

Passive Phone Speaker

 APPROXIMATE TIME: 4 TO 6 1-HOUR CLASSES

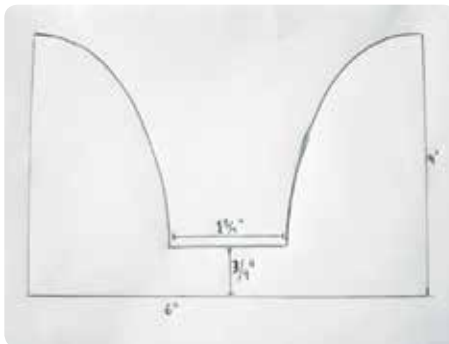
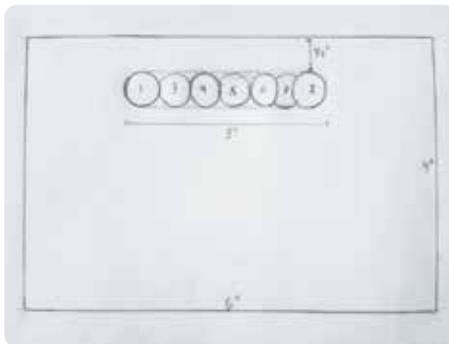
TOOLS & MATERIALS

MATERIAL LIST

- Assorted wood types available in a variety of sizes. Top and bottom pieces should be $\frac{1}{2}$ " thick. Middle piece should be $1\frac{1}{2}$ " thick
- Wood glue

TOOL LIST

- Safety glasses
- Straight edge ruler
- Bandsaw
- Chop saw
- Scroll saw
- Drill press with $\frac{1}{2}$ " Forstner bit
- Scrap wood for drill press and fence
- Assorted wood files
- Clamps
- Sandpaper (# grits)
- Sanding blocks



PROCEDURE

- 1 Cut your top and bottom pieces to $6" \times 4" \times \frac{1}{2}"$ using the bandsaw or chop saw.
- 2 On your top piece, you will drill a series of $\frac{1}{2}"$ holes as seen in the image on the left. They should be $\frac{1}{2}"$ away from the back of the long edge and $1\frac{1}{2}"$ from the sides. Be sure to drill enough holes to custom fit your device.
- 3 You will need to locate the center of the two outside holes first. Measure $\frac{3}{4}"$ in from the back edge of the board and $1\frac{3}{4}"$ from each side. Along with a drill press and a scrap piece of wood (to clamp on as a straight edge), a $\frac{1}{2}"$ Forstner drill bit will be used to drill your holes. Continue drilling holes next to each other to hollow out the phone slot.
- 4 Clamp the top piece down (or use a vice) and use a wood file to clean up the edges to create straight uniform edges, leaving the ends of the slot round. Once the filing is complete, lightly sand to remove any further rough areas.
- 5 Sketch the shape shown to the left onto your inner $1\frac{1}{2}"$ thick piece. Cut out with a bandsaw or scroll saw.
- 6 Sand the curved sides before assembly. Do not sand the top and bottom faces that will be glued.
- 7 Spread glue on the top and bottom of your inner piece and place the top and bottom of your speaker together like a sandwich. Clamp tightly. Wipe away any excess glue with a damp cloth and allow to dry at least one hour.
- 8 **Optional:** Round the corners of your speaker using a disc sander.
- 9 Sand your finished piece and apply a stain or finish of your choosing.

EXTENSION CHALLENGES

- 1 Customize your speaker for a particular phone, taking into account where the phone's speaker is and whether you will be using it in portrait or landscape mode.
- 2 Research different amplifying shapes found in nature and redesign yours to have a different inner structure, or outer structure (ie: horn or shell shaped).
- 3 Use of a variety of router bits to add detail to the top edges of your speaker.
- 4 Use a wood burning tool to customize your speaker with details.