

**BUILD AND TEST A WIND TUNNEL****BUILD A WIND TUNNEL****MATERIALS (Per Wind Tunnel)**

- Large pieces of cardboard cut into the following pieces
  - Four (4) 21" x 25" x 8" (these are for the intake)

These pieces will be in the shape of a trapezoid. Your dimensions might vary based on the size of your fan. In this case, a 21" square frame fan was used. Adjust the longer parallel side of the trapezoid to fit your fan. The shorter parallel side should always be 8", the size of your tunnel. The angled sides of the trapezoid panel will be shorter or longer based on the size of your fan. Have the students calculate that distance as a geometry exercise, if you wish.

- Four (4) 40" x 8" (these are for the tunnel)
- Four (4) 10" x 7" (these are to provide support under the tunnel)
- Box fan (highest powered fan available)
- Box knife
- Metal straight edge
- Measuring tape/ruler
- Drinking straws (recommend using jumbo size)
- One (1) 8" x 10" piece Lexan/Plexiglass (can be purchased pre-cut at a major hardware store)
- Duct tape
- Hot glue gun and glue sticks
- Digital scale (measures to 0.1g, at a minimum)
- Safety glasses

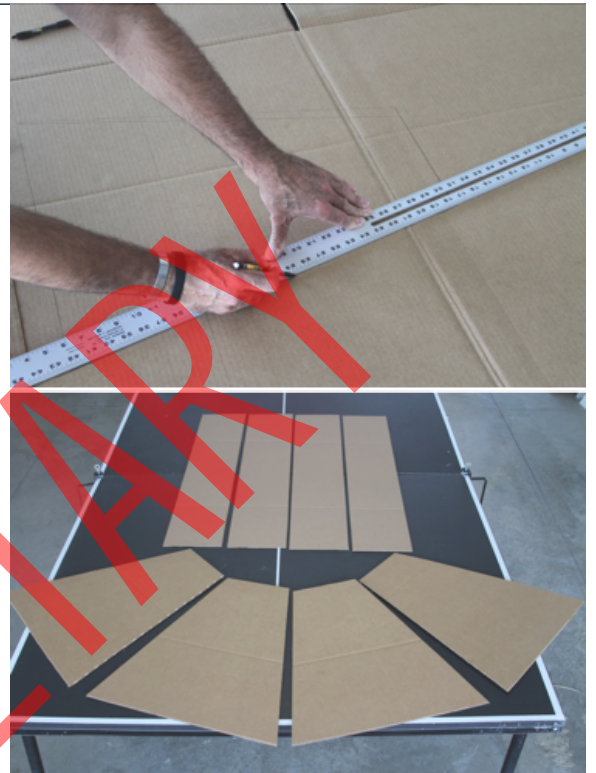
**SAFETY**

- Actively supervise students during the activity. Be ready to offer guidance in situations where safety could be compromised.
- Make sure students use eye protection. Have insulated gloves available for handling hot objects, and pads for setting down objects with heated surfaces.
- Explain how to safely store sharp objects on an active workspace when they are not in use. Students should not be holding sharp objects or tools when they are not in use.
- Sharp tools should be stored in their protective cases as soon as you finish using them.



1

Measure and cut the pieces of cardboard.



2

Duct tape three of the four 40" x 8" tunnel pieces together on the long edges. Leave one edge untaped.



3

On one end of the 40" x 8" tunnel, glue the straws down using hot glue. The straws will straighten the turbulent airflow coming from the fan. Using jumbo straws will reduce the time needed to complete this step and produce the same results.





4

On the top (untaped) 40" x 8" tunnel flap, cut a hole for the sheet of Lexan. Ensure the hole is smaller than the area of the Lexan so it can be taped in place from the outside and not fall through the hole (e.g., 8" x 10" Lexan = 7-1/2" x 9-1/2" hole).



5

Tape the last 40" x 8" tunnel piece into place to make a square tube. Tape the Lexan onto the tunnel from the outside.





6

Tape the four trapezoid-shaped cardboard pieces for the intake together, and then tape them around the fan. Ensure that you seal the area around the fan with duct tape as best you can.



7

Make two support stands to hold up the tunnel using the four 10" x 7" pieces of cardboard. Cut a slit halfway down each piece and slide them together to make an "X".



8

Duct tape or hot glue the stands to the bottom of the tunnel.



9

Duct tape the tunnel to the intake.

