

6.2 Potential and Kinetic Energy

Lesson Concept Stored energy is potential and can be converted to kinetic energy of motion.

Link 6.2 Potential and Kinetic Energy builds on 6.1 that identified the form of energy. Further classification of energy is done in 6.2 by identifying when the energy is potential (stored or the ability to do work) or when the energy is in kinetic (in motion or doing work). This links to designing transfers and transformations of energy in the next lesson.

Time 50 minutes

Materials **Whole class**

Beach ball

Punchline definition

Individual

H1 Potential and Kinetic Energy

H1a-f Completed Energy Survey Lab handout (from 6.1)

H2a,b Forms of Energy (from 6.1)

H3 Potential and Kinetic Energy (NEW handout)

Advance preparation

1. Inflate beach ball.
2. Duplicate **H3 (Potential and Kinetic Energy)**.
3. Ask students to have H1a-f and H2a,b from lesson 6.1 available.

Procedure:

Engage *(10 minutes) Introduce difference between kinetic (energy of motion) and potential (stored energy).*

1. Toss a beach ball up and say “kinetic”. Catch it and say “potential.” Repeat again. Toss the beach ball to a student and say “kinetic.” Prompt the student to say “potential.” Allow students to toss the ball around a few times saying “kinetic” and “potential” at the right times.
2. Ask students to Think-Pair-Share the meaning of potential energy and kinetic energy based on their experience with the beach ball. Chart a summary of the discussion

by developing a class working definition for potential energy and kinetic energy. Post the definition.

Punchline: When the work is actually being done, we term the energy as “kinetic.” When the work is waiting to be done, or resting, the potential for work to be performed, we term the energy as “potential.”

3. Display punchline definition and ask students to compare it to their own definition. How are the definitions the same? How are they different?

Explore/Explain (15 minutes) Use a criteria to determine the difference between potential and kinetic energy in lab notes from lesson 6.1.

4. Ask students to review their notes from lesson **6.1 H2a,b (Forms of Energy)**. Looking at **H2a (Forms of Energy)** with a partner, ask students to discuss which column represents potential or kinetic energy. Share selection and reasoning for selection of the column.
5. Ask students to review their notes from lesson **6.1 H1a-e (Energy Survey)**. Model a discussion of whether the energy is potential or kinetic using **6.1 H1a-e (Energy Survey)**. Use the charted definition or criteria to determine whether the energy is potential or kinetic.
6. Ask students to justify whether the energy in **6.1 H1a-e (Energy Survey)** was potential, kinetic, or both at different points in the station observation. Explain the reasoning for each identification. Remind students that both potential and kinetic may have been observed at each station.
7. Ask small groups to discuss where potential or kinetic energy was evident in the remaining **H1b-e (Energy Survey)**. Ask students to explain their reasoning to their team.

Extend (15 minutes) Potential energy is stored energy and kinetic energy is energy in motion.

8. Distribute **H3 (Potential and Kinetic Energy)**. Ask students to individually draw and describe the potential and kinetic energy from each station on **H3 (Potential and Kinetic Energy)**.
9. Ask students to share their completed **H3 (Potential and Kinetic Energy)** in partners or table groups. Discuss any difference and reach a consensus of the type of energy (potential or kinetic).
10. Ask students to share the form of energy that was easy to classify as potential or kinetic. Explain what made it easy.

11. Ask students to share the form of energy that was difficult to classify as kinetic or potential. Explain what made it difficult.

Evaluate ***(10 minutes) Potential and Kinetic energy can be identified through observations and a criteria.***

12. Ask students to refer to the KWL chart. What can we add to our class chart? Do we need to remove anything inaccurate from our class chart?
13. Complete the following prompt in notebooks. Potential energy means I know this because.... Kinetic energy means..... I know this because. ..

Potential and Kinetic Energy

Potential =	Kinetic =
Balloon	Balloon
Bouncing Ball	Bouncing Ball
Chemical Reaction	Chemical Reaction
Wind-up Toy	Wind-up Toy
Magnets	Magnets

Potential energy means _____

I know this because _____

Kinetic energy means _____

I know this because _____