

ACTIVITY CARD 1

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

CONSERVATION OF ENERGY

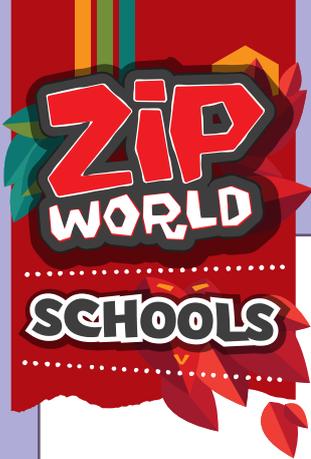
Energy cannot be created or destroyed. It can only be stored and transferred between different types.

The types of energy below have their vowels missing. Work together to find out what they are.

lght	
ht	
snd	
kntc	
grvttnl ptntl	
chmcl ptntl	
lctrcl	
lstc ptntl	

Energy is measured in joules. In energy transfers there is an input energy and one or more output energies.

Extension: All energy falls into one of two states; potential or kinetic. Potential energy is energy that is stored in the position or the structure of an object, energy ready to go. Kinetic energy is energy an object possesses due to its motion. Can you sort the types of energy above into these two categories?



ACTIVITY CARD 2

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

ENERGY STORES AND TRANSFERS

Energy can be stored or it can be transferred from one store to another – as one store decreases, another increases.

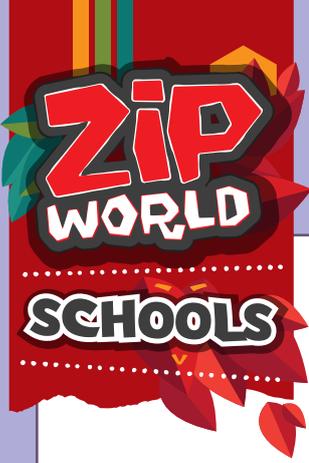
Match each type of energy to its description.

Kinetic Energy	This store increases as an object is moved higher.
Elastic Potential Energy Store	This is the energy stored in the bonds of chemical compounds. The energy is released when the bonds are broken.
Chemical Potential Energy Store	This is the energy in moving objects. It is energy at work.
Gravitational Potential Energy Store	This store increases when an object is stretched or squashed.

Extension: Add two examples for each definition above – one to show an example of how the energy might increase and one to show how the store might decrease.

Some examples from below can be used:

- A boulder rolling down from the top of a hill
 - A battery being recharged
- A parachutist jumping out of a plane
 - A spring being compressed



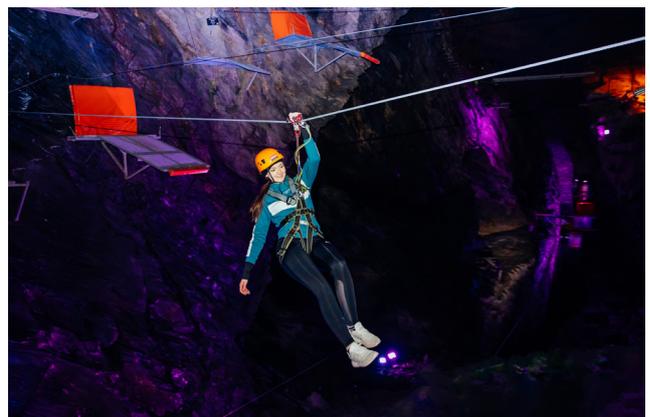
ACTIVITY CARD 3

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

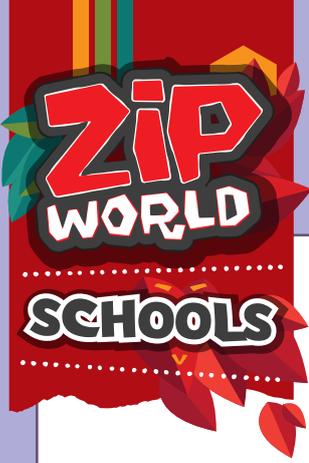
ENERGY

Look at the pictures below and discuss:

- What energy types can you see in use in the pictures?
- What energy transfers are happening?
- What energy stores are present?



Extension: Write in full sentences to explain what is happening in terms of energy transfer and storage in one of the pictures.



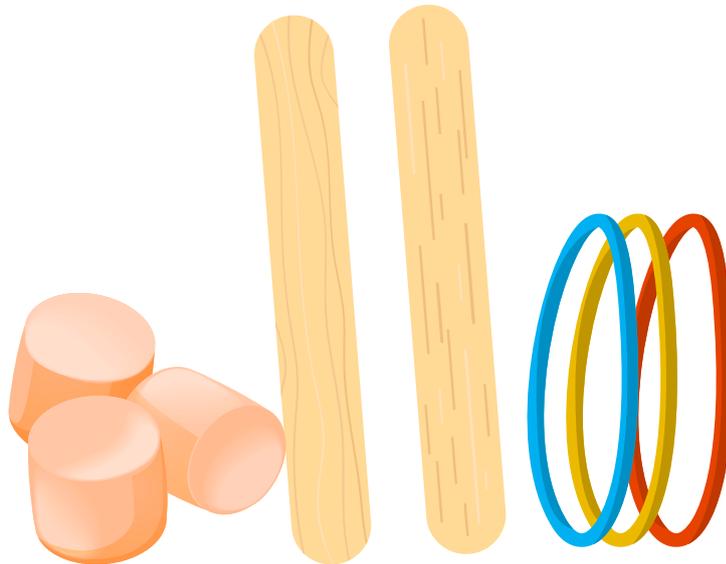
ACTIVITY CARD 4

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

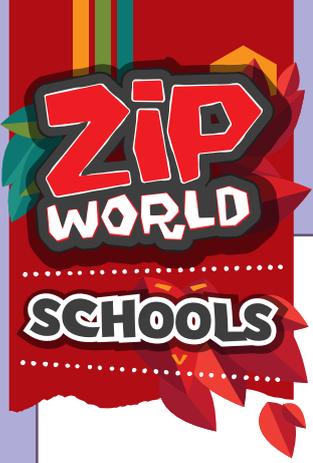
ELASTIC POTENTIAL ENERGY

Things like springs and rubber bands are elastic – if you stretch or compress them, they can return to their original shape and size when the force is removed. Elastic potential energy is the work done on an elastic object for it to return to its original shape. The energy is transferred out of the object as kinetic or heat energy when it returns to its original shape. Objects that are hard to compress/stretch will store more energy because more work is done to compress/stretch them.

Using the lolly sticks and rubber bands on the table, create a simple catapult that uses elastic potential energy to move a mini marshmallow.



Extension: Write a definition of elastic potential energy. Draw a simple energy transfer diagram to explain the energy transfer happening when you press the catapult.



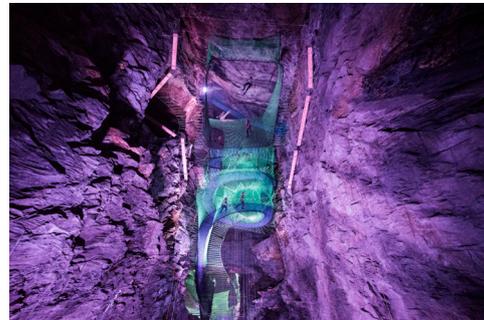
ACTIVITY CARD 5

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

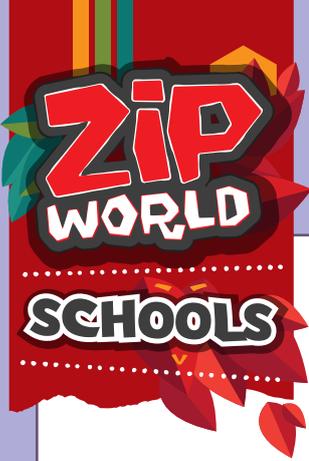
GRAVITATIONAL POTENTIAL ENERGY

Gravitational potential energy is energy an object has because it is high up. This is due to gravity pulling it down. It only releases this energy when it falls down.

Look at the images from Zip World below and discuss who/what has gravitational potential energy in each picture and why. Annotate the pictures.



Extension: Choose a picture and explain what happens when the person falls – as the gravitational potential energy decreases, energy must be transferred (we know it cannot just disappear) – but into what? What happens to the energy store when the person actually hits the bottom?



ACTIVITY CARD 6

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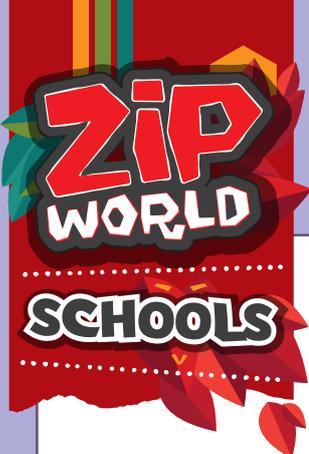
FORCES REVISION

Using arrows, draw the forces at work on these bouncers at Zip World. Remember, the longer the arrow, the greater the force. You may wish to include: gravity (weight); drag; friction; upward force.

Discuss: are the forces balanced or unbalanced? Contact or non-contact?



Extension: Explain what effect the forces are having on the nets and the bungee ropes to which they are attached.



ACTIVITY CARD 7

You and your group have approximately 5 minutes to read the information on this card and complete the activity.

WORK DONE AND SIMPLE MACHINES

Work is done when energy is transferred from one store to another or when a force causes an object to move. It is measured in joules. The formula to calculate work done is:

$$\text{Work (J)} = \text{Force (N)} \times \text{Distance (m)}$$

We can make doing work easier by using simple machines. They allow us to change the direction that a force is applied. Make a list of the simple machines you can see around your classroom or from the window.

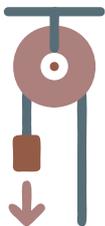
LEVERS



SCREWS



INVERTED INCLINE



PULLEYS

WEDGES



WHEELS AND AXELS



Extension: Explain what effect the forces are having on the nets and the bungee ropes to which they are attached.

For example: I pushed my school bag with a force of 10N, 2.5 metres across the room. Calculate the work done.