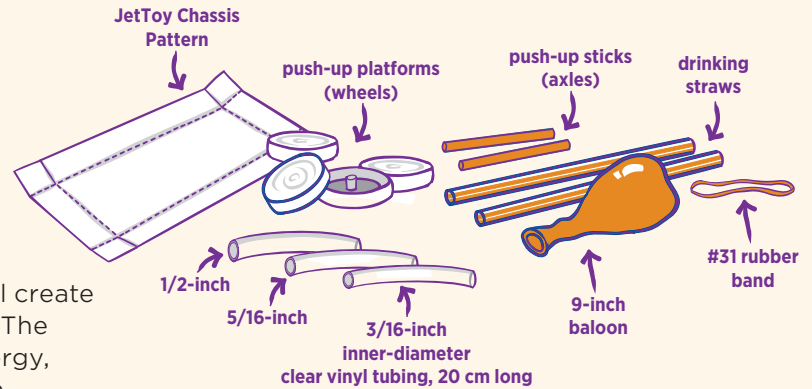


# AWIM® in a Box

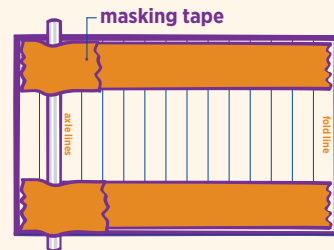
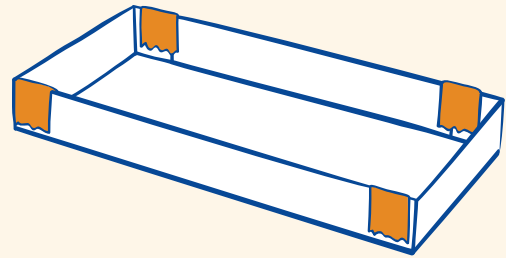
## JetToy

This activity is used to introduce students to motors and how they work. The students will create a “balloon motor” to help drive their JetToy. The concepts covered in this activity include energy, forward pushing force, pressure, and friction.



### Materials Needed:

- JetToy Chassis Template (see below)
- Scissors
- Ballpoint pen
- Masking tape
- Plastic Drinking straw
- Ruler
- Wheels
- Axles
- Clear vinyl tubing 20 cm long
- 9-inch balloon
- Rubber band



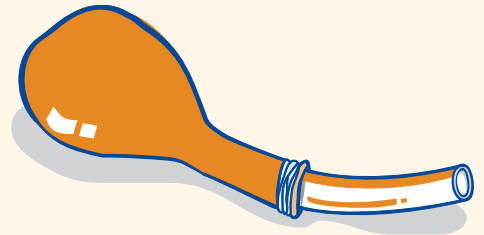
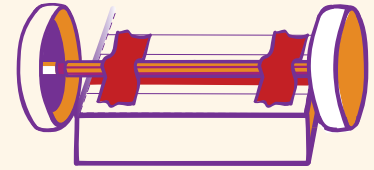
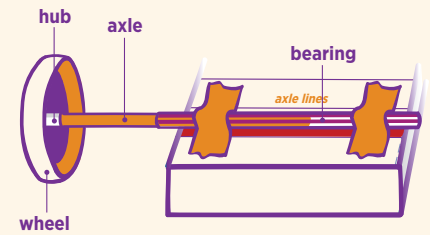
### Building the Chassis:

1. Cut out the Jet Toy Chassis Pattern outline along the solid outer lines.
2. Cut the “cut lines” at the corners. Be careful that you don’t cut too far.
3. Use a ballpoint pen to draw a very heavy, deep line over each of the dotted fold lines. Press the pen hard back and forth to score the paper to make it easier to fold.
4. Fold down the four sidewalls on the scored lines. Make sure that the axle lines are showing on the outside of the chassis.
5. Use small pieces of masking tape to carefully attach all the flaps inside the chassis.



## Assembling the Axles and Wheels:

1. Cut 2 axle bearings from a drinking straw. Each bearing should be exactly 7 centimeters long. Make sure that the cut edges are straight and not jagged.
2. Put two strips of masking tape along the side of the chassis.
3. One team member can line up an axle-bearing with one of the axle lines. Center the bearing so the same amount extends on each side of the chassis.
4. Another team member can tape the straw into place. Put the tape over the tape already on the chassis.
5. Repeat steps 3 and 4 to mount the other axle bearing.
6. Carefully push an axle stick into the hub of one wheel, then insert the stick into the axle bearing.
7. Carefully push a wheel onto the other end of the axle.
8. Repeat this procedure to make the other wheel assembly.



## Assembling the “Balloon Motor”:

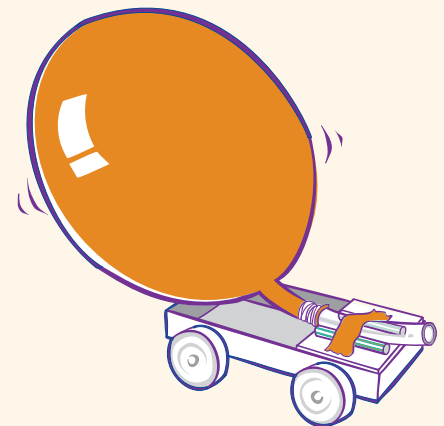
1. Place the balloon over one end of the plastic tubing.
2. Secure the balloon to the plastic tubing using a rubber band.
3. Attach to the JetToy.

## Using the JetToy:

1. Fill the balloon with air via the tubing.
2. Block the end of the tube with a finger.
3. Place the JetToy on a flat surface, keeping the tube blocked.
4. Remove the finger and watch it go.

## Questions to guide learning:

1. What could you change on the JetToy to change how far it travels? What would you change on the JetToy to change how fast it travels?
2. This project is part of our 'JetToy' challenge where students look at how changing the nozzle size and adding weight changes the vehicle performance.



For additional related activities visit the link below.

[sae.org/learn/education/  
stem-at-home/  
build-investigate](https://sae.org/learn/education/stem-at-home/build-investigate)

