



CERT Heat Transfer Module

Step-By-Step Set-Up Instructions

The heat transfer kit includes contents for eight student stations.

- 16 insulated cups (8 each labeled A or B) with 16 cup liners
- 1 Styrofoam cup labeled “Use to cool thermometers”
- 16 foam lids
- 8 Aluminum bars
 - 1 extra aluminum bar to be used before the experiment
- 16 digital thermometers
- One hot water pot
- A portable mouse
- A memory stick containing all files
- A notebook with all documents

The following steps should be completed before class:

1. Determine how you will group your class to form eight experiment stations.
2. Open the Kit box and remove the hot water pot and storage boxes.
3. Remove the contents of all boxes.
4. Fill the pot with water, but do NOT heat it yet. Use it to fill the B cups with liners with cold water. **Cups labeled B, with liners, should only have about 1 inch of cold water. This is very important since the temperature will not change very much if you fill the B cups with too much water.**
5. Fill up hot water pot and turn on to heat the water for cups labeled A. Take one of the thermometers and monitor the temperature of the hot water. You will only need to heat it to around 140°F. Then turn off pot. **Do this just before you start the experiment.**
6. Assemble the apparatus for each of the eight student stations.
7. Assemble the experiment apparatus for each of the eight student stations.
 - a. Place each end of the metal bar ends into a foam lid in the longer slit.
 - b. Place a thermometer into each foam lid in smaller slit.

The following steps are completed immediately before the experiment:

1. Start the video and continue until you get to Experiment 1. Stop video at the appropriate place.
2. Fill eight cups marked “A” to about 1 inch below the top edge of the cup with hot 140°F water. Re-heat the hot water to 140°F if needed.
3. Place assembled apparatus (bars, foam lids, thermometers) into the two cups labeled A and B making sure the metal bar is inside each cup and the tops are secure. The thermometers should be on and set to Fahrenheit (F). Have a few

students feel the extra metal bar while you are passing out one apparatus to each student station.

Completion of Class and Experiment

1. Resume play of educational video.
2. Remove apparatus from each student station when directed by the video.
3. Remove ALL thermometers and turn off.
4. Remove all metal bars.

To pack the kit to return to CERT:

1. Pour water out of all cups and water pot.
2. **Allow all items to dry before packing them.**
3. Place all items back in appropriate (marked) storage boxes.
4. Place hot water pot into large box first.
5. Place small boxes into large bin.
6. Return the flash drive to the pencil pouch inside the notebook.
7. Place the notebook into the bin.
8. Contact CERT to pick up the 3rd Grade Heat Transfer Kit from your school's front office.

To Contact CERT:

CERT
336-256-2406
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