

## Wave machine

Lesson plan and more resources are  
available at: [aka.ms/hackingstem](https://aka.ms/hackingstem)





# Things You'll Need

## Materials

- 1 91 cm piece of ribbon
- 20 wooden skewers
- 40 gumdrops
- 2 bookends (in this model it's a solid unit, but you can use simple metal bookends and clamps to secure them to a surface)

## Toolkit

- hot melt tool
- masking tape
- spring clamps

## Safety guidelines

### Hot Melt Tool

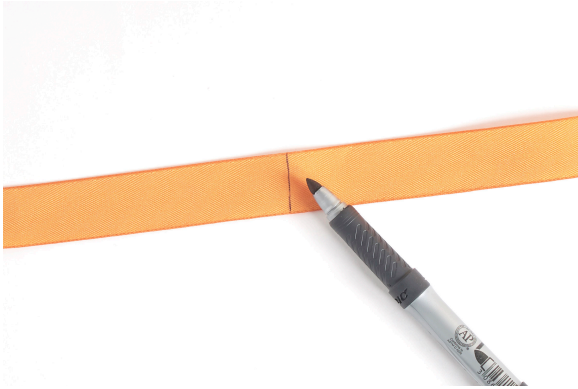
- ▶ Place it on a level surface to avoid tipping over.
- ▶ Place the electrical cable out of the way to avoid a tripping hazard.
- ▶ Do not touch the tip of the tool or the hot glue coming out of it.

## Substituting materials

Similar items can be substituted/hacked for most materials, according to availability and the student design process.

Please note that lesson activities will require adult supervision.

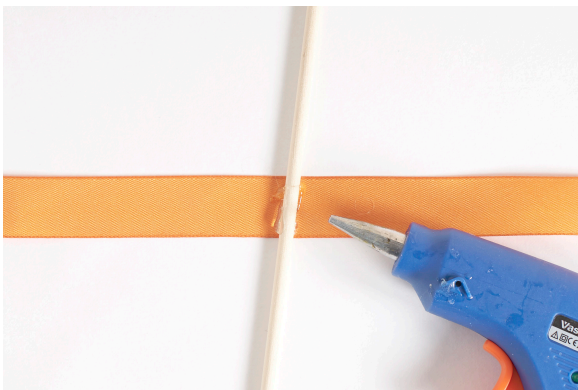
# Assemble the wave machine



**1** | Lay the ribbon on the table. Fold it in half and crease. Draw a line on the crease. Unfold the ribbon with the line facing up.



**2** | Place two fingers to either side of the line and place a skewer. Make sure to center it on the ribbon.



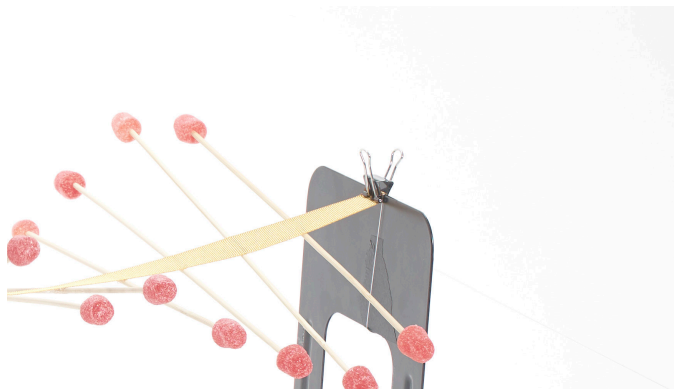
**3** | Using the hot glue gun, run a bead of glue along the skewer and adhere it to the ribbon.



**4** | Glue the rest of the skewers with 2 fingers spacing up to the line on each end.



5 | Attach a gumdrop on the ends of each skewer.



6 | If you're using light weight bookends, clamp each end onto the table. Tape the end of the ribbon onto the bookends. Repeat on the other side.



7 | Rotate one end of a skewer and watch the waves propagate down the ribbon. Notice how each skewer transfers its energy to the next one in line. Now try your wave machine out!