

Forms of energy

Energy, Force and Work

1. A _____ is a push or pull that makes objects move.
2. _____ is the ability to do work.
3. _____ happens when a force moves an object in the direction of the force.
4. Work = _____ × _____.
5. Energy provides the _____, force is the _____, and work is the _____.

Forms of energy

There are many different types of energy that allow us to make things happen and do work. There are two main types of energy: kinetic energy and potential energy. Whether energy is kinetic or potential depends on whether an object is moving or not. A moving object can do work when it applies force to another object and causes it to move some distance. This is because the moving object has kinetic energy.

Some objects have stored energy because of their position or shape. For example, when you lift a bag from the floor or compress a spring, you transfer energy to it. That energy is stored, ready to do work. It can be used later, such as when the bag is dropped or the spring is released. The stored energy that results from the position (above the ground) or shape (compressed spring) of an object is called potential energy, because it has the potential to do work.

1. _____ energy is stored energy that an object has because of its position or condition.
2. _____ energy is the energy an object has because it is moving.
3. When an object falls or moves, its _____ energy can change into _____ energy.

4. Write the correct form of energy next to each definition

Potential energy	
	The potential energy an object has because of its position in a gravitational field.
	Potential energy stored by stretching or compressing an elastic object by an external force
	Potential energy stored in substances that can be released through chemical reactions.
Kinetic energy	
	The energy of moving particles that makes a substance have a temperature.
	A form of energy that can be seen by the human eye
	The energy generated by the movement of charged particles within an electric field or a circuit.
	A form of energy created when an object vibrates and produces sound waves

Potential energy (stored energy)

5. Read each description of a scenario and write the form of energy from the list below.
Forms of potential energy: **gravitational, elastic, chemical**

Description	Form of energy
A rock sitting at the edge of a cliff, ready to fall.	
A stretched rubber band ready to launch a toy.	
A battery in a remote control before it is used.	
A compressed spring waiting to push a toy.	

Kinetic Energy (energy of movement)

Forms of kinetic energy: **kinetic, thermal, light, electrical, sound**

Description	Form of energy
A flashlight shining light across the room.	
A rock rolling down the hill.	
A toy car moving across the floor.	
A kettle of water heating on the stove.	
A ringing alarm clock producing sound.	
Electricity flowing through a lamp to make it turn on.	

Energy transfer and transformation

1. A _____ is the movement of one type of energy from one object to another.
2. A _____ is the changing of energy from one form to _____.
3. Complete the table to classify each scenario as either an energy transfer or transformation and identify the forms of energy present.

Description	Energy transfer or transformation?	Form(s) of energy
A moving cue ball hits a stationary pool ball.		
A torch is turned on.		
A toaster heats bread.		
A moving car hits a stationary car and makes it move.		
A ball rolling down a hill.		
A lamp converts electrical energy into light.		
Heat from a heater warms the air in a room.		

Description	Energy transfer or transformation?	Form(s) of energy
A battery powers a toy, making it move.		

Forms of energy (Answers)

Energy, force, and work

1. A **force** is a push or pull that makes objects move.
2. **Energy** is the ability to do work.
3. **Work** happens when a force moves an object in the direction of the force.
4. Work = **force** × **distance**.
5. Energy provides the **ability to do work**, force is the **push or pull that makes an object move**, and work is **the result when a force moves an object over a distance**.

Forms of energy

1. **Potential** energy is stored energy that an object has because of its position or condition.
2. **Kinetic** energy is the energy an object has because it is moving.
3. When an object falls or moves, its **potential** energy can change into **kinetic** energy.
4. Write the correct form of energy next to each definition

Potential energy	
Gravitational potential energy	The potential energy an object has because of its position in a gravitational field.
Elastic potential energy	Potential energy stored by stretching or compressing an elastic object by an external force
Chemical potential energy	Potential energy stored in substances that can be released through chemical reactions.

Kinetic energy	
Thermal energy	The energy of moving particles that makes a substance have a temperature.
Light energy	A form of energy which can be seen by the human eye
Electrical energy	The energy generated by the movement of charged particles within an electric field or a circuit.
Sound energy	A form of energy created when an object vibrates and produces sound waves

5. Read each description and write the form of energy from the list below.

Potential energy (stored energy)

Forms of potential energy: Gravitational, elastic, chemical

Description	Form of energy
A rock sitting at the edge of a cliff, ready to fall.	Gravitational
A stretched rubber band ready to launch a toy.	Elastic
A battery in a remote control before it is used.	Chemical
A compressed spring waiting to push a toy.	Elastic

Kinetic Energy (energy of movement)

Forms of kinetic energy: Kinetic, thermal, light, electrical, sound

Description	Form of energy
A flashlight shining light across the room.	Light

A rock rolling down the hill.	Kinetic
A toy car moving across the floor.	Kinetic
A kettle of water heating on the stove.	Thermal
A ringing alarm clock producing sound.	Sound
Electricity flowing through a lamp to make it turn on.	Electrical

Energy transfers and transformations

1. A **transfer** is the movement of one type of energy from one location to another.
2. A **transformation** is the changing of energy from one form to **another**.
3. Complete the table to classify each scenario as either an energy transfer or a transformation and identify the forms of energy present.

Description	Energy transfer or transformation?	Form(s) of energy
A moving cue ball hits a stationary pool ball.	Transfer	Kinetic → Kinetic
A torch being turned on	Transformation	Chemical → Electrical → Light + Heat
A toaster heats bread.	Transformation	Electrical → Thermal
A moving car hits a stationary car and makes it move.	Transfer	Kinetic → Kinetic

Description	Energy transfer or transformation?	Form(s) of energy
A ball rolling down a hill.	Transformation	Gravitational potential → Kinetic
A lamp converts electrical energy into light.	Transformation	Electrical → Light
Heat from a heater warms the air in a room.	Transfer	Thermal → Thermal
A battery powers a toy, making it move.	Transformation	Chemical → Electrical → Kinetic