only these to make a bridge. Their bridge must stand at least one inch off their work surface, and be able to support 100 pennies (or marbles, washers, etc.)

Source https://www.playdoughtoplato.com/stem-project-straw-bridges/