



# The Energy Quest: A Journey to rescue the Princess

# The Energy Quest

## A Journey to rescue the Princess

**Topic:** Physics

**Level:** Secondary education (14 years old)

**Concepts:** Conversion and transfer of energy

**Time required:** +/- 30 min

**Summary of the activity:** In the mystical realm where energy shapes destiny, Prince Eamon embarks on a daring mission to rescue Princess Isabella from a malevolent sorcerer's clutches. As they escape the sorcerer's enchanted castle, their journey unfolds as a symphony of energy forms. Faced with challenges, they harness heat, light, motion, wind, and mechanical energy, transforming obstacles into opportunities.

**Material needed:** Paper, pen, physics knowledge and... motivation!

## Introduction

In the mystical and ethereal realm of energy, where the very fabric of existence is woven from its vibrant threads, a courageous tale unfolds. Prince Eamon, possessing a heart ablaze with determination, embarks on a quest of unparalleled daring. His mission: to rescue the enchanting Princess Isabella from the relentless clutches of the malevolent sorcerer, whose sinister aura has cast an oppressive shadow over the land.



Isabella has been his captive for many years now, and the prince, deeply in love with her, found a map detailing the corridors, the pathways, and the secret entrances to the sorcerer's castle. After 5 long days and nights waiting for the sorcerer to leave the castle, the prince finally finds his chance: the sorcerer stepped out to collect mushrooms and herbs from the nearby forest.

The prince enters the castle and finds the princess in her room. Amazed by her beauty, he hugs her with tears in his eyes. Isabella returns the greeting, ecstatic by the prince's presence. "We must go", she whispers, "he never leaves for long!"

The couple rush to the exit. As they thread through the winding corridors of the sorcerer's castle, desperation propelling them forward, Prince Eamon and Princess Isabella find themselves in a realm where energy is not merely an abstract concept, but a living, breathing force that courses through everything. The air hums with an otherworldly intensity, resonating with the energy of ancient spells and untold possibilities.

 **Go to paragraph 1.**

1

Yet, their daring escape from the castle's clutches is but the beginning of their journey. As they emerge into the moonlit night, they see the sorcerer's figure emerging from the woods.



The sorcerer quickly realised what was going on. "Stop!" he shouts. The prince, in the heat of the moment, makes a rushed decision. He orders his men to stay back and fight the sorcerer as he and the princess flee on foot. Stripped of their trusty steeds, they are left with no choice but to traverse the treacherous path back to the sanctuary of the prince's




formidable stronghold on foot. The tapestry of their destiny unfurls, intricately woven with threads of energy forms waiting to be harnessed.

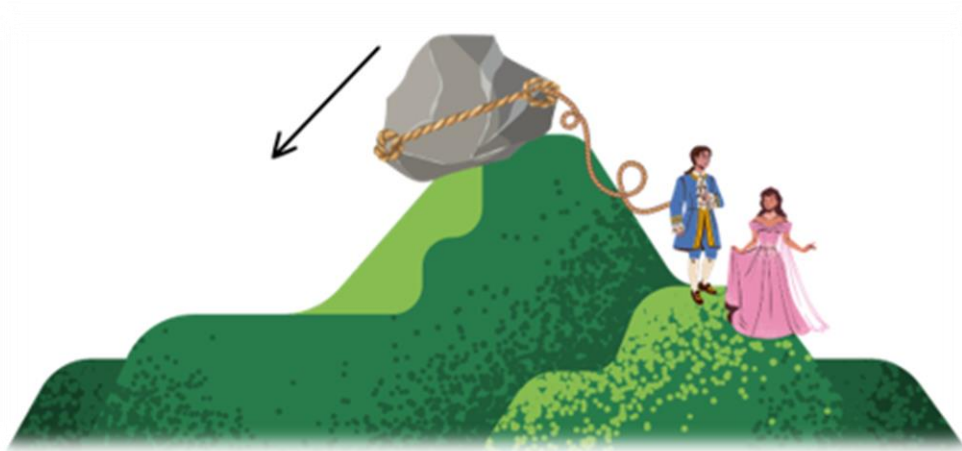
 **Go to paragraph 10.**



### 2



As they continue their journey through the varied terrain, a formidable obstacle presents itself - a steep hill rising before them like a sentinel guarding the path ahead. Prince Eamon's gaze narrows with determination, his eyes locked on the challenging ascent. "We must ascend" he says. The princess spots a boulder balancing at the top and leaning towards the other side. Her eyes light up with excitement. "We can use this to transform \_\_\_\_\_ to kinetic energy and propel ourselves upward!" she says.

- Heat       **Go to paragraph 7.**
- Electrical energy       **Go to paragraph 4.**
- Potential energy       **Go to paragraph 13.**



### 3

Are you sure? Temperature is a physical quantity that expresses quantitatively the perceptions of hotness and coldness. It is not a form of energy. Try again!

- Kinetic energy       **Go to paragraph 5.**
- Potential energy       **Go to paragraph 12.**

### 4

Are you sure? Electrical energy is the ability the charged particles of an atom have to cause an action or move an object. The movement of electrons from one atom to another is what results in electrical energy. Every time you plug a toaster or cell phone charger into a wall outlet, electrical energy is powering those devices. Try again!

- Heat       **Go to paragraph 7.**
- Potential energy       **Go to paragraph 13.**

### 5

That's right! The kinetic energy provided by the prince to rub the sticks produces friction and heat, and eventually, an ember!

 **Go to paragraph 6.**






6





Dawn's fingers brush the horizon, and the sun brings some light into the cave, which wakes our heroes up. They observe the cave and realise that there are two sources of light, meaning that there is a second opening on the other side of the cave. They decide to leave through the second exit, since they realised the cave works as a tunnel through the hill. As they exit their shelter, the sun, now almost fully risen, reveals a dense forest.

Not seeing a way around it, the couple decides to walk through it. After a couple of hours, they realise that the forest is huge, and they will probably need the whole day to walk through it. "I am too hungry; I don't think I can keep walking" the prince says. "You are right" observes the princess, "we need to eat something in order to continue our journey". The prince sets a trap to capture a rabbit which they cook on the fire and eat. After eating, they both feel re-energised and ready to continue their journey, as their bodies can now convert the \_\_\_\_\_ from the food to kinetic energy.

- Electrical energy       **Go to paragraph 11.**
- Heat       **Go to paragraph 8.**
- Chemical energy       **Go to paragraph 17.**



7

Are you sure? Heat is the energy that is transferred from one warmer body to another cooler as the result of a difference in temperature. Try again!

- Electrical energy  **Go to paragraph 4.**
- Potential energy  **Go to paragraph 13.**


8

Are you sure? Heat is the energy that is transferred from one warmer body to another cooler as the result of a difference in temperature. Try again!

- Electrical energy  **Go to paragraph 11.**
- Chemical energy  **Go to paragraph 17.**

9

That's right! In a grain mill, the wind's energy, harnessed by the windmill's sails, is transferred via a system of shafts, cogs, and belts to drive one or more pairs of millstones. Within the windmill's embrace, they find sustenance and vitality—grains ground to flour by the wind's transformative force. Prince Eamon's hands work with purpose as he prepares a simple meal, the rhythmic grind of the mill's mechanism echoing the wind's kinetic dance. Seated within the windmill, they partake in their humble feast, each bite a reminder of the intricate dance between energy forms that shapes their journey. The wind, once an adversary that tested their endurance, now nourishes them, its kinetic energy offering a profound interlude of rest and rejuvenation.

The kinetic energy of an object is the form of energy that it possesses due to its motion.  **Go to paragraph 14.**



10

With darkness blanketing the land, they find shelter in a cave. Shivering, Princess Isabella prompts: "We need warmth." Prince Eamon remembers his science lessons, rubbing sticks to light a fire. By doing so, he manages to convert \_\_\_\_\_ to heat and radiant energy.



- Temperature      >>> → Go to paragraph 3.
- Kinetic energy      >>> → Go to paragraph 5.
- Potential energy      >>> → Go to paragraph 12.



11

Are you sure? Electrical energy is the ability the charged particles of an atom have to cause an action or move an object. The movement of electrons from one atom to another is what results in electrical energy. Every time you plug a toaster or cell phone charger into a wall outlet, electrical energy is powering those devices. Try again!

- Heat      >>> → Go to paragraph 8.
- Chemical energy      >>> → Go to paragraph 17.

12

Are you sure? Potential energy is the energy held by an object because of its position relative to other objects. Try again!

- Temperature  **Go to paragraph 3.**
- Kinetic energy  **Go to paragraph 5.**

13

The plan works perfectly- the potential energy from the boulder converts into kinetic energy, and as the boulder tips over the opposite side, Prince Eamon and Princess Isabella are carried by the momentum they have unleashed. The hill's incline, once insurmountable, becomes an avenue of triumph as they ascend, their hearts beating in synchrony with the energy that surrounds them. As the sun started setting, they decide to look for a place to spend the night and find something to eat.

 **Go to paragraph 18.**

14




The next morning, with their strength renewed and their spirits rekindled, Prince Eamon and Princess Isabella leave the windmill behind, their journey a testament to the interconnectedness of all energy forms. After walking for a while, the silhouette of the prince's castle emerges on the horizon – a beacon of hope and safety that promises an end to their arduous journey. And yet, a

## The Energy Quest: A Journey to rescue the Princess

formidable obstacle stands in their path – a river, swift and unwavering, separating them from their sanctuary. "We need to cross," Princess Isabella's voice resounds with determination, her eyes fixed on the water's expanse. Looking around, Prince Eamon spots a boat. After inspection, they realise that there are no oars. "We can't cross the river without oars, as the boat won't move without them!" the prince says. "Let's make our own!" answers the princess.





With the river's melody as a backdrop, they begin to fashion two oars of their own design. Their hands work with precision, weaving together materials they've gathered along their journey – wood, vines, and their own indomitable spirit. When they are ready, they embark on the boat and start rowing, transferring \_\_\_\_\_ energy from their hands to the water, pushing the boat forward.

- Chemical            **Go to paragraph 19.**
- Kinetic              **Go to paragraph 21.**
- Potential            **Go to paragraph 15.**



15

Are you sure? Potential energy is the energy held by an object because of its position relative to other objects. Try again!

- Chemical  **Go to paragraph 19.**
- Kinetic  **Go to paragraph 21.**

16

Are you sure? Electrical energy is the ability the charged particles of an atom have to cause an action or move an object. The movement of electrons from one atom to another is what results in electrical energy. Every time you plug a toaster or cell phone charger into a wall outlet, electrical energy is powering those devices. Try again!

- Mechanical  **Go to paragraph 9.**
- Potential  **Go to paragraph 20.**

17

Correct! The chemical energy they receive from the food is converted to kinetic energy, allowing them to continue their journey. They keep walking for hours and when they finally reach the end of the dense forest, it is already evening.




 **Go to paragraph 2.**

18

Their search for respite unveils an unexpected oasis—a windmill that stands as a testament to the artistry of harnessing energy. As they approach, the windmill's colossal blades slice through the air with a hypnotic rhythm. Prince Eamon's gaze shifts from the





blades to the windmill's structure. "Here," he declares, his voice infused with newfound energy as he directs Princess Isabella's attention to the windmill. "This is perfect!" exclaims the princess. "Windmills use wind energy to transform it to \_\_\_\_\_ energy, which is used to ground grains to flour! We can use some flour to make bread and sleep inside for the night!"

- Mechanical  **Go to paragraph 9.**
- Potential  **Go to paragraph 20.**
- Electrical  **Go to paragraph 16.**

19



Are you sure? Chemical energy is energy stored in the bonds of atoms and molecules. Batteries, biomass, petroleum, natural gas, and coal are examples of chemical energy. Try again!

- Kinetic  **Go to paragraph 21.**
- Potential  **Go to paragraph 15.**



20

Are you sure? Potential energy is the energy held by an object because of its position relative to other objects. Try again!

- Mechanical  **Go to paragraph 9.**
- Electrical  **Go to paragraph 16.**

21

That's right! When rowers propel their boat, kinetic energy is evident. Their bodies exert kinetic energy as they move back and forth in the rowing motion. The oars utilise kinetic energy as they move through the water. The boat applies kinetic energy as it speeds down the river. Even the water itself possesses kinetic energy as it flows across the land.

As they travel through the river, each row is a testament to the synergy between their efforts and the energy forms that have carried them through the challenges they've faced. The river's current seems to acknowledge their resolve, its gentle murmur a whispered encouragement that carries them toward their destination.

 **Go to paragraph 22.**

22

With the castle's imposing gates before them, their rhythm quickens, their energy is unwavering. As they finally step onto solid ground, Prince Eamon and Princess Isabella share a triumphant embrace – a testament to their journey's culmination and the energy that has fueled their every step. The castle's walls, once distant and unattainable, now encircle them with a sense of security and belonging, a testament to the boundless potential that emerges when energy is harnessed with purpose and unwavering resolve. Exhausted but triumphant, they cross the castle's threshold.

Prince Eamon and Princess Isabella's valiant odyssey serves as an enduring reminder of energy's incredible versatility. In their saga, with your help and knowledge, they masterfully harnessed energy in its myriad manifestations, ultimately emerging victorious as they navigated challenges, championing the unparalleled potential of understanding and utilising energy.

**The end**





Designed by 6 European organisations, the project intends to create efficient, engaging pedagogical materials and tools for teachers in order to implement an innovative gamified Homework methodology with pupils. In doing so, we wish to contribute to boosting their efficiency and engagement rate in remote work and, more specifically, in Homework.

**Discover more stories on:**

[EDUGRAAL.EU](https://edugraal.eu)

**Funded by:**



**Co-funded by  
the European Union**

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.