Name: _____ Date: _____

How a Wind-Up Toy Saves Up Energy

Circle group

A wind-up toy sits still. You turn the key a few times. You let go. The toy hops across the floor. Where did the hopping come from?

Inside the toy is a coil of springy metal. When you turn the key, you twist the coil tighter. The coil wants to unwind. The energy you put in is stored in the coil. It is saved for later. This is called potential energy.

When you let go, the coil unwinds. The saved energy turns into motion. Little gears pass the motion to the toy's legs or wheels. The toy moves. The coil gets looser, and the toy slows down. At last the saved energy is used up. The toy stops.

Other things save energy this way. A stretched rubber band can snap back. A toy car with a spring can zoom ahead. A mattress spring pushes back up. A springy thing is squeezed or stretched. When it is let go, it gives the energy back.

Questions

1. What is inside a wind-up toy that saves energy?

_____

_____

2. What happens to the coil when you turn the key?

_____

_____

3. What is saved energy called?

_____

_____

4. What do the little gears do?

_____

_____

5. Why does the toy slow down and stop?

_____

_____

6. What else saves energy when it is stretched or squeezed?

_____

_____

Words to know

coil: a long piece wound into rings or spirals
unwind: to loosen and turn back the other way
potential energy: energy that is stored and ready to be used
gears: wheels with teeth that fit together and pass motion along

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How a Wind-Up Toy Saves Up Energy

Triangle group

A wind-up toy sits still on the table. Then you turn the key a few times, let go, and the toy hops across the floor. Where did the hopping come from?

Inside the toy is a coil of springy metal. When you turn the key, you do work on the coil. You twist it tighter and tighter. The coil does not want to stay twisted. It wants to unwind. The energy you put in is stored in the squeezed coil, ready to be used. Scientists call this stored energy potential energy.

When you let go, the coil begins to unwind. Its stored energy changes into energy of motion. Little gears carry that motion to the toy's legs or wheels, and the toy moves. As the coil loosens, the toy slows down, until the stored energy is used up. Then it stops.

Other things store energy in the same way. A stretched rubber band can snap back. A pulled-back toy car with a spring can zoom forward. A compressed mattress spring pushes back up. In all of these, a springy material is squeezed or stretched, and it gives the energy back when it is released.

Questions

1. What is inside a wind-up toy that stores energy?

_____

_____

2. What happens to the coil when you turn the key?

_____

_____

3. What is stored energy called in this passage?

_____

_____

4. What do the little gears do?

_____

_____

5. Why does the toy slow down and stop?

_____

_____

6. Which other things store energy when they are stretched or squeezed?

_____

_____

Words to know

coil: a long piece wound into rings or spirals
unwind: to loosen and turn back the other way
potential energy: energy that is stored and ready to be used
gears: wheels with teeth that fit together and pass motion along

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How a Wind-Up Toy Saves Up Energy

Square group

A wind-up toy sits motionless on the table. Then you turn the key several times, release it, and the toy goes hopping across the floor. Where does all that movement come from?

Inside the toy is a coil of springy metal. When you turn the key, you do work on the coil by twisting it tighter and tighter. The coil resists staying twisted and tends to unwind, so the energy you supplied is stored in the compressed coil, ready for use. Scientists call this stored energy potential energy.

When you let go, the coil begins to unwind, and its stored energy is transformed into energy of motion. Small gears carry that motion to the toy's legs or wheels, which makes the toy move. As the coil loosens, the toy gradually slows down, and once the stored energy has been used up, it comes to a halt.

Many other things store energy in the same way. A stretched rubber band can snap back, a pulled-back toy car with a spring can shoot forward, and a compressed mattress spring pushes upward again. In every case, a springy material is squeezed or stretched, and it returns the energy when it is released.

Questions

1. What component inside a wind-up toy stores the energy?

_____

_____

2. What do you do to the coil when you turn the key?

_____

_____

3. What do scientists call stored energy?

_____

_____

4. What is the job of the small gears?

_____

_____

5. Why does the toy gradually slow down and halt?

_____

_____

6. Which other objects store energy when they are stretched or compressed?

_____

_____

Words to know

coil: a long piece wound into rings or spirals
unwind: to loosen and turn back the other way
potential energy: energy that is stored and ready to be used
gears: wheels with teeth that fit together and pass motion along

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: How a Wind-Up Toy Saves Up Energy

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: How a Wind-Up Toy Saves Up Energy

Easier · 164 words · Flesch-Kincaid grade 1.4

1. A coil of springy metal.
2. It is twisted tighter.
3. Potential energy.
4. They pass the motion to the toy's legs or wheels.
5. The coil unwinds and the saved energy is used up.
6. A rubber band, a spring in a toy car and a mattress spring.

Triangle: How a Wind-Up Toy Saves Up Energy

This passage · 196 words · Flesch-Kincaid grade 3.2

1. A coil of springy metal.
2. It is twisted tighter and tighter.
3. Potential energy.
4. They carry the motion to the toy's legs or wheels.
5. The coil unwinds and its stored energy is used up.
6. A rubber band, a spring in a toy car and a mattress spring.

Square: How a Wind-Up Toy Saves Up Energy

Harder · 201 words · Flesch-Kincaid grade 6.4

1. A coil of springy metal.
2. You twist it tighter and tighter.
3. Potential energy.
4. They carry the motion to the toy's legs or wheels.
5. The coil unwinds and its stored energy is used up.
6. A rubber band, a spring in a toy car and a mattress spring.