

# DISSECT AN APPLIANCE

## CABOT TRAIL Creative Expression



### THE ADVENTURE:

Reverse engineer an appliance! Discover the design and engineering behind an appliance, and figure out how different parts work together to create the final functioning product. Then, build something new.

### PLAN:

- How much time will you need to dissect your appliances?
- What appliances or mechanical equipment do you want to dissect? Choose appliances that are safe to take apart, such as a toaster, computer tower or CD player. Ask your parents if they have appliances that they want to get rid of or visit second hand stores. You might also be able to find businesses that are willing to donate old appliances to the Troop.
- Form groups of two to four. Each group will need one appliance.
- Are any manuals available for the appliances you chose?
- Do you know a repair specialist who could help your Troop with the process of dismantling the appliances?
- What tools will you need to successfully dissect your appliances? Do you have enough tools for all of the groups to work simultaneously?

### DO:

#### Activity #1: Imagine the design

- Before taking apart the appliance, think about what you might find inside.
- Discuss with your patrol or Troop.
- Draw a sketch of your ideas.

#### Activity #2: Take it apart

- As you open up the appliance and take it apart, try to figure out the role of each part of the appliance.
- When you are done, you want to be able to explain how your appliance works to the rest of the Troop.
- As you take apart the appliance, consider any questions you have about how the appliance works. When you are finished your dissection, take some time to discuss and research any remaining questions.
- If a repair specialist or an engineer is at the meeting, you can discuss your questions and understanding with them. If not, do more research or find someone to talk to during the week and bring your findings to the next meeting.
- Keep the pieces of your appliance together for Activity #5.

#### Activity #3: Draw the sketch

- Now that you have taken apart the appliance, make a new diagram of the inside of the appliance.
- How does it compare to your first sketch? What differences do you notice?

#### Activity #4: Engineer it

- Discuss how your appliances could be improved. Should it be lighter or heavier? Made of different material? Are there other ways to achieve the same result? Could it be easier to use?

#### Activity #5: Make something new

- Use parts from your dissected appliance to design and build something new.
- The final product does not have to work. Instead, it should demonstrate a new idea.



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## REVIEW:

- What do you know now that you did not know before?
- How did you collaborate with other members of your group?
- How can you recycle old appliances? How could you repurpose an old appliance?
- What other appliances you can think of that use a similar technology to the one you dissected?
- What elements of STEM were in this adventure? Science? Technology? Engineering? Mathematics?
- What did you like about this adventure? What did you not like? How would you do this adventure differently?

## MATERIALS:

- Old or used appliances or equipment (printer, vacuum cleaner, dishwasher, desktop computer, VCR or DVD player)
- Paper and pencils
- Tools for each group to dissect the appliances (Robertson screw drivers, Phillips screw driver, slot screw driver, hammer, wrench, pliers)
- Safety glasses for everyone involved

## SAFETY TIP:

- Everyone involved in this adventure should wear safety glasses at all times.
- Keep in mind that some appliances or equipment, like microwaves, televisions or computer monitors, have sections that should not be taken apart due to electrical risks. Be sure to obey all warning labels.
- Some appliances may have sharp parts or blades, and should be approached with caution.
- Appliances should be disconnected from any battery or electrical supply before taking them apart.

## ONLINE RESOURCES:

- Dissecting a computer
- Dissecting a vacuum cleaner
- Dissecting a printer
- Information about how different home appliances work

