Using the Project Pack

Each of the projects included in the Project Pack are simple, cost effective ways of incorporating the ***Make:*** message into everyday situations. Classrooms, mentoring groups, even a corporation's brown bag lunch hour are places to bring these projects! However, to ensure success, the ***Make:*** team recommends the following steps to using these projects.

First, think about what the equipment or materials needed for the project. Make sure you have the items listed for the activity, and be sure to try making it in advance so you are familiar with the steps and different challenges you may face in the process.

Second, think about how the project will be incorporated into your activity. Consider utilizing segments from ***Make:*** which are available for free online at www.makezine.tv. Each project directs you to the original project as it appeared in the Workshop segment of ***Make:***.

And lastly, have fun! ***Make:***'s whole purpose is tapping into the new DIY movement with the goal of inciting millions to invent, revent, recycle, upcycle, and act up! And don't forget to let us know exactly how you do it by emailing MakeTV@tpt.org.

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Marshmallow Launcher

John Park with the Burrito Blaster, Episode 102

In episode 102 of ***Make:***, John Park shows viewers how to build a Burrito Blaster air cannon in the Maker Workshop. Instructions for building this project can be found at www.makezine.tv. To start, try introducing yourself to the basic concepts of air power with the simple concepts of the Marshmallow Launcher outlined below.

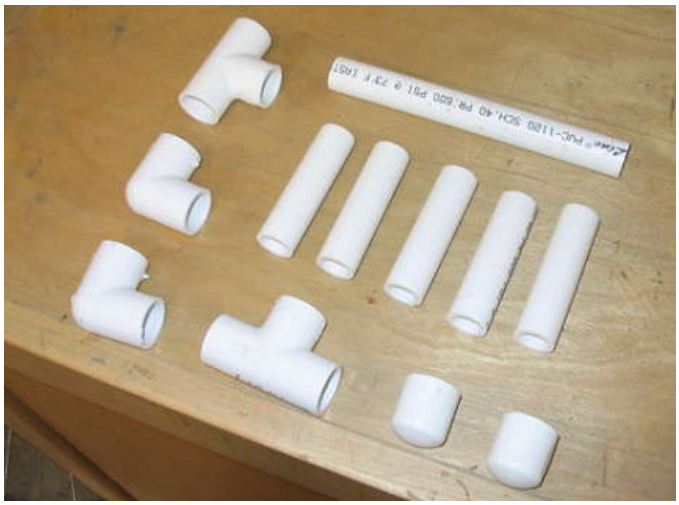
Tools
Hacksaw, small handsaw, or ask your local hardware store to cut the PVC pipe for you

Materials
22 inches of 1/2" PVC pipe
1/2" PVC end caps (2)
1/2" PVC three way junctions (2)
1/2" PVC elbows (2)

Estimated Cost:
$5.

Before you begin:
You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!

Step 1: Cut the PVC to length
Cut 1 length of 7 inches and 5 lengths of 3 inches – or see if your local hardware store can cut it for you.



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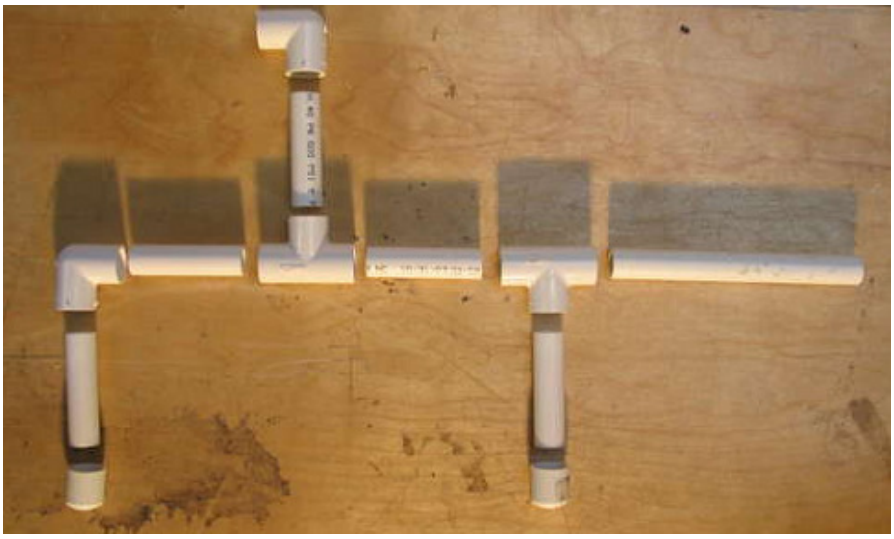
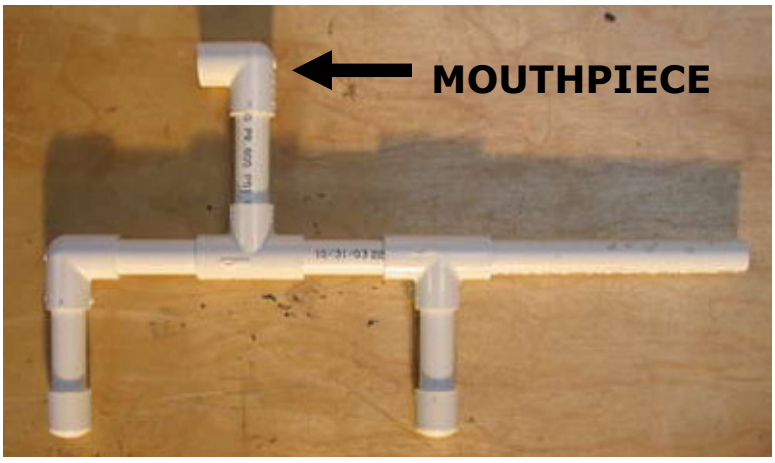
Marshmallow Launcher

Step 2: Lay out the parts as they appear in the picture.



Step 3: Assemble the pieces.
It's not necessary to cement the parts, friction should hold them together and you may want to take your launcher apart to clean it.



Step 4: Test the Launcher!
Point the Launcher at the target included in the Project Pack! Load a mini marshmallow into the mouth piece (designated above in step 3). Take a deep breath, seal your lips to the mouthpiece, and give a quick burst of air. The marshmallow will travel down the pipe and out the barrel! HINT: It's important to keep your marshmallows in a container, if they are dried out they don't work as well.

Don't forget to clean up your marshmallows when you're done and wash your Marshmallow Launcher between uses!

Let us know how you used this project by emailing MakeTV@tpt.org.

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Desktop Trebuchet

The ***Make***: Portable Trebuchet that John Park builds in episode 106 is great if you have a park for throwing water balloons, but what if you only have your office? Learn the concept behind this ancient device with some pencils, rubber bands and a paperclip. Once you've graduated from the desktop model, go to www.makezine.tv for instructions on building the Maker Workshop's Portable Trebuchet for your next picnic in the park!

John Park with his Portable Trebuchet, Episode 106

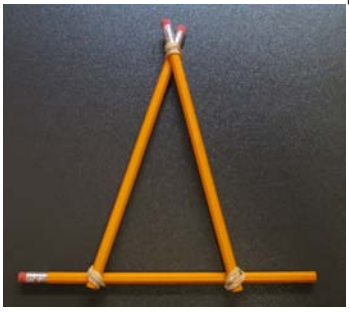
Materials
Pencils (9)
Rubber bands (11)
Paperclip (1)
Paper ball

Estimated Cost:
$5 (more than one Desktop Trebuchet can be built with this investment in supply)!

Before you begin:
You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!

Step 1: Build the legs of the device
Attach two sets of two pencils together just beneath the eraser top using a rubber band.

Step 2: Build the device supports
Rubber band the two leg supports to pencils as shown below on left. The new pencils should then be attached to two more pencils to form the base, as illustrated below.



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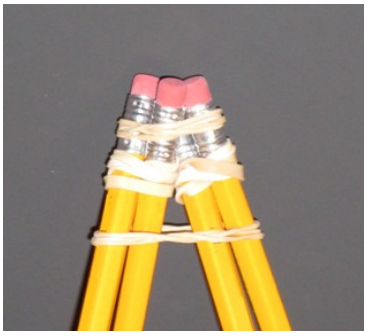
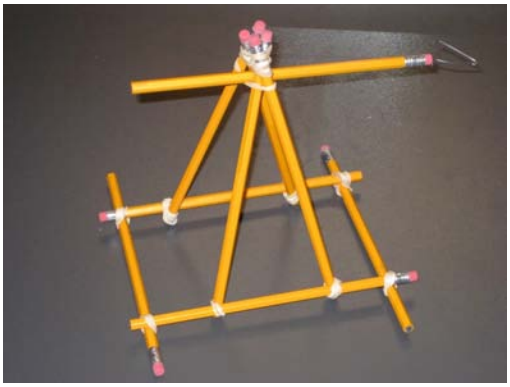
Desktop Trebuchet

Step 3: Join the legs of the structure.
Rubber band the tops of each set of legs together. Wrap the first rubber band BELOW the first rubber bands, the second rubber band should go above. See image.



Step 4: Make the launch arm and paper ball holder.
Shape the paperclip into a number four shape, this will hold your paper ball. Push the straight end of the paperclip into the eraser to attach the paper ball holder to your pencil.

Step 5: Final assembly.
Insert the launch arm in between the rubber bands that joined the leg structures in Step 3 (see below image on left). Adjust the launch arm so it extends longer on the paperclip side of the rubber band than the other.



Step 6: Test your Desktop Trebuchet!
Point the Launcher in a safe direction and load a paper ball into the paperclip. Hit the short end of the launch arm to propel the paper ball!

Let us know how you used this project by emailing MakeTV@tpt.org.

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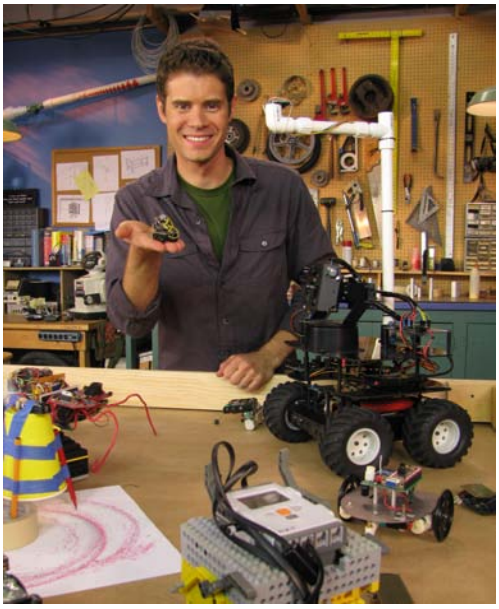
Simple Motor

In episode 108, John Park shows viewers how to build miniature robots. Why not go back to the basics first and start small with this simple motor that shows how electricity works. After making your first prototype, experiment with modifications and then go to www.makezine.tv and take the next steps with the miniature robot instructions!



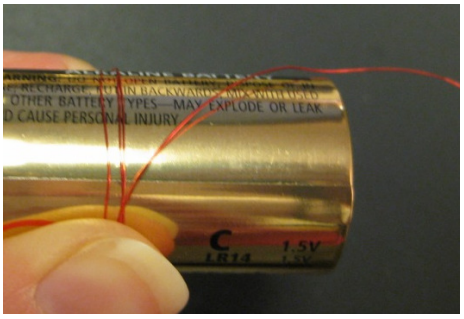
John Park with his miniature robots, Episode 108

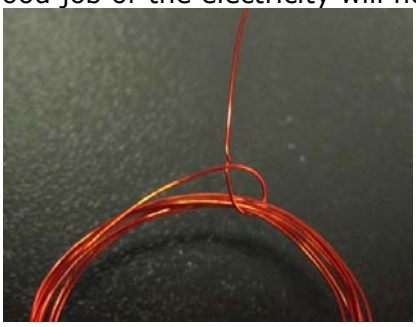
Materials
Battery C or D (1)
#26 or # 30 Magnet wire
Paperclips (2)
Insulated tape
1" Ceramic magnet (1)
Sandpaper to strip the wires
Pliers (optional)

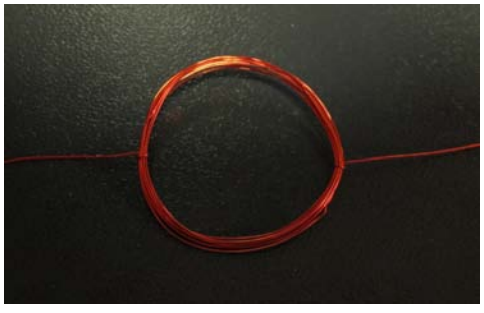
Estimated Cost:
$5

Before you begin:
You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!

Step 1: Wind the motor coil.
Wrap the wire around the battery 8 times as shown on left. Secure wire in place with pliers as shown in image in the right. The final product appears as illustrated below. Sand the enamel off of the wire ends – do a good job or the electricity will not flow!







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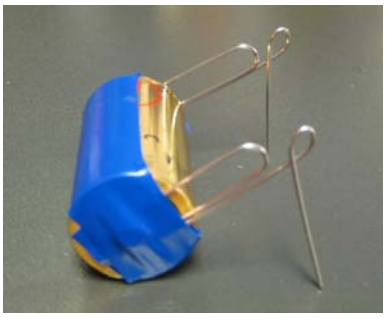
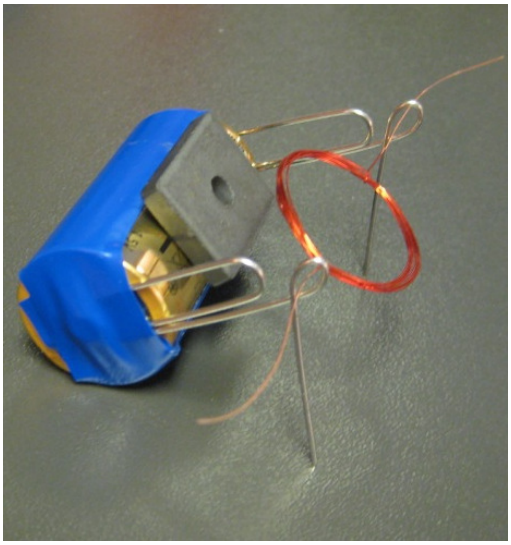
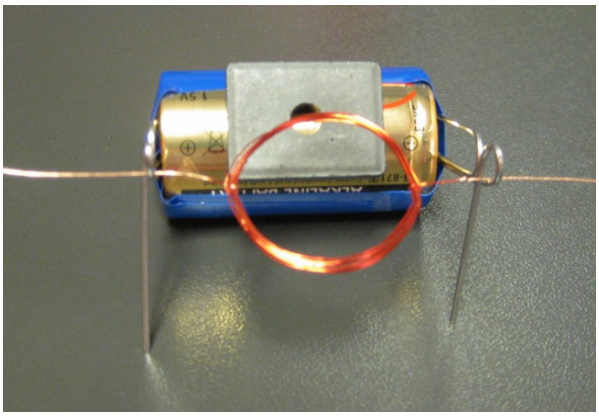
Simple Motor

Step 2: Build legs for your motor.
Shape each paperclip as indicated in picture below. Secure them to the battery with tape as show on the right.



Step 3: Finishing steps.
Put the magnet on the battery and insert the enamel wire into the leg holes of the structure.





Step 4: Test your Simple Motor!
Flick the wire circle to start it spinning! HINT: If it doesn't spin very fast, double check the wires to make sure all of the enamel coating has been removed. Try flipping the magnet over, does that change the spinning? Be careful, the wires and paperclips get hot if you leave the motor running for a long time!

Let us know how you used this project by emailing MakeTV@tpt.org.

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Recycled Instruments

Did you know that many folk musicians used to build their own instruments? It's easy to make interesting music when you experiment with objects around you. If you have access to power tools, try the ***Make***: Cigar Box Guitar featured in episode 110's Maker Workshop with John Park. Instructions are available at www.makezine.tv, otherwise experiment with different sizes and shapes of boxes and rubber bands to see what changes!

John Park and his Cigar Box Guitar, Episode 110

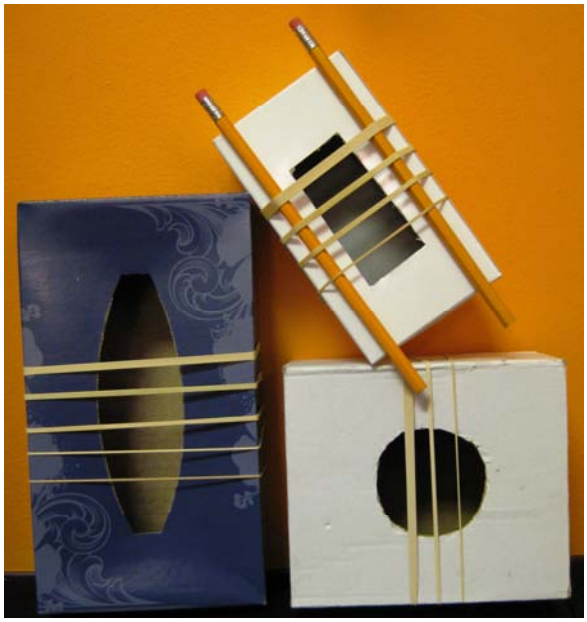
Materials
Cardboard boxes of various sizes (try empty tissue boxes!)
Rubber bands
Tape (optional)

Estimated Cost:
$2 (many instruments can be built with this supply investment)!

Before you begin:
You may find it necessary to modify these instructions, depending on what materials and tools you have at hand, and any improvements you might want to make in the design. Go ahead and customize the project and make it your own!

Step 1: Make sure box is securely closed, use tape if necessary.

Step 2: Cut an opening in the box, try a circle first. Wrap rubber bands of different sizes around the box.



Step 3: Strum the rubber bands to see what sounds they make!
HINT: If you aren't getting much vibration with the rubber bands, try inserting pencils as indicated in the above picture – it allows the rubber bands to vibrate freely.

Let us know how you used this project by emailing MakeTV@tpt.org.

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