Energy

KS3 Physics · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Which energy store is filled when you wind up a toy car?

Step 1 · What changes shape?

Winding twists a spring inside the toy.

Step 2 · Name the store

A twisted or stretched spring stores energy in its elastic potential store.

Answer: Elastic potential store

Check: When you let go, the spring unwinds and the car's kinetic store fills.

2. Now try one with the steps

Describe the energy transfer when a gas hob heats a pan of water.

Step 1 · Start

Step 2 · Pathway

Step 3 · End

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Name the energy store of a moving football. [1]

2. Name the energy store of a stretched elastic band. [1]

3. Which energy store does food have? [1]

4. What is the unit of energy? [1]

5. Name the four ways (pathways) energy can be transferred. [2]

6. A book is lifted onto a high shelf. Which store increases? [1]

7. Describe the energy transfer when a battery-powered fan is switched on. [2]

8. A bike's kinetic store has 500 J of energy. The rider brakes to a stop. How much energy is transferred out of the kinetic store, in joules? [1]

9. Where does the energy go when a moving bike brakes to a stop? [2]

10. Explain why 'electrical' is called a pathway and not a store. [2]

11. A firework rocket is lit. Describe the energy changes from the moment it is lit until it explodes high in the sky. [3]

12. A ball is dropped and bounces back to a lower height. Explain what has happened to some of its energy. [3]

13. A wind turbine charges a battery. Describe the full chain of energy transfers, naming each store and pathway. [3]

14. Ravi says: 'A hot cup of tea has more thermal energy than a hot bath at the same temperature.' Is he right? Explain. [2]

4. Before you hand it in

"Energy gets used up."
Say the energy is transferred, usually ending up in the thermal store of the surroundings.

Listing "electrical energy" or "light energy"
Use the eight stores (kinetic, gravitational potential, elastic potential, thermal, chemical, nuclear, magnetic, electrostatic) and the four pathways.

Only naming the start and the end.
Write store → pathway → store, e.g. chemical → (electrically) → kinetic.

"Hotter always means more energy."
A large, warm object can store more thermal energy than a small, very hot one.