Energy

Did you just sit down? You needed energy to do it. Did you brush your teeth this morning? Did you ride in a car, bus, or train today? Energy made that happen. In fact, all day, every day, energy is on the move. It is in you. It is around you. It is everywhere.

What is energy? Energy is being able to do work. It doesn't matter who or what is doing the work. Energy is being used. Machines use it. The sun uses it. Living things use it, too. That means you use it all the time.

Energy cannot be made. It cannot be destroyed. It is always the same amount. It may change form. It may start as motion. It may turn into heat. But the amount will not change.

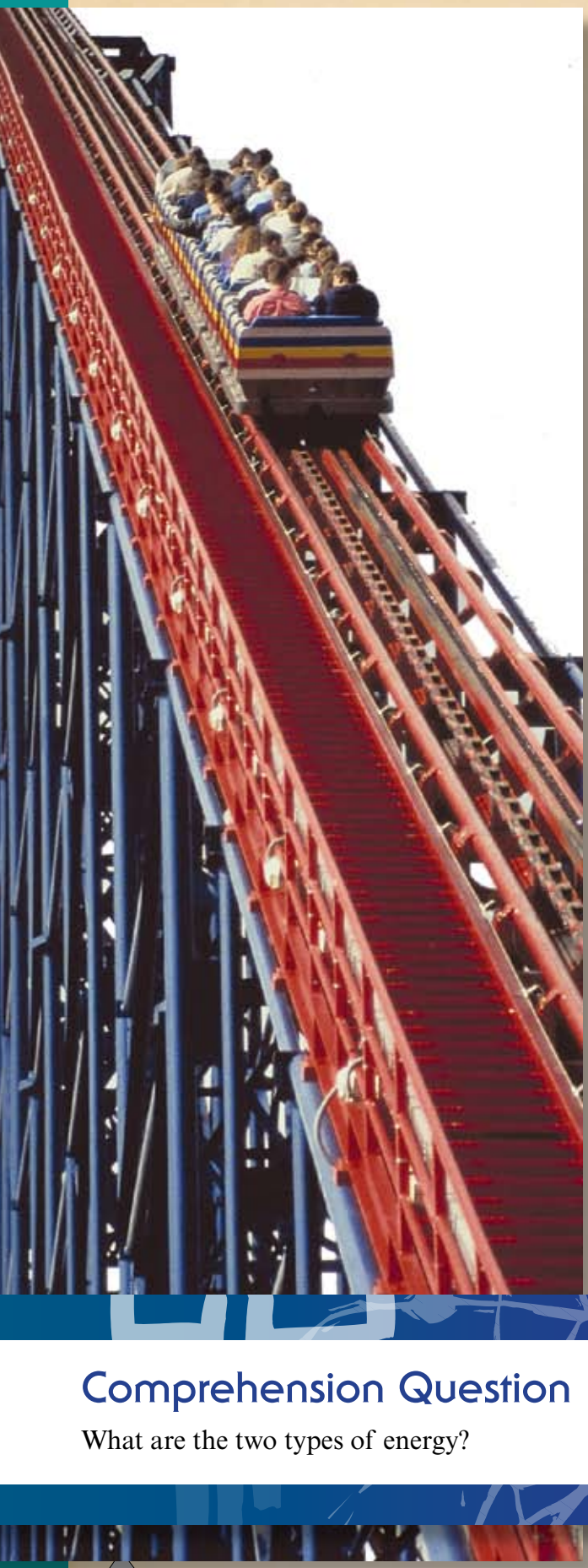
Energy is found in many forms. It can be heat. It can be light. It can be motion. There are many more. All of them belong to one of two types. First there is kinetic (ki-NET-ik) energy. Then there is potential (puh-TEN-shuhl) energy.

Kinetic Energy

First there is kinetic energy. It comes from motion. A bouncing ball has it. Water in waves has it. Even atoms have it. They are always moving.

Heat comes from moving atoms. They can bump other atoms. Those atoms start moving. The heat spreads. This is called thermal (THUR-muhl) energy. Sound makes things vibrate. That is movement, too.

Electrical (ee-LEK-tri-kuhl) energy is also motion. It comes from electrons when they move. That is electricity. When this happens in a storm, we call it lightning.



Potential Energy

The second type is potential energy. This type is stored. It comes from position. Is nothing moving? The energy is stored. No work is being done. The energy is ready to be used later.

Where does potential energy come from? It can come from gravity. Think of a ball at the top of a hill. Think of all the water behind a dam. They both have energy. If you let them, the ball and the water will move. That is the energy stored in them. It comes from where they are.

Where can potential energy be? It can be in small things, too. Chemical (KEM-ih-kuhl) energy has it. It is stored in the bonds between atoms. It comes out when the atoms move. Nuclear (NOO-klee-er) energy also has it.

Comprehension Question

What are the two types of energy?

Energy

Did you just sit down? You needed energy to do it. Did you brush your teeth this morning? Did water flow from the faucet? Energy did that, too. Did you ride in a car, bus, or train today? Energy made that happen. In fact, all day, every day, energy is on the move. It is in you. It is around you. It is everywhere.

What is energy? Energy is being able to do work. No matter who or what is doing the work, energy is being used. Machines use energy. The sun uses energy. Living things use energy, too. That means you use energy all the time.

Energy cannot be created. It cannot be destroyed. It is always the same. It may change form. It may be motion and turn into heat. But the total amount of energy will not change.

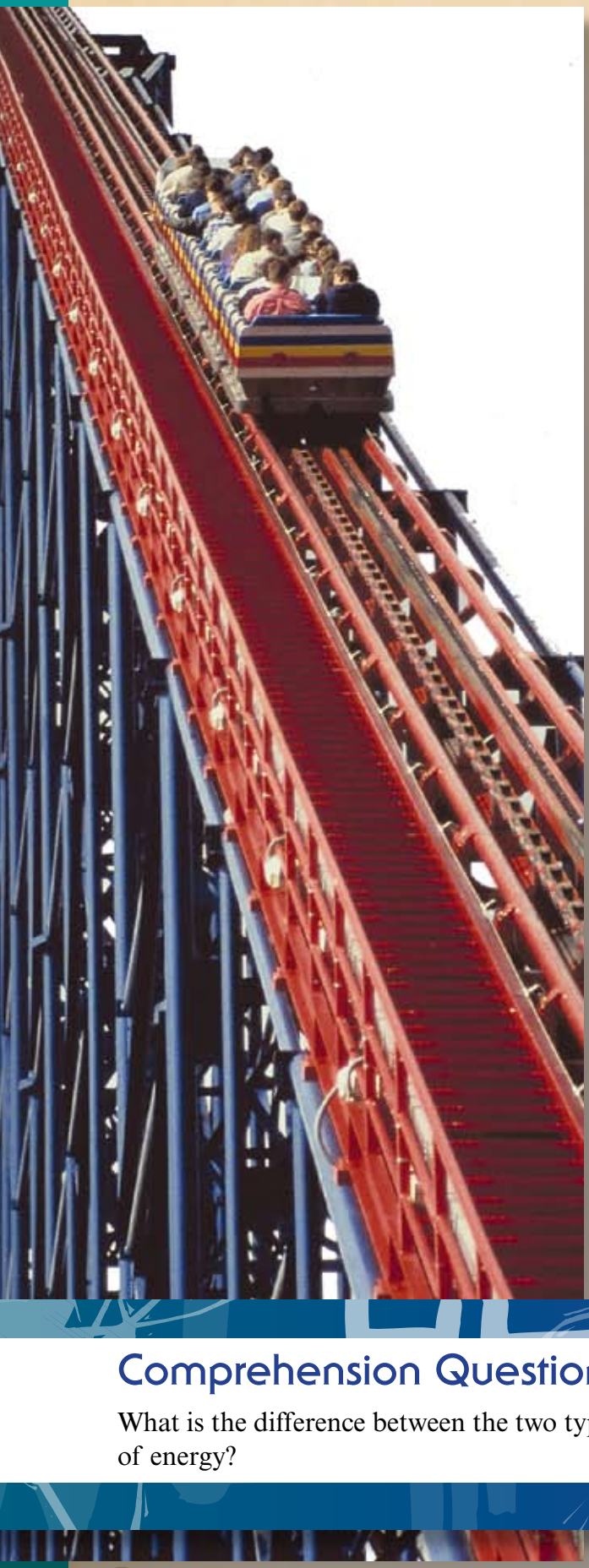
Energy is found in many forms. Heat, chemical energy, light, and motion are all forms of energy. There are many more. All of them belong to one of two types. First there is kinetic (ki-NET-ik) energy. Then there is potential (puh-TEN-shuhl) energy.

Kinetic Energy

The first type is kinetic energy. It comes from motion. A bouncing ball has it. Water in waves has it. Even atoms have it. They are always moving.

Heat is energy that can spread. It comes from the moving atoms. It is called thermal (THUR-muhl) energy. Sound energy is sound waves making things vibrate.

Electrical (ee-LEK-tri-kuhl) energy is also moving. It comes from electrons. They are tiny parts of atoms. They can move from atom to atom. That is electricity. If this happens in a storm, we call it lightning.



Potential Energy

The second type is potential energy. This type is stored. It comes from position. Is nothing moving? The energy is stored. No work is being done. The energy is ready to be used later.

Potential energy can come from gravity. Think of a ball at the top of a hill. Think of all the water behind a dam. They both have energy. If you let them, the ball and the water will move. This is because the energy comes from where they are.

Potential energy can be in small things, too. Chemical (KEM-ih-kuhl) energy has it. It is stored in the bonds between atoms. It comes out when the atoms move. Nuclear (NOO-klee-er) energy also has it. It is stored in the nucleus (NOO-klee-us) of an atom. It is comes out when the nucleus is broken apart.

Comprehension Question

What is the difference between the two types of energy?

Energy

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Energy cannot be created. It cannot be destroyed. It is always the same. It may change form. It may be motion and turn into heat. But the total amount of energy will not change.

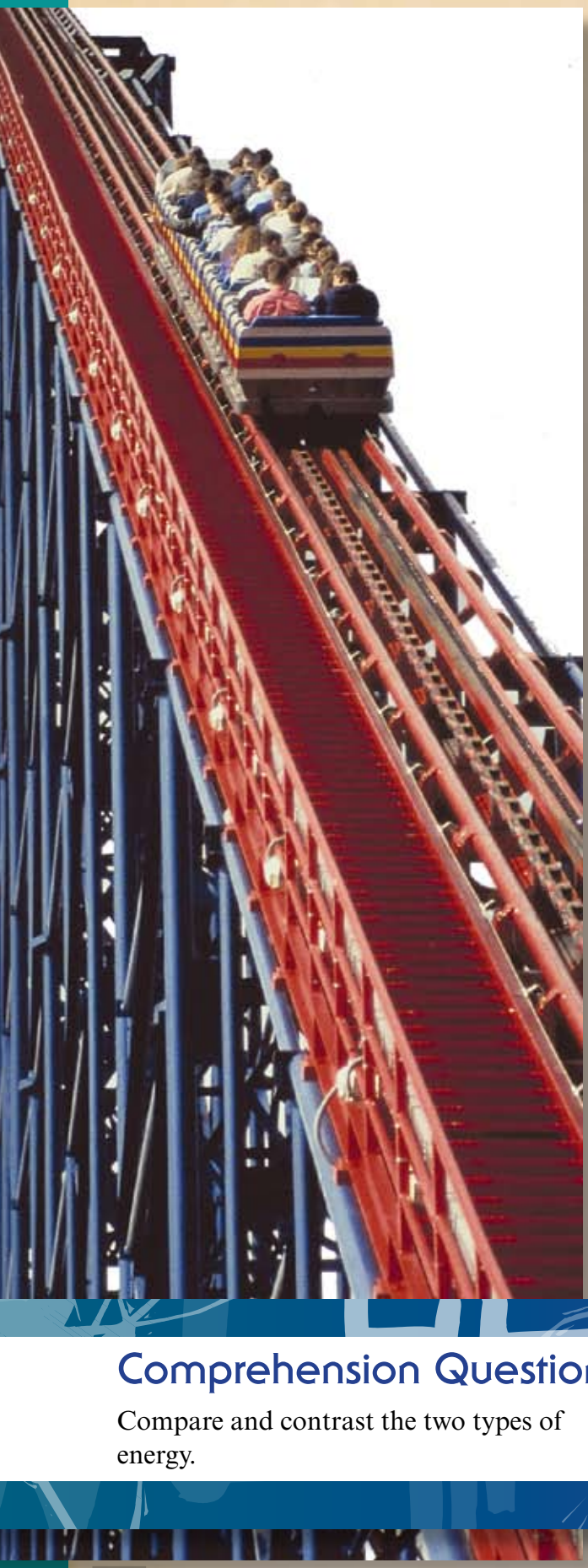
Energy is found in many forms. Heat, chemical energy, light, and motion are all forms of energy. There are many more. All of them belong to one of two types. First there is kinetic (ki-NET-ik) energy. Then there is potential (puh-TEN-shuhl) energy.

Kinetic Energy

The first type is kinetic energy. It is the energy of motion. Water in waves has this energy. Atoms, molecules, and all things in motion all have it. Even you!

Heat is energy that can spread across objects. It is called thermal (THUR-muhl) energy. It comes from the atoms moving and vibrating. Sound energy is sound waves making things vibrate.

Electrical (ee-LEK-tri-kuhl) energy is also moving. Electrons are tiny parts of atoms. When they move from atom to atom, this energy is released. That is electricity. When this happens in a storm, we call it lightning.



Potential Energy

The second type is potential energy. This type is stored. It comes from position. Is nothing happening? The energy of the system is stored. No work is being done. The energy is ready to be used later.

Potential energy can come from gravity. It is caused by position. A ball at the top of a hill has this energy. Water behind a dam has it. The energy comes from where they are. If allowed to, the ball and the water will move because of energy.

Potential energy isn't just big things ready to move. Chemical (KEM-ih-kuhl) energy has it, too. It is stored in the bonds between atoms. Nuclear (NOO-klee-er) energy also has it. It is stored in the nucleus (NOO-klee-us) of an atom. It holds the nucleus together. It is released when the nucleus is smashed apart or into another nucleus.

Comprehension Question

Compare and contrast the two types of energy.

Energy

Did you just sit down? You needed energy to do it. Did water flow from the faucet when you brushed your teeth this morning? Energy did that, too. Did you ride in a car, bus, or train today? Energy made that happen. In fact, all day, every day, energy is on the move in you, around you, and everywhere else.

What is energy? Energy is the ability to do work. No matter who or what is doing the work, energy is being used. Machines use energy. The sun uses energy. Living things use energy, too. That means you use energy all the time.

Energy cannot be created or destroyed. The total amount of energy that goes into a system must equal the total energy out of that system. It may change in form within the system, but the total amount of energy will not change.

Energy is found in many forms. Heat, chemical energy, light, and motion are all forms of energy. There are many more. All the different forms of energy belong to one of two types. There are kinetic (ki-NET-ik) energy and potential (puh-TEN-shuhl) energy.

Kinetic Energy

The first group is kinetic energy. Kinetic energy is the energy of motion. Water in waves or currents has this energy. Atoms, molecules, and all things in motion all have it.

Heat is the kind of kinetic energy that can be transferred between objects. It is called thermal (THUR-muhl) energy. The movement of atoms and molecules in matter causes this energy. Sound energy, or sonic energy, is made when vibrating movement creates sound waves. Electrical (i-LEK-tri-kuhl) energy is the movement of electrical charge. Electrons are tiny particles inside atoms. When electrons move, this energy is released. It is called electricity. Lightning is an example of this kind of energy.

Potential Energy

The second group is potential energy. Potential energy is stored or caused by position. If nothing is happening and no work is being done, the energy of the system is stored. It is ready to be used in the future.

Chemical (KEM-ih-kuhl) energy is an example of potential energy. It is stored in the bonds of atoms and molecules. Nuclear (NOO-klee-er) energy is stored in the nucleus (NOO-klee-us) of an atom. It holds the nucleus together. It is released when the nucleus is split or joined with another nucleus.

Potential energy from gravity or gravitational energy is caused by position. A ball resting at the top of a hill has this energy. Water has it when it is behind a dam. If allowed to, the ball and the water will move because of energy.

Comprehension Question

How are the two types of energy related?