

Sunlight at Work

Trace how light energy becomes useful energy.

5.6.d “radiant energy can be transformed into thermal, mechanical, and electrical energy.”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline every sentence that names an energy transformation. Circle the resulting energy form in each underlined sentence and write T, E, or M beside it for thermal, electrical, or mechanical energy.

Three Sunlight Projects

- ① Radiant energy travels as light from a source, such as the Sun or a lamp. When light reaches an object, the object can change that energy into another form. At a school energy fair, three teams used sunlight in different ways. Their projects showed that one kind of incoming energy can lead to different useful results.
- ② One team aimed a shiny reflector at a dark solar cooker. The reflector directed more sunlight toward the cooker. The cooker absorbed the radiant energy, and its inside temperature rose. This is a transformation from radiant energy to thermal energy. The heat warmed vegetable soup in a pot. No fuel was burned, but the absorbed light caused the cooker to become hot.
- ③ Another team connected a small solar panel to a motor that turned a fan. Light struck the panel, which transformed radiant energy into electrical energy. The electrical energy traveled through wires to the motor. The motor changed electrical energy into mechanical energy as its blades moved. In this system, radiant energy was transformed into mechanical energy because light-powered electricity ran the motor. The moving blades pushed air across wet paper strips.

2

ANSWER WITH EVIDENCE

Use the passage

1

How did the solar cooker change radiant energy into thermal energy?

2

What form of energy did the solar panel produce when light struck it?

3

Write the energy pathway for the fan, starting with radiant energy and ending with the moving blades.

4

What evidence in the passage shows that the fan produced mechanical energy?

3

YOUR TURN

Your own words

Create three different device ideas that use sunlight. Show an energy pathway beginning with radiant energy and give one observable result for each, including one thermal, one electrical, and one mechanical result.

DEVICE IDEA	ENERGY PATHWAY	OBSERVABLE RESULT

PART 1 • READ AND MARK

Underline every sentence that names an energy transformation. Circle the resulting energy form in each underlined sentence and write T, E, or M beside it for thermal, electrical, or mechanical energy. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How did the solar cooker change radiant energy into thermal energy?	The cooker absorbed sunlight, and its inside temperature rose, producing heat.
2	What form of energy did the solar panel produce when light struck it?	Electrical energy.
3	Write the energy pathway for the fan, starting with radiant energy and ending with the moving blades.	Radiant energy → electrical energy → mechanical energy.
4	What evidence in the passage shows that the fan produced mechanical energy?	Its blades moved and pushed air across wet paper strips.

PART 3 • YOUR TURN (SAMPLE ANSWER)

DEVICE IDEA	ENERGY PATHWAY	OBSERVABLE RESULT
Solar kettle	radiant energy → thermal energy	Water in the kettle gets warmer.
Solar calculator	radiant energy → electrical energy	Its display turns on.
Solar fan	radiant energy → electrical energy → mechanical energy	Its blades spin and move air.

Accept different accurate sunlight-powered devices and pathways. For the mechanical example, accept a pathway through electrical energy when a solar panel powers a motor.