

### Evidence of Energy

The inside of the ring conducts heat from your finger to the liquid crystals making up the glass "stone." Heat transferred from your body changes the shape of the liquid crystal molecules. This change in molecular shape alters the way different wavelengths of light are absorbed and reflected, resulting in different colors.

### Energy source

Hand / Body (thermal)

### Energy receivers (and subsequent energy sources)

Metal ring band (thermal)

Liquid crystals in glass stone (thermal, chemical)

Fold

# Mood Ring

1. Put the mood ring on your finger or hold it in your hand. (It may take a few minutes to "work.")
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

..... Cut along this line .....

Fold

### Evidence of Energy

With the flick of the wrist the paddle hits the ball. The attached ball returns to the paddle via the elastic.

#### Energy source

Hand/paddle

(chemical, mechanical-motion, gravitational potential)

#### Energy receiver (and subsequent energy source)

Ball on elastic tether and elastic tether stretched  
(mechanical/motion, elastic, gravitational potential)

#### Energy receiver

Ball, paddle, elastic tether  
(elastic, mechanical/motion, thermal)

Fold

## Paddle Ball

1. Stand a safe distance from others. Try to hit the ball in succession with the paddle.
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

..... Cut along this line .....

### Evidence of Energy

The ball glows red and makes a sound.

#### Energy source

Battery (chemical energy)

#### Energy receiver

Sound chip and light bulb

Fold

## Energy Ball

1. Place the ball in the palm of your hand. Make sure your hand is touching the metal strips on the bottom of the ball at the same time.
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

### **Evidence of Energy**

After being stretched, the popper turns itself right-side out and flies in the air.

### **Energy source**

Hand (mechanical/motion, chemical)

### **Energy receivers** (and subsequent energy source)

Stretched elastic (elastic)

### **Energy receiver**

Popper (mechanical/motion, gravitational potential)

Fold

## **Poppers**

1. Turn the popper inside out and place on a smooth surface. Stand back!
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

..... Cut along this line .....

### **Evidence of Energy**

Once the toy is wound and released it “hops” unevenly across the table.

### **Energy source**

Hand (mechanical/motion, chemical)

### **Energy receiver** (and subsequent energy sources)

Gear (and subsequent gears)  
(mechanical/motion)

Fold

## **Windup Toy**

1. Gently turn the crank on the top of the windup toy. Set the toy on a table top.
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

### **Evidence of Energy**

After being compressed, the pop up toy's spring uncoils making the toy fly into the air.

### **Energy source**

Hand (mechanical/motion, chemical)

### **Energy receivers** (and subsequent energy source)

Compressed spring (elastic)

### **Energy receiver**

Toy (mechanical/motion, gravitational potential)

Fold

## Pop Up Toy

1. On a smooth surface, press down gently on the top of the toy until the suction cup sticks.
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

..... Cut along this line .....

### **Evidence of Energy**

As the wave tube is tilted from side to side, the liquids hit the end of the tube and reverse direction.

### **Energy source**

Position of tube (gravitational potential)

### **Energy receiver**

Liquid (mechanical/motion)

Fold

## Waves

1. Gently move the wave tube from side to side.
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

### **Evidence of Energy**

In the presence of light, car wheels turn, moving the car forward.

### **Energy source**

Sun (radiant)

### **Energy receiver** (and subsequent energy source)

Panel (electrical)

### **Energy receivers**

Gears, axle, wheels  
(mechanical/motion)

Fold

## Solar Powered

1. Position the solar panel towards a source of light (a sunny window or lamp).
2. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?

..... Cut along this line .....

### **Evidence of Energy**

When exposed to sunlight, the beads turn color.

### **Energy source**

Sunlight (radiant)

### **Energy receiver**

Beads (chemical)

Fold

## Beads

1. Remove the cloth covering the beads. Immediately observe the beads.
2. Place the beads near bright sunlight or under a lamp. Observe what happens.
3. Where does the energy come from to make the toy work?
4. Where does it go next?
5. Place the beads back under the cloth.

### **Evidence of Energy**

When the top is released, it spins, lights up and in some models, makes sound.

### **Energy source**

Hand (mechanical/motion, chemical)

### **Energy receivers**

Top  
(mechanical/motion – including sound,  
radiant – light)

Fold

## **Spinning Top**

1. Click handle of the top in place. Turn handle counterclockwise one full turn. Top will “click” several times. (Do not force).
2. Holding the top upright in the center of a table or in a box lid, push button to release top.
3. Observe what happens.
4. Where does the energy come from to make the toy work?
5. Where does it go next?

..... Cut along this line .....

### **Evidence of Energy**

When the yo-yo is released down, it comes back up the string toward your hand.

### **Energy source**

Position of yo-yo (gravitational potential)

### **Energy receiver**

Yo-yo (mechanical/motion)

Fold

## **Yo-Yo**

1. Wrap the string evenly and tightly around the center shaft of the yo-yo. Place your finger through the loop at the end of the yo-yo’s string.
2. Hold the yo-yo in the palm of your hand – palm facing up. Allow the yo-yo to roll off your hand towards the ground.
3. As the yo-yo reaches the end of the string, quickly flip your hand around so that the yo-yo winds backup the string to your hand. Observe what happens.
4. Where does the energy come from to make the toy work?
5. Where does it go next?

