Student Name_____ Block # _____ Date_____

Materials: metal wires, 1 solar calculator, 1 flashlight, 1 meter stick, 1 bouncy ball, 1 candle, matches, 2 standard rulers, 1 marble, 2 CPO science textbooks, 1 small plastic cup, 1 9V battery, 1 small motor fan

Energy! – Oh Where, Oh Where Did You Go?

Station One

1. Pick up the metal wire and observe if it feels cool or warm. Hold the ends of the wire and bend it several times. (Caution: if the wire breaks, the ends could be sharp). Bend the wire very quickly. After bending the wire, touch the bent area. Is the bent area the same temperature now as it was before? What energy conversion have you just observed?

   Wire felt _____ before bending it. Wire felt _____ afterwards.

   I converted _____ energy (when I moved the wire) to _____ energy that I could feel in the bent part of the wire.

Station Two

2. Place your calculator in direct light, making sure that it is turned on. Now cover the solar cell with your fingers and observe what happens. From your observation, what type of energy can you infer powers the calculator?

   _____ energy powers the calculator (do not say “solar energy”)

Station Three

3. Turn on the flashlight. Observe what happens. Explain what energy conversion you can see occurring.

   I converted _____ energy in the battery to _____ energy that is visible

   and _____ energy (felt when I touch the end of the flashlight with the bulb inside).

Station Four

4. Hold the meter stick vertically with the zero end on the counter. Drop -do not throw- a ball from the 50 centimeter mark and record the height to which the ball bounces back.

   The ball bounced back to the _____ cm mark. Why can’t the ball rise back to the 50 cm mark? This

   is because some of the _____ energy converts to _____ & _____ energy.

Station Five

5. Quickly rub the palms of your hands together for 30 seconds. Notice what you feel, then describe the energy conversion that occurred.

   I changed _____ energy (as I moved my hands) into _____ energy (hint: why do you sometimes rub your hands together like this?)

Station Six

6. Look at the burning candle. The energy in the candle is chemical energy. It is being converted into 2 more types of energy.

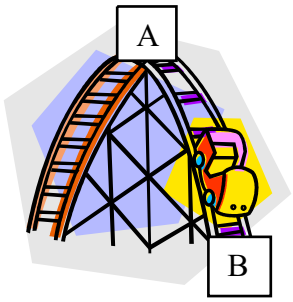
   The burning candle converts chemical energy into _____ energy that I can see and _____ energy that I can feel.

Station Seven

7. Look at the video and the picture below of a roller coaster. Note the location of point "A" and "B". List which position represents the greatest amount of potential energy and which represents the greatest amount of kinetic energy. Explain your answers.

   Point ____ has the greatest amount of potential energy because _____.

   Point ____has the greatest amount of kinetic energy because _____.



Station Eight

8. When you make toast for breakfast, the toaster converts electrical energy into several forms of energy. Using the hints given, list these forms:

   Electrical energy converts to _____ energy that cooks the bread, _____ energy that causes the glowing coils to become visible and _____ energy when the bread pops out of the toaster.

   Now answer these questions:

   An overhead projector takes electrical energy and changes it to _____ energy that shines on the screen, _____ energy that turns the fan blades and _____ energy that you can feel if you touch the surface near the motor.

Station Nine

9. Prop one end of a ruler on a book and the other end on the counter. Place the foam cup at the end of the ruler that rests on the counter. Roll the marble down the center of the ruler and measure the distance it pushes the cup. It pushed the cup _____ cm.

10. Repeat these steps using two books stacked on each other. It pushed the cup _____ cm.

    Which trial demonstrates the greatest amount of kinetic energy based on height? Trial one with one book or trial two with two books? _____.

    - How did you know which trial had more kinetic energy?

    _____

    - What do you think causes this trial to have more kinetic energy?

    _____

Station Ten

11. Observe the fan motor. Attach the alligator clips to the motor and to the negative and positive terminals of the 9V battery in a way that creates a simple circuit. When you have it set up correctly, the fan blades will turn. Ask your teacher for help if you are having trouble!

    Energy is transformed from _____ energy in the battery to _____ energy that runs through the wires to _____ energy that is the movement of the fan blades. What other form of energy might be released? _____ energy.

Conclusion: **(USE COMPLETE SENTENCES!!)**

What law is responsible for all of the transformations that you witnessed in today's lab? What have you learned? _____

_____

_____

_____

_____

Student Name_____ Date_____

Period _____

Answer Sheet for Energy Transformation Lab

Station One

I converted _____ energy to _____ energy.

Station Two

I think _____ energy powers the calculator.

Station Three

I converted _____ energy in the battery to _____ energy that is visible.

Station Four

The ball bounced back to the _____ mark. This is because some of the _____ energy converts to _____ energy.

Station Five

I changed _____ energy into _____ energy.

Station Six

The burning candle converts chemical energy into _____ energy and _____ energy.

Station Seven

Point ____has the greatest potential energy because _____.
Point ____has the greatest kinetic energy because _____.

Station Eight

Electrical energy converts to _____ energy that cooks the bread, _____ energy that causes the glowing coils to become visible and _____ energy when the bread pops out of the toaster.

An overhead projector takes electrical energy and changes it to _____ energy that shines on the screen, _____ energy that turns the fan blades and _____ energy that you can feel if you touch the surface near the motor.

Station Nine

The marble moved the cup ____ cm when propped on one book.
The marble moved the cup ____cm when propped on two books.

The trial that demonstrated the greatest amount of kinetic energy based on height was ____ (trial 1 or 2).

I know this trial had more kinetic energy because _____.
I think that re reason it has more kinetic energy is _____.