

Stored Energy Detectives

Find the features that allow systems to store energy.

PS.5.a "energy can be stored in different ways;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that describes energy being stored, then circle the words that name the feature or material that stores it.

Energy in the Emergency Kit

- ① Before a storm, Maya checks the classroom emergency kit. A hand-crank radio works after its battery has been charged. Inside the battery, energy is stored through chemical changes involving its materials. When the radio is switched on, those chemical changes help move electric charges through the circuit. The charges transfer energy to the speaker, which produces sound. A snack bar in the kit also stores chemical energy in its molecules. A person can release some of that energy during digestion and use it for movement and warmth.
- ② On a nearby shelf, a wind-up flashlight contains a tightly twisted spring. Cranking the handle transfers energy to the spring, where it is stored as elastic potential energy. As the spring unwinds, it can turn a generator and transfer energy electrically to the lamp. A book resting on a high shelf has gravitational potential energy because of the book-Earth system and its position above the floor. If it falls, that stored energy can transfer into motion, sound, and thermal energy when the book lands.
- ③ Energy storage is not the same as energy moving from place to place. Electric current transfers energy, but a charged capacitor stores energy because separated electric charges create an electric field. Fuels such as propane store chemical energy, while uranium nuclei can store nuclear energy. Different storage methods can lead to the same later effect, such as light or heat. To identify stored energy, ask what feature of the system could change and release energy: chemical arrangement, height, deformation, charge separation, or nuclear structure.

2

ANSWER WITH EVIDENCE

Use the passage

1

What type of stored energy is found in both the radio battery and the snack bar?

2

Why does the book on the high shelf have gravitational potential energy?

3

Why is electric current described as energy transfer, while a charged capacitor is described as energy storage?

4

Name two ways energy can be stored besides chemical energy. For each one, name the system feature that stores the energy.

3

YOUR TURN

Your own words

Invent three systems that store energy in three different ways. Complete the table by naming each system, the type of stored energy, and the feature that allows it to store energy. Do not use a battery, snack bar, flashlight spring, book, capacitor, propane, or uranium.

SYSTEM	STORED ENERGY TYPE	FEATURE THAT STORES ENERGY

PART 1 • READ AND MARK

Underline each sentence that describes energy being stored, then circle the words that name the feature or material that stores it. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What type of stored energy is found in both the radio battery and the snack bar?	Chemical energy.
2	Why does the book on the high shelf have gravitational potential energy?	Its position above the floor gives the book-Earth system gravitational potential energy.
3	Why is electric current described as energy transfer, while a charged capacitor is described as energy storage?	Electric current moves energy from place to place. A charged capacitor stores energy because separated charges create an electric field.
4	Name two ways energy can be stored besides chemical energy. For each one, name the system feature that stores the energy.	Answers may include gravitational potential energy, height or position; elastic potential energy, deformation of a spring; electric energy, charge separation; or nuclear energy, nuclear structure.

PART 3 • YOUR TURN (SAMPLE ANSWER)

SYSTEM	STORED ENERGY TYPE	FEATURE THAT STORES ENERGY
A sealed glow stick	Chemical energy	Its chemicals can change during a reaction.
A stretched bungee cord	Elastic potential energy	Its stretched material is deformed.
A water tower	Gravitational potential energy	Its water is high above the ground in the Earth-water system.

Accept any scientifically accurate storage type paired with the feature that makes storage possible. For the open task, all three systems should be different and should correctly connect energy storage to chemical arrangement, height, deformation, charge separation, or nuclear structure.