

Lab #1

How can energy change its form?

Date: Friday, October 28, 2011 Class: Jones/Paul

Objective: Identifying and measuring changes in energy

Materials: Each group should have the following items:

- 1 white piece of cardstock to stage experiment
- 1 jar with lid containing sand
- 1 envelope containing a thermometer
- 1 timer
- Set of safety goggles (one for each member of your group)
- Workbook page 137 (one for each member of your group)
- Workbook page 140 (one for each member of your group)
- Lab instructions and data chart (one for each member of your group)

Group Members: **Group Captain** – oversees all procedures and group members to make sure that the experiment is going according to the instructions. The experiment will be conducted on the Captain's desk. The desk should be completely cleared except for a piece of white card stock and experiment materials.

Materials Manager – obtains, checks, sets-up, repacks, and returns materials on behalf of the group. The Materials Manager should clean the work area when experiment is complete and report any problems with or damage to materials.

Time Manager-operates and controls the timer and manages time for the group. The time manager must signal team members when to start the experiment, switch the sand jar to the next team member, and stop the experiment.

Data Manager – handles and controls the thermometer. The Data Manager will obtain and record the temperature at pre-specified intervals.

Procedure: Obtain materials and set-up on staging mat.

Examine thermometer and **record pre-experiment temperature.**

Remove lid from jar and insert thermometer into sand. Do not let thermometer touch the bottom or sides of the jar. **Record the temperature.**

Wait one minute and record temperature again.

Remove thermometer and replace lid. IMPORTANT: MAKE SURE LID IS FULLY AND TIGHTLY ON JAR.

The Captain should decide the order in which group members will shake the jar.

The Time Manager will prepare the timer. The timer should be set for 10 minutes. When the first group member starts to shake the jar, the Time Manager should start the timer.

Each team member will take turns shaking the jar of sand. The jar should be shaken for a total of ten minutes.

The Time Manager and the Captain should monitor the timer and signal when the jar should be changed to the next team member. If a team member gets too tired, other team members should be willing to step in and take over.

During the ten-minute-period, all team members should work on workbook pages 137 and 140. You may work cooperatively on these worksheets.

At the end of the ten-minute period, remove the lid from the jar. The Data Manager should insert the thermometer as before and record the temperature on the data sheet.

Leave the thermometer in the sand. After one minute, record the temperature. Record the temperature again, four minutes later (five minutes after you stopped shaking the jar).

Once experiment is complete, the Materials Manager should gather, repack, and return materials to Mrs. Crisler. The work area should be cleaned once the experiment is complete.

Note: the data chart contains a column to record the time. Use the clock on the wall to record the appropriate times.

Evaluate your data and explain your results. Do the results support your hypothesis (prediction)? Why or why not?