# Potential And Kinetic Energy

***First Grade, Second Grade*** ***Science,***

Walk, sleep, run, eat! We're constantly using energy, whether we're moving or not. In this lesson, students learn how their bodies are constantly converting potential energy into kinetic energy and kinetic energy back to potential energy.

## Learning Objectives

Students will be able to differentiate between potential and kinetic energy. Students will be able to describe what causes potential energy to change into kinetic energy and vice versa.

## Materials and preparation

### MATERIALS

- Board markers
- Potential Versus Kinetic Energy worksheet
- Colored pencils
- Notebooks or lined paper
- Index cards (one per student)
- Pencils

### PREPARATION

- Write an action on each of the index cards (i.e. jumping, sleeping, sitting, eating, etc.)

## Key terms

- energy
- potential energy
- kinetic energy

## Attachments

- Potential Versus Kinetic Energy (PDF)

## Introduction *(5 minutes)*

- Begin the lesson by talking to your class about energy. Great discussion questions to introduce the topic are: *What is energy? Where does energy come from? How many kinds of energy are there? What are the different kinds of energy?*
- Explain that **energy** is the ability to do work, and that energy comes from all sorts of sources, such as the sun, wind, petroleum, and the muscles inside our bodies.
- Tell your students that today, they will be learning about the two kinds of energy: potential and kinetic.
- Ask your students some questions to gauge their understanding of these kinds of energy. Good examples include: What is potential energy? What is kinetic energy? What is the difference between the two?*

## Explicit Instruction/Teacher modeling *(10 minutes)*

- Define **potential energy** as energy at rest. Give a few examples of potential energy use, such as standing and sleeping.
- Define **kinetic energy** as moving energy. Give a few examples of kinetic energy use, such as walking and swimming.
- Demonstrate different examples of potential and kinetic energy to the class, in the form of charades.

## Guided Practice *(15 minutes)*

- Explain to the class that when we are sitting or standing, we're using potential energy. Once we start walking, the potential energy is converted into kinetic energy.
- Draw a t-chart on the board, labeling one side *Potential* and one side *Kinetic*. Ask your students to give some examples of potential and kinetic energy, and list their responses on the board.
- Pass out one copy of the Potential Versus Kinetic Energy worksheet to each student, and go through each question as a class. Encourage your class to discuss their answers with each other.
- Review the correct answers as a class.

## Independent working time *(20 minutes)*

- Prompt your class to think of some things they do during lunch time. Instruct your students to write down and draw six things they do during lunch, in their notebooks or on a sheet of lined paper.
- Tell your students to draw a picture to go with each action.
- Once students have finished, instruct them to write down the kind of energy that is being used in each action: potential or kinetic.
- Walk around the classroom to help students who struggle with the assignment. Offering examples of potential and kinetic energy is a good strategy for helping students grasp these concepts.

## Differentiation

- **Enrichment:** Ask your students to think about their after-school routine. Tell them to list five actions they take between the end of school and bedtime. Remind them to include whether they used potential or kinetic in each action.
- **Support:** Ask your students to draw the following actions they do every day. The actions are sitting, eating, stretching, sleeping, standing and bathing. Ask your students to write the energy used in these actions next to the picture.

## Assessment *(10 minutes)*

- Review the examples of energy that each student wrote down and drew in their notebooks.

## Review and closing *(20 minutes)*

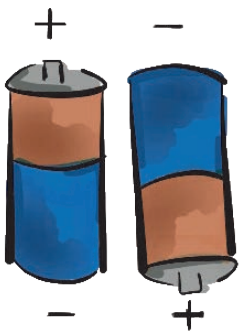
- Pass out one index card to each student. Each card should have a different action on it. Tell each student to keep their action a secret from their classmates.
- One by one, have students act out the action on their card, as a game of charades.
- Ask other students to guess the action. The person who guesses correctly must say whether the action used kinetic or potential energy.

# POTENTIAL VERSUS KINETIC ENERGY

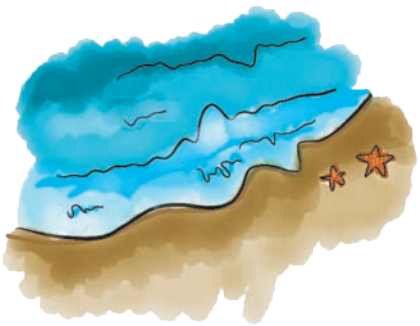
**Take a look at the chart to see some examples of potential and kinetic energy.**

| POTENTIAL ENERGY | KINETIC ENERGY |
|---|---|
| A car sitting in the driveway | A car driving down the street |
| A ball in a basketball player's hands | A ball bouncing down the court |
| A sleeping child | A child jumping on the bed |
| A log in a fireplace | A burning log |
| A lamp | A lamp turned on |

**Look at the pictures below, and label them potential or kinetic based on what type of energy they are showing.**





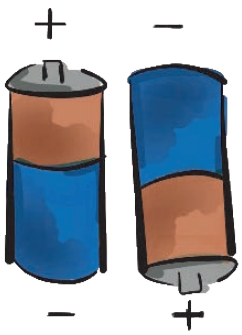


# POTENTIAL VERSUS KINETIC ENERGY

**Take a look at the chart to see some examples of potential and kinetic energy.**

| POTENTIAL ENERGY | KINETIC ENERGY |
|---|---|
| A car sitting in the driveway | A car driving down the street |
| A ball in a basketball player's hands | A ball bouncing down the court |
| A sleeping child | A child jumping on the bed |
| A log in a fireplace | A burning log |
| A lamp | A lamp turned on |

**Look at the pictures below, and label them potential or kinetic based on what type of energy they are showing.**



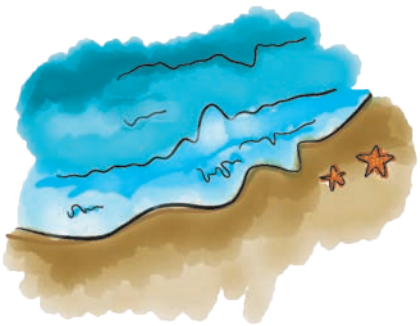
potential

kinetic

kinetic


potential

potential



kinetic