

Energy Transformations



ESP

It's Science Time!

Maria and Darrell went to Sasha's house. They were invited to dinner. Sasha's mom was making her famous macaroni and cheese. When they arrived at the house, they saw Mr. Brown, Sasha's dad, lying flat on the kitchen floor with his head under the sink.

"Uh-oh, Mr. Brown!" exclaimed Maria. "What is wrong? Is the garbage disposal not working properly?"

"You hit the nail right on the head, Maria," answered Mr. Brown. "I think I understand the problem. But I need additional light under here so I can see more clearly."

"Where do you store your flashlight?" asked Maria. "I'll go get it."

"That is very kind of you, Maria. It should be downstairs in the storeroom next to my toolbox," said Mr. Brown. "I think Sasha is downstairs watching television with her mother. Go on down and let her know you are here. Then I sure could use your help."

"I'll return in a minute," said Maria.



Darrell and Maria went downstairs and found Sasha and her mom watching television together.

"Hi Sasha and Mrs. Brown," said Maria. "That macaroni and cheese sure smells delicious. I wasn't hungry until I got here. Now I am starving!"

"Me too," said Darrell.

"It should be ready in about thirty minutes," said Mrs. Brown. "Come sit down and watch this television program with us."

"I'll join you, but Maria is going to go back upstairs to help Mr. Brown," said Darrell.

"I offered to hold the flashlight for him," said Maria.

"That is very nice of you to offer to help," said Mrs. Brown. "The flashlight is right here. I just replaced the batteries with new ones. The bulb should be nice and bright."



Maria took the flashlight from Mrs. Brown and went upstairs to the kitchen.

"Here is the flashlight, Mr. Brown. Where do you want me to direct the light?" asked Maria.

"Point it in this direction," answered Mr. Brown. "I think I understand what the problem is. I just need to tighten several screws."

As Maria held the flashlight, Mr. Brown made a few last minute adjustments to the garbage disposal. He got up from under the sink, turned on the water, and flipped the switch. The garbage disposal whirled into action.

"Well, that certainly did the trick, Maria," said Mr. Brown. "Thanks for your assistance."



Just then the oven timer buzzed. The macaroni and cheese was done.

"It sounds like dinner is ready, Maria," said Mr. Brown. "Would you please inform Mrs. Brown that I am taking her casserole out of the oven?"

"Sure thing, Mr. Brown," said Maria. "I have been looking forward to this all day!"

Everyone took their seats at the kitchen table. Mrs. Brown's macaroni and cheese was bubbling, hot, and crispy brown on the top.



"Mom, you really are the most wonderful cook in the world," said Sasha.

"Thank you so much for inviting Maria and me for dinner," said Darrell.

"You are welcome, Darrell," said Mr. Brown. "And Maria, thank you for helping me repair the garbage disposal."

"What exactly was wrong with it?" asked Mrs. Brown.

"I needed to tighten up several screws and push the reset button," said Mr. Brown. "Once I did that, it worked without a problem."

"We have been learning about energy transformations in science class," said Sasha. "I never thought of it before, but the garbage disposal is a great example."

"You are correct, Sasha," said Mr. Brown. "The garbage disposal is an example of electrical energy changing to mechanical energy. What other energy transformations can you kids think of?"

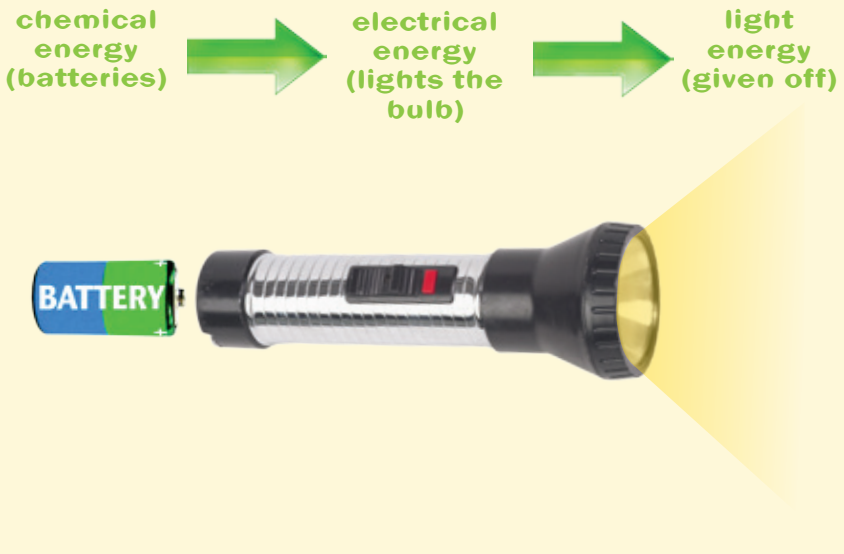
electrical energy



mechanical energy
(garbage disposal)



"Well, Mrs. Brown put fresh batteries in the flashlight," said Maria. "A flashlight is an example of an energy transformation. The chemical energy in the batteries changes to electrical energy. The electrical energy lights the light bulb in the flashlight. The bulb in the flashlight gives off light energy."



"I can think of another example," said Darrell. "Mrs. Brown cooked this fantastic dinner in the oven. The oven transformed the chemical energy from the natural gas into heat energy to cook the food."

chemical energy
(natural gas)



heat energy
(oven)



“What about when the buzzer on the oven went off?” added Sasha. “That is another example. Electrical energy was converted to mechanical energy then to sound energy.”

electrical energy → mechanical energy (buzzer) → sound energy



"I can think of the most delicious energy change of all!" exclaimed Darrell. "It is the macaroni and cheese! Our bodies use the chemical energy in food. It keeps us warm and gives us the energy to do all kinds of things like walking, growing, and even doing the dishes. Speaking of doing dishes, do you need some help, Mrs. Brown?"

**chemical
energy
(in the food)**



**mechanical energy
(movement of the body)**



"We will help too," said Maria and Sasha. "We would not want to waste any of that energy!"

"Sasha, your friends are welcome in our house anytime," said Mrs. Brown.


"I second that opinion," said Mr. Brown.

The three friends smiled at each other as they cleared the dishes from the table.



Electrical Circuits
Energy Transformations

Correlation

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