Key Stage 4 Science home learning term 4 week 1

LO: To understand how energy is transferred and stored

Full of energy!

Science Video for Kids: What Is Energy? - YouTube

Stores of energy - Energy stores and transfers - KS3 Physics Revision - BBC Bitesize

What ways are there to store energy?

Iron Man must have a good system to store energy. Otherwise he would have to stay connected to the wall socket all the time!

These light sabres store energy as chemicals in the battery.

The Sun is a huge store of energy for us. But how easy is it to collect?

These cyclists store energy as they go downhill. They know it will be easier to go up the next hill that way!

The twisted rubber band in this toy aeroplane makes the propeller go round and keeps the model in the air.

The pulled string on this bow stores energy to shoot the arrow forward when it is released.

This old clock stores energy in a tightly-wound spring to move the hands around the face.

This stone has stored heat from the oven. When they put it on your table you can cook your steak just how you like it!

Practical - A catapult is a simple toy to throw a pom-pom ball over a short distance. The energy stored in the stretched elastic transfers to the pom-pom ball and pushes it forward. Plan and carry out an investigation to see how the distance you pull back the elastic affects how far the pom-pom ball goes.

Pompom Catapult | Crafternoons with the PMA - Bing video

List at least five different ways to store energy.

1.

2.

3.

4.

5.

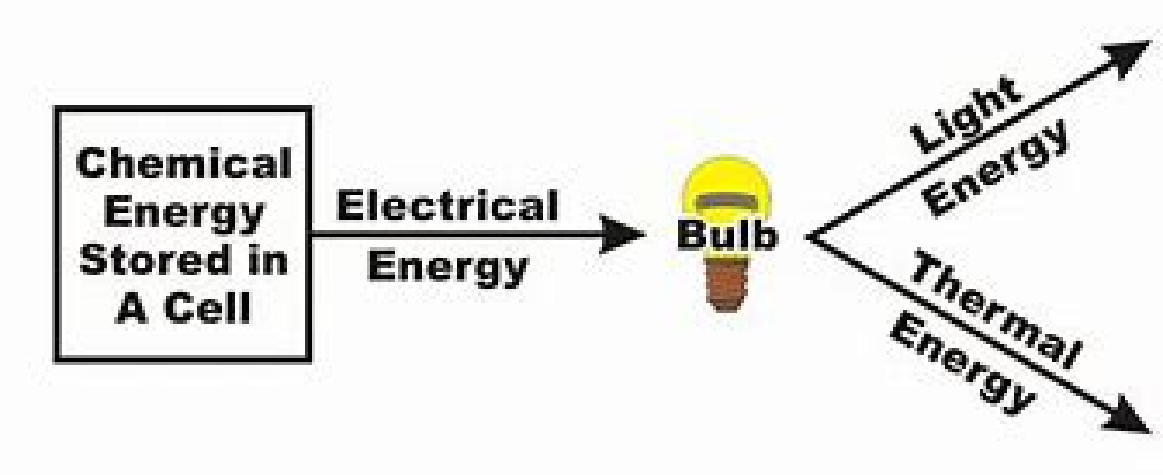
2 What type of energy store do the following depend on?

a) a Formula 1 racing car

b) a new smartphone

c) a marathon runner

Energy: what's it like? Energy is strange stuff. We cannot see it, hear it or smell it. We can only detect it when it makes something happen. Energy is a bit like money. It is great to have lots of money in the bank. But money is only useful when you spend it! So, energy is only noticeable when some leaves the store. Energy cannot be created or destroyed – it is just transferred from one form to another. We can show these changes as an energy transfer diagram.



When energy in chemicals in this battery is used to make electricity … it flows along these wires … into this bulb where the energy is used to make light … we can detect the light with our eyes.

Energy transfer from a battery to a light bulb.

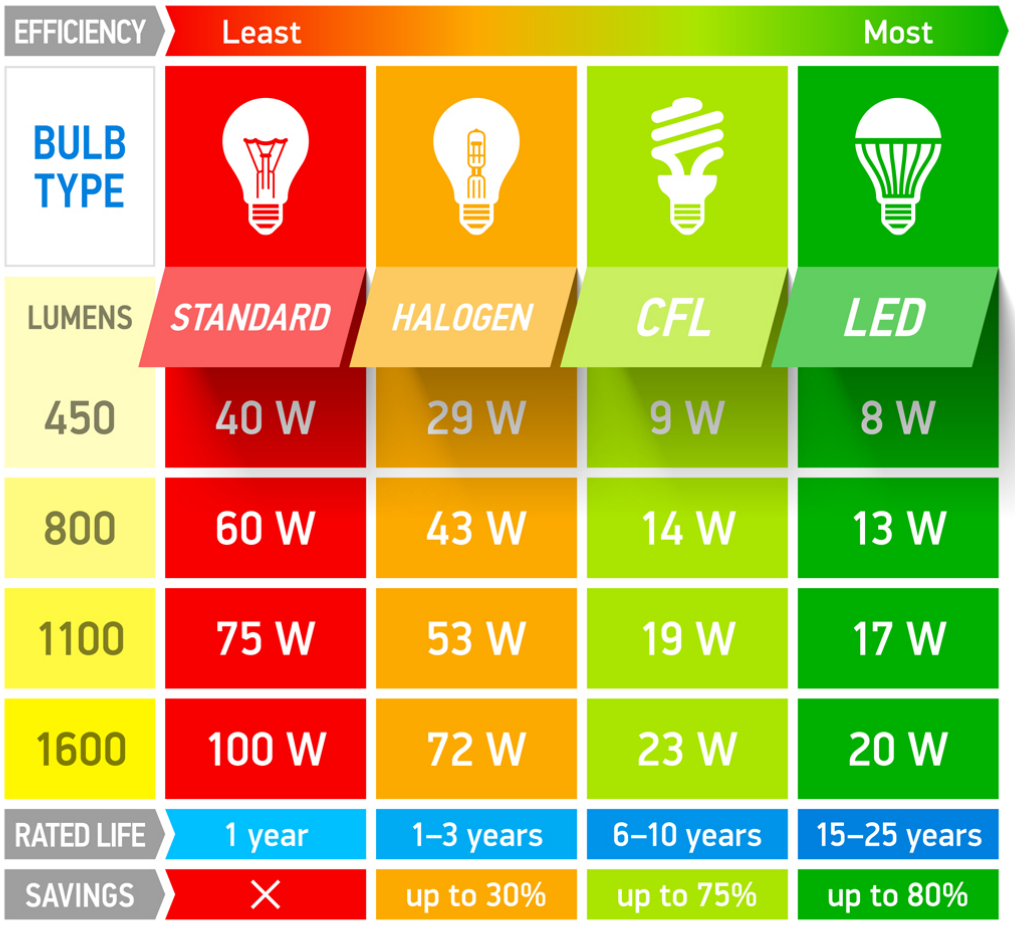
3 Draw an energy transfer diagram to show how energy transfers when: a a kettle boils water for tea b a solar cell makes electricity c a drummer hits the skin of the drum.

Energy forever

Energy stored in the gunpowder in fireworks is transferred into sound, light and heat when they go off. But what is left afterwards? Is all the energy used up? In fact, the total amount of energy after the explosion is the same as before. Before, most of the energy was stored in the gunpowder. Afterwards it is in the light and heat and sound. Light, heat and sound spread out. The energy is spread so thinly it cannot be detected. We say the energy has dissipated. However, the total amount of energy will still be the same.

Efficiency

Some energy transfers work very well. Most of the energy makes something useful happen. These energy transfers are efficient. But sometimes the transfer is inefficient. In inefficient transfers too much of the energy does something that is not very useful. We say that the energy has been wasted.



EFFICIENCY	Least			Most
BULB TYPE				
LUMENS	STANDARD	HALOGEN	CFL	LED
450	40 W	29 W	9 W	8 W
800	60 W	43 W	14 W	13 W
1100	75 W	53 W	19 W	17 W
1600	100 W	72 W	23 W	20 W
RATED LIFE	1 year	1–3 years	6–10 years	15–25 years
SAVINGS	✕	up to 30%	up to 75%	up to 80%

The efficiency of each of these light bulbs will be different.

Let's Make Energy Efficiency Our First Fuel - YouTube

Please email your completed work to me via homelearning@ifield.kent.sch.uk so that I can mark your work and support you. I am very happy to answer any questions or just let me know how you are getting along.

Keep safe and well

Mrs Hargood 😊