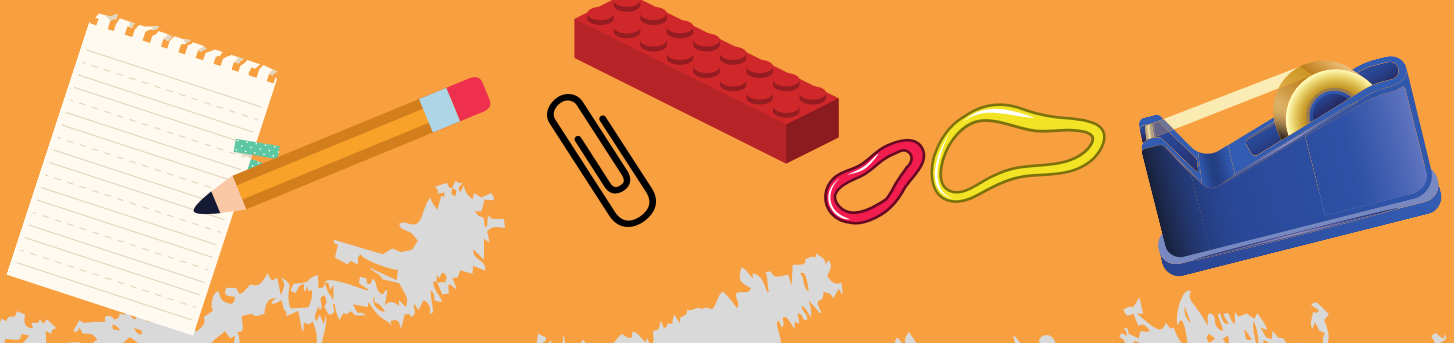
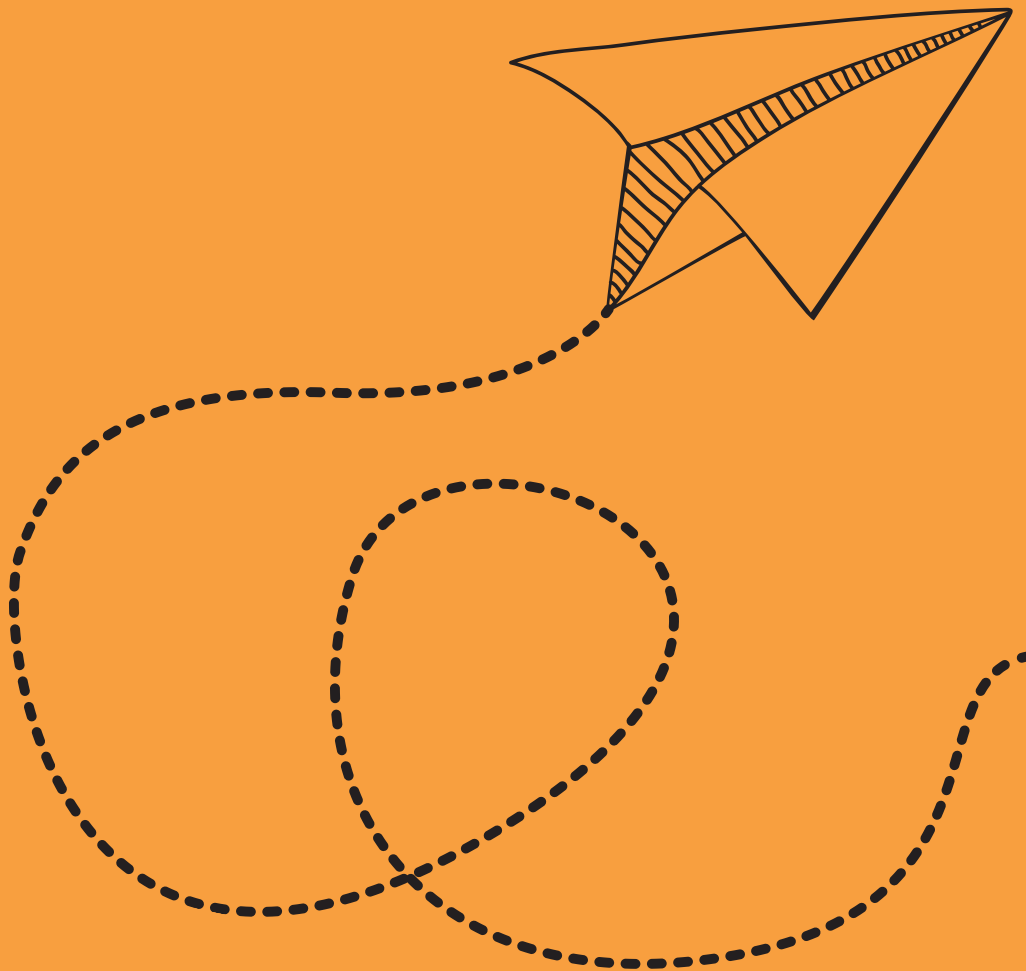


MAKERSPACE & INTRO TO ENGINEERING



16 WEEKS OF EXPLORATION & DISCOVERY
IMPACTING HOME, SCHOOL, & THE ENVIRONMENT



Parent Guide



How do I use these activities?

We have designed these activities to be used with the entire family. Our goal is for you to have fun and learn more about STEAM. Each activity will provide you with directions, materials you need, and resources.



Community Events/Activities

Each month there will be community activities (See Calendar [HERE](#) on the website) and events. By attending these and completing your project, your family can earn tickets to local area attractions. See the calendar for each month's community activities.

Parent Video



Be sure to check out our parent video series for overviews, tips, ideas, and more [HERE](#).



MakerSquad SM



**DAZZLING
DISCOVERIES**
STEM Education Center
www.DazzlingDiscoveries.com



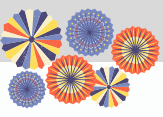
nepris

Important Links

Website: <https://nc16weeksofsteam.org/>

Activities: <https://nc16weeksofsteam.org/curriculum-download/>

Calendar: <https://nc16weeksofsteam.org/events/>



What is a Makerspace/Craft Center & How to Create One at Home The Guide



What is a Makerspace/Craft Center?

Makerspaces are places for families to build, create, tinker, and explore. They can be designed to promote creativity or focus on a particular topic. The goal of 16 Weeks of STEAM Unit 1 is to create a makerspace in your home and begin exploring new ideas to promote family creativity, problem-solving, collaboration, and design thinking.

To get started, gather what you can. Don't worry if you don't have everything listed here. Creating a makerspace can take time. Many of the materials listed below can be found in the home, but you may need to look at garage sales, dollar stores, ask friends and family, and collect them over time.

How To Make a Space at Home

Makerspaces do not need to be elaborate or take up a ton of space. Regular household items can be collected and organized for your makerspace. Your makerspace can be in a room, or it can be a container that holds your things. You will want to have a table that you can work on.

Get started with collecting the following items:

- Cardboard - Start by collecting cardboard you have around the home. It comes in many forms:
 - Boxes (Think everything from shipping to cereal.)
 - Toilet paper rolls
 - Paper towel rolls
 - Egg cartons
 - Gift wrap rolls
 - Any other forms of existing cardboard you have.

Cardboard is a key foundational material for many creations and designs. The wonderful part about cardboard is that it is easy to find. You can ask family and neighbors for any cardboard they may have as well.

How To Make a Space at Home - Continued

- Textiles - These are materials that consist of fabric, yarn, and string. They can even include a needle and thread.
- Arts & Crafts Supplies - Simple crafting supplies are another makerspace staple and can include:
 - Paint
 - Brushes of various sizes
 - Needle and thread
 - Glue (sticks and craft)
 - Tape (including Washi)
 - Buttons
 - Scissors (including patterned)
 - Paper
 - Recycled Printer Paper
 - Newspaper
 - Old wrapping paper
 - Magazines
 - Old calendars
 - Stamps and stickers (canceled postage stamps)
 - Scrapbook paper
- Building Supplies - These can be traditional building materials but also include things like Legos.
 - Screwdrivers
 - Pliers
 - Nails
 - Hammer
 - Ruler
 - Legos
 - Wood Scraps
 - Duct Tape
 - Wooden Dowels
- Tech Tools - Tech tools can range from a 3D printer (this can be expensive and isn't necessary) to broken tech that you can take apart and use parts. You can look for items in the home that are no longer working too.
 - Old keyboards
 - Broken technology (cell phones, walkie-talkies, clocks)





How To Make a Space at Home - Continued

Learn more with these video resources:

- [Make Your Own Makerspace](https://youtu.be/6SuSV_L2gAg) - (All Ages) This video guides you on how to create your own Makerspace at home with recycled materials. Gather up your arts and crafts materials and some recycled objects, and get ready to create something fun! Link: https://youtu.be/6SuSV_L2gAg
- [In-Home Space Tour](https://youtu.be/9f_D7eXrwg4) - (4th-8th Grades) Eli walks you through his incredibly small and cheap in-home maker space that is equipped with everything from the workbench to organized storage that makes it the ultimate budget DIY maker area. Link: https://youtu.be/9f_D7eXrwg4
- [Children's Makerspace Tour at Milner Virtual Open House](https://youtu.be/EOF3Y73AOA0) - (All Ages) This is a tour of an amazing makerspace at the children's library. Don't get overwhelmed this is just to inspire you! You can also visit a nearby makerspace to learn more! Link: <https://youtu.be/EOF3Y73AOA0>
- [DIY Mini Makerspace](https://youtu.be/kKaHAWhcMGw) - (All ages) Low-cost, makerspace in a box for parents. Makerspaces can be expensive, which is why I've put together some suggestions on how to make a low-cost, budget-friendly, mini makerspace! Link: <https://youtu.be/kKaHAWhcMGw>





Makerspace/Craft Area Ideas

Learn more with these video resources:

- [Learning Problem Solving and Growth Mindset in a Makerspace](#) (Adults) - Video on building your student's ability in a makerspace or craft center. This is an overview of why makerspaces are essential in learning.
- [DIY: Armoire Craft Center Project](#) (Adults & Kids) - This video details how a family created a craft space with an existing armoire.
- [10 Wonderful Recycled DIY Crafts That Can Brighten Your Room](#) (Adults & Kids) - This video features craft ideas you can make to create items for your room.
- [Makerspace/Craft Project: How to Make Candy Gumball Dispenser out of Cardboard](#) (Kids) - Learn how to create a gumball dispenser at home!
- [Makerspace/Craft Project: How to Make a Mini Robot Bug](#) (Kids) - This video shows how to make a tiny robot bug at home out of household items.
- [Makerspace/Craft Project: How to Make a Mini Rubberband Car](#) (Kids) - Learn how to make a mini-powered rubber band car!

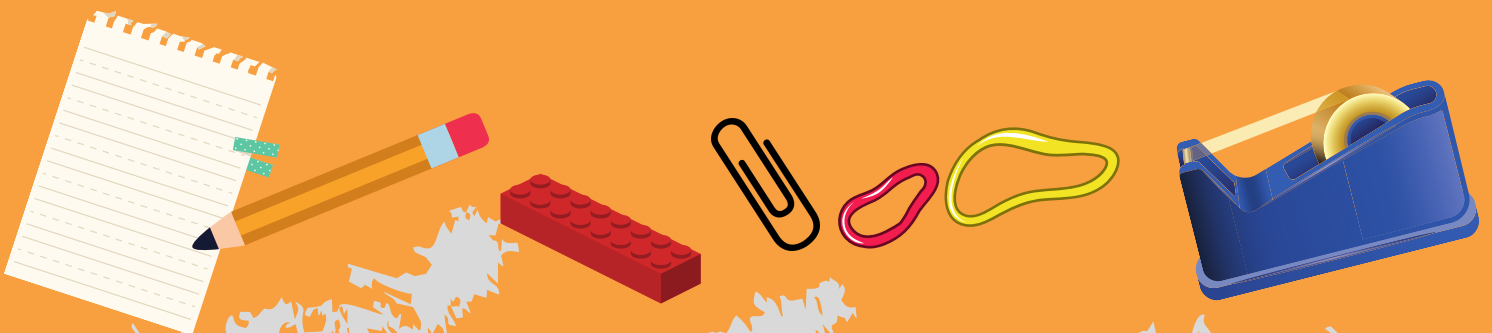
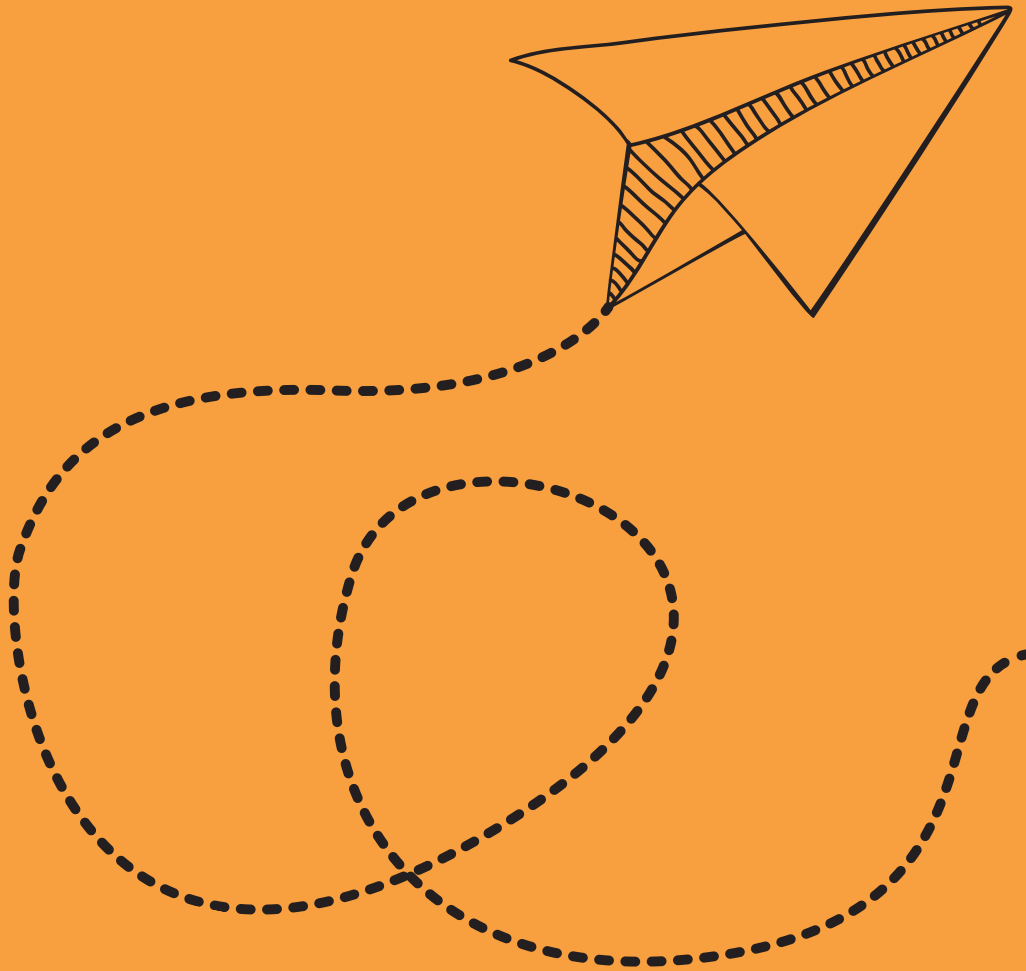
Note: There are many more project ideas to be found on Youtube! Search YouTube with keywords: Makerspace Project Ideas. Be sure an adult is helping to find appropriate videos.



WEEK 2 & 3 - INTRO TO ENGINEERING ACTIVITIES



16 WEEKS OF EXPLORATION & DISCOVERY
IMPACTING HOME, SCHOOL, & THE ENVIRONMENT





16 WEEKS OF EXPLORATION & DISCOVERY
IMPACTING HOME, SCHOOL, & THE ENVIRONMENT



Parent Activity Recommendations

For this unit, your student will select one of the following activities to make. We have given grade-level recommendations, but feel free to work with your student on any or all of the activities. Younger students will need support.

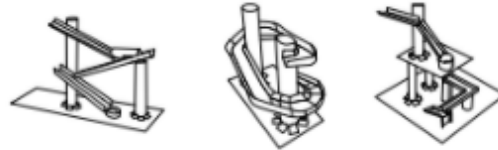
Tips

- Gather your supplies before starting. Most of the activities require paper, tape, and scissors.
- Find a table or desk to work on.
- Read the directions through once to familiarize yourself with each of the steps.
- Begin your activity by asking your student to complete each step. Then, ask them questions about the activity. For example, Why, What, How.
- Don't get discouraged if you have to do things more than once. It is okay! The idea is to problem solve and try new things.
- Go at a pace that is comfortable for your student. This should be FUN! It is okay to take a few days or longer to work on this.
- Have a bag or box where you can store your work and materials. This will make it easy to come back to.
- Take pictures along the way to document your progress!



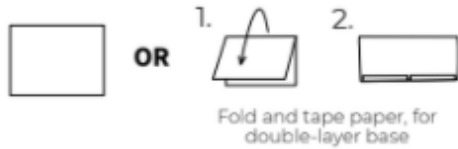


Build a Roller Coaster



The Base

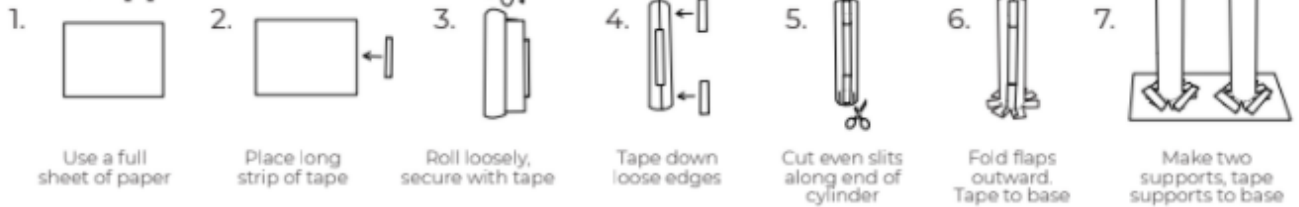
Use a half or full sheet, as needed based on project size



The Tracks

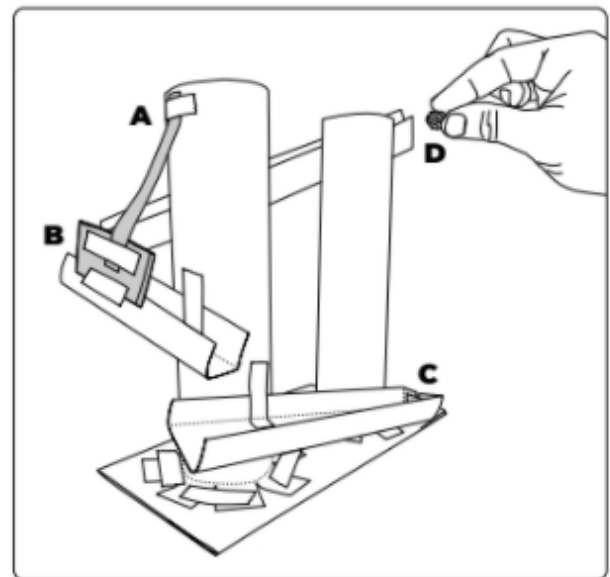
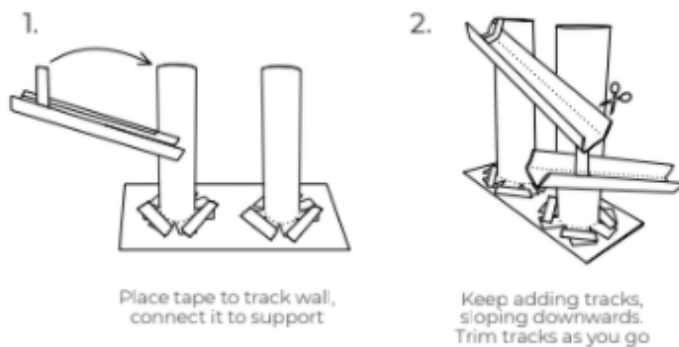


The Supports



Assemble

Design your own. Adjust height, width, number of supports & size of base to create different roller coaster structures



A

Suspender

Use as needed to connect track to support and help keep track level

Cut a paper strip. Connect strip to track and support

B

Barrier Walls

Tape section of paper to track wall as needed

C

Endcap

1. 2. 3.

Cut slits at end of last track
 Fold middle upward
 Fold side inward, tape to secure

D

Ball

1. 2.

Crumple paper to make ball
 Wrap with tape to make it smoother



Tilting Maze

A DIY gravity game

Supplies:



4 sheets copy paper
 (or more for add-ons)

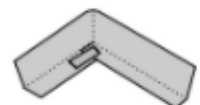
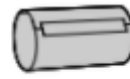
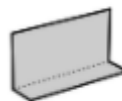


Build a tilting maze.
 Experiment with gravitational forces through play

Add barriers, tunnels, goals & more! Make it as a physical "unplugged" addition to your computer science activities

Adjust & Add On

Here are a few ideas for components to add to your tilting maze!



Paper Ball



Crumple a scrap of paper into a ball

Straight Barrier

-
-

Curved Barrier

-
-
-

Tunnel

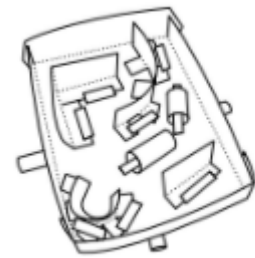
-
-
-

Corner Barrier

-
-
-
-



Create a Tilting Maze



Supplies:

4 sheets copy paper
 (or more for add-ons)



Tape



Scissors



(Optional)
 Markers

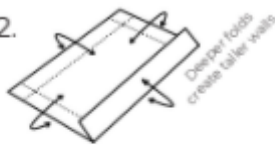
Assemble Tray

1.



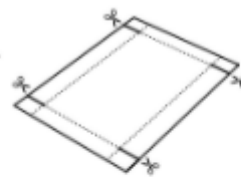
Use 1 sheet of
 copy paper

2.



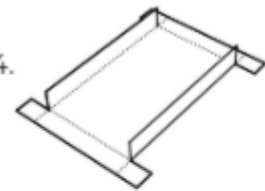
Crease all 4 edges
 inward to make walls

3.

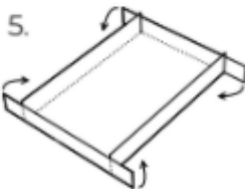


Cut slits from edge of paper to
 intersection of fold lines

4.

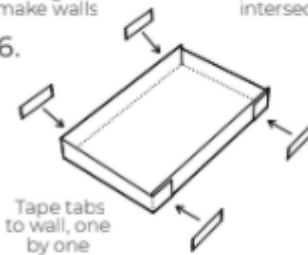


Fold edges up to
 make walls



Fold tabs inward

6.



Tape tabs
 to wall, one
 by one

7.



Finished tray

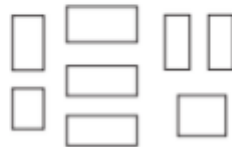
Add Barriers

1.



Use 1 sheet of
 copy paper

2.



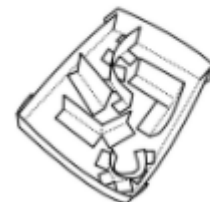
Cut paper into rectangles
 of different dimensions

3.



Make barriers and tunnels,
 tape to tray

4.



Create maze

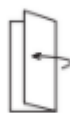
Make Handle

1.



Use 2 sheets of
 copy paper

2.



Fold each sheet
 in half, **long edge**
 to **long edge**

3.



Place tape
sticky side up
 on open edge of
 folded sheet

4.



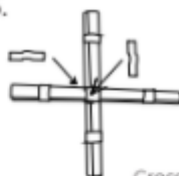
Tightly roll folded
 sheet into a tube

5.



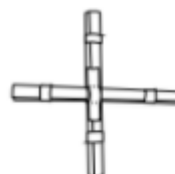
Make two
 tubes

6.



Cross segments,
 tape them together
 on front and back

6.



Finished
 handle

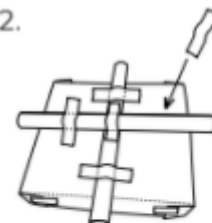
Assemble

1.



Place handle on back of tray

2.

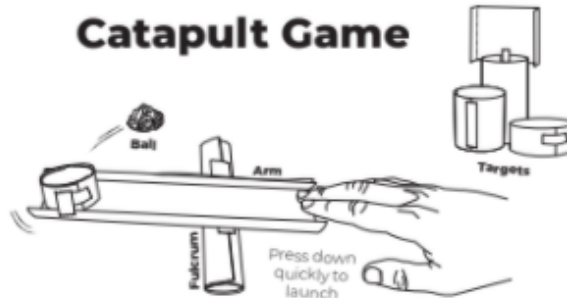


Tape
 handle
 in place





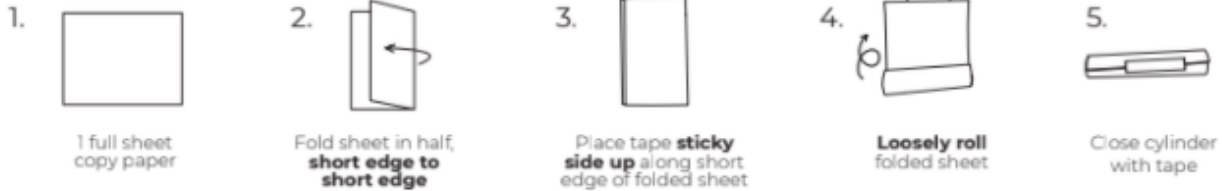
Build a Catapult Game



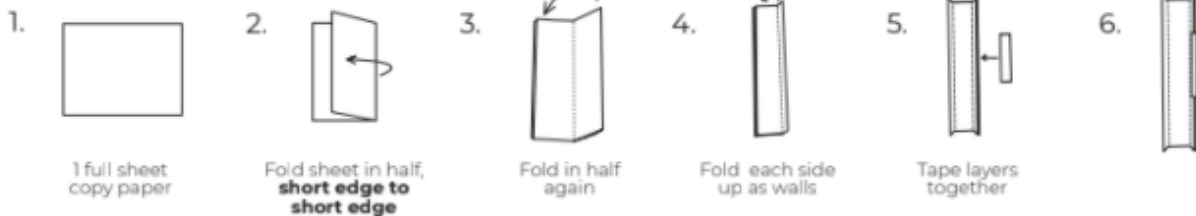
Supplies:



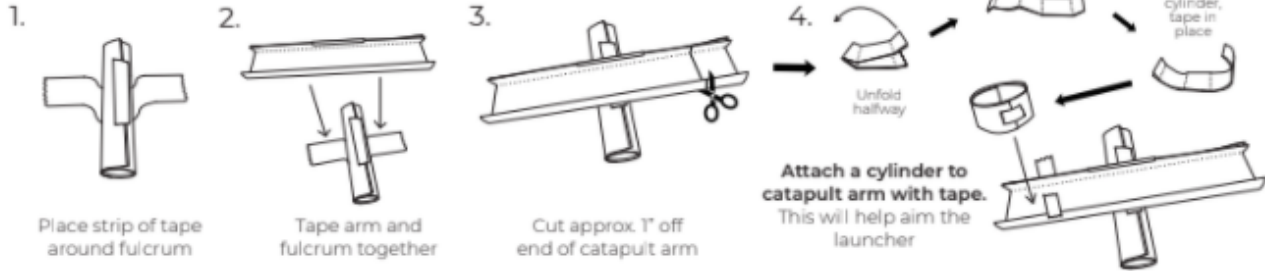
Fulcrum



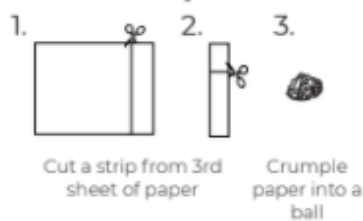
Catapult Arm



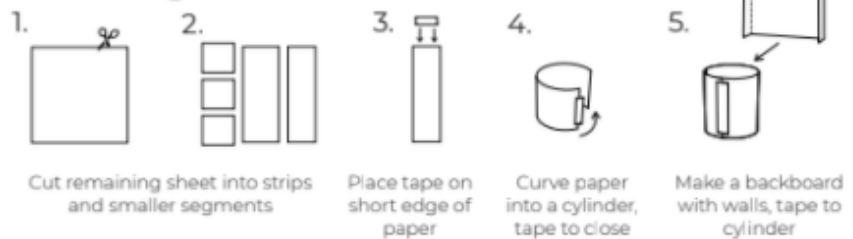
Assemble



Make a Paper Ball



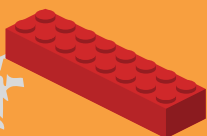
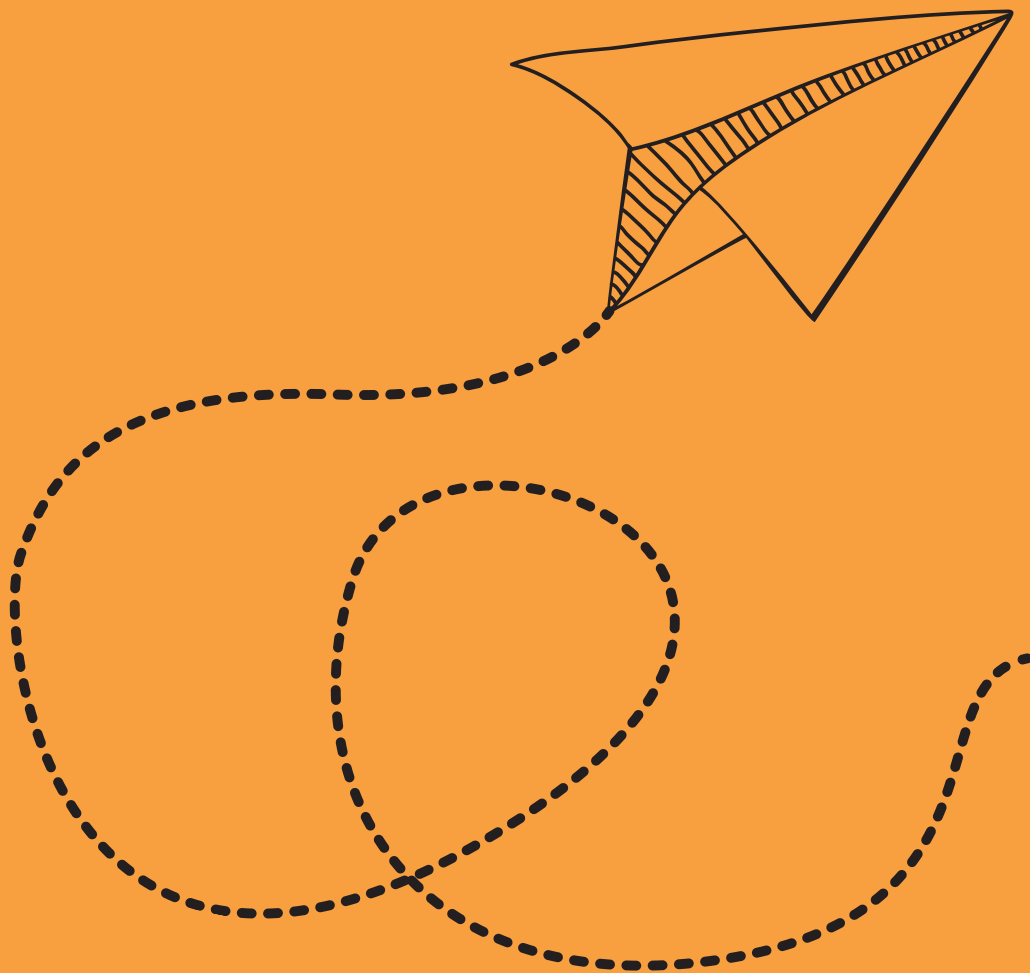
Make Targets & Baskets



WEEK 4- INTRO TO ENGINEERING ACTIVITIES



16 WEEKS OF EXPLORATION & DISCOVERY
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Parent Activity Recommendations

Look at the activity calendar on the website and attend one of the Nepris expert interviews. This is an opportunity for the entire family to learn more about this field. Use the sheet on the next page for students to organize their questions, ideas, and more, during the interview.

Tips

- Make a copy for each person.
- Write down questions and any thoughts before the interview.
- Students can work on this sheet before, during, and after the interview. It is designed to be a fun graphic organizer so don't worry if your student would like to do something else.
- Encourage your student to discuss ideas and thoughts on what the expert shared.



INTERVIEW WITH AN EXPERT

Draw a Picture of the Expert



Name & Title of Expert

Describe what this person does

3 Things You Learned:

Questions for the Expert



What would you like to know more about?