



## DIY ACTIVITY

# MAKE YOUR OWN AIR CONDITIONER

## GRADES 3-5

### OBJECTIVES

- Build a cooling device to reduce impacts of a heat wave.
- Utilize simple household materials and science concepts to solve a problem.

### PROCEDURE

#### WATCH THE GENERATION GENIUS EXTREME WEATHER SOLUTIONS VIDEO

1. Place one opening of the angled tube on top of the cooler lid. Using the marker, trace the circle where it touches as closely as possible.
2. Then place the fan face down on the cooler lid, too. Trace around it as closely as possible, as well.
3. With an adult's help, carefully cut out the circle you traced for the tube.
4. Cut slightly inside the circle you traced for the fan, so that the fan will be able to sit on top of the cooler lid without falling in.
5. Place all the frozen water bottles inside the cooler.
6. Put the lid on the cooler. Insert one end of the 90 degree tube into its hole so that the other hole faces away from the cooler. Lay the fan on top of the hole you cut for it, facing inside the cooler.
7. If you like, you can tape short streamers (about 12 inches in length) around the edge of the tube opening (optional step).
8. Plug in and turn on the fan. You should feel cool air coming out through the tube.

### MATERIALS NEEDED

- 1 styrofoam cooler per group
- 4 frozen water bottles per group
- 1 plastic 90 degree angled tube per group
- 1 small household fan per group
- 1 marker per group
- Serrated steak knife\* (Adult use only!)
- Tape (optional)
- Streamers (optional)

### WHAT IS GOING ON HERE?

Air that is blown into the cooler by the fan is cooled by the ice inside the cooler. That air is then forced upward and out through the tube as more air is pushed inside the cooler by the fan. The air that is blown out through the tube is cooler than the air that the fan blows inside.

## FURTHER EXPLORATION

This air conditioner is too small to cool an entire room, but maybe you can engineer one that does! Experiment with the principles used here to design a larger, more powerful air conditioner. Research how commercial air conditioners work—what is similar and what is different compared to how this one works?

 Make sure an adult cuts the styrofoam cooler with the serrated knife.

