Self - Study Pack –Grade 7

- Subject: - Science
- Grade – 7
- Term – 2nd Term
- Unit:- Forms of Energy and their usages (Unit 7)
- Learning Outcomes: -
    - Give examples for different forms of energy.
    - List different devices that use various forms of energy.
    - Demonstrate various forms of energy in usage based on simple activities
    - Appreciate the uses of different forms of energy.

Activity 1

1) Engage in the following activity with your family members.
   Draw a circle in a flat place of your compound. Throw away a ball from that circle. Record the distance that the ball travelled.

Member	The distance that the ball travelled
A	60cm
B	1m 50cm
C	70cm

2) Take 10cm long piece of bicycle tube. Ask same members of your family to stretch the piece of tube at its two ends. Record the length of the tube after stretching.

Member	Length of the piece of tube after stretching
A	12cm
B	18cm
C	14cm

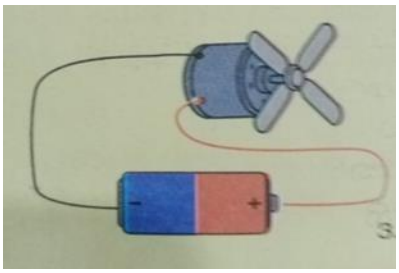
You also engage in the above activities.

For your knowledge-

An object should be moved by a pull or a push in order to do a work. In the first activity B has thrown the ball for the highest distance. In the second activity also, B has stretched the tube to the highest length. Accordingly, B has done more work in both instances.

Energy is the ability to do work. The Standard International unit (SI unit) of measuring energy is Joule (J).

Activity 2



A battery powered motor

A bicycle dynamo

An electric torch

A small radio

A winding toy car

A wall clock

An electric bell

A solar panel

Observe the above appliances well. Operate them. Complete the following table.

Appliance	Basic form of energy that is necessary to operate the appliance	Forms of Energy that produced during operation
A small radio	Chemical Energy	Sound Energy
A bicycle dynamo	Kinetic Energy	Light Energy
A wining toy car	Potential Energy	……..
A wall clock	Chemical Energy	……..
An electric bell	Electric Energy	……..
An electric torch	Chemical Energy	……..
A battery powered motor	Chemical Energy	……..
A solar panel	Light Energy	……..

For your knowledge – You can identify several forms of energy by abov activity. They are light energy, kinetic energy, electric energy, heat energy, sound energy and potential energy. When each appliance is operated, one form of energy converts into another form of energy. This is known as **Energy Transformation**

Activity 3

1.

2.

3.

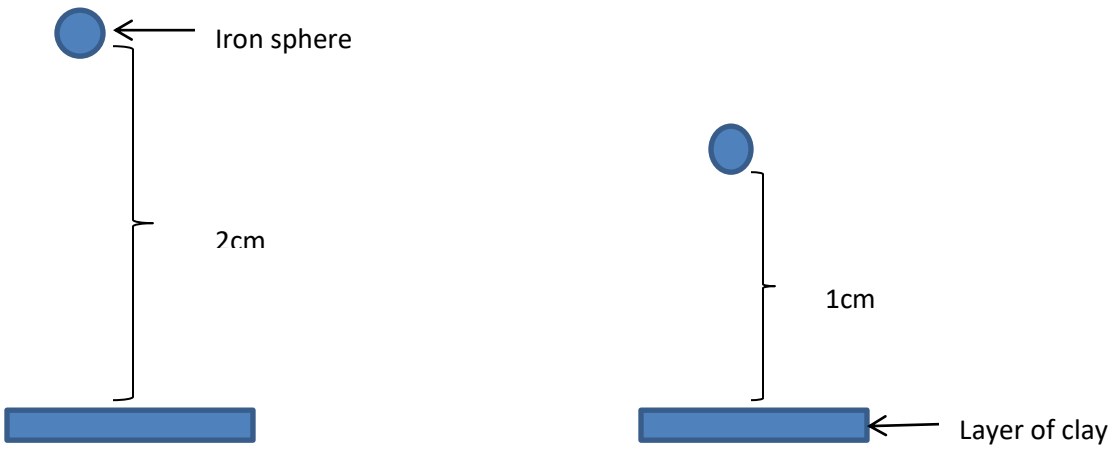
Observe the pictures given above. Tabulate the forms of energy used in each instance and usages of those forms of energy.

Instance	Way of obtaining energy	Usage of energy
1. ……	From a stream of following water	To produce electricity
2. ……	From blowing wind	……
3. ……	From sea waves	……

For your knowledge – The form of energy possessed by an object in motion is known as **Kinetic Energy.**

Activity 4

Take somewhat large sphere of iron. Spread some clay on the floor. Drop the iron sphere from a certain higher position on to the clay layer on the floor as illustrated in the diagram given below.



Observation: -

……

……

It is clear that an object at a higher position has more energy.

A stretched catapult

A Stretched bow

A winding toy car

The form of energy stored in the stretched objects (catapult and bow) and the wined spring of the toy car is known as potential energy.

For your knowledge – The form of energy stored in objects due to change of position or shape is known as **Potential Energy**. Potential energy is also known as **Mechanical Energy.**

Activity 5

Engage in following activities with a candle. (Get the help of an adult).

Candles

Bring the following items close to the candle flame. Record your observations.

Item brought closer to the flame	Observation
Piece of paper	……
PVC pipe	……
A tube with water	……

For your knowledge – According to the above activity, it is clear that altering the shape of an object, changing colour of an object, catching fire, vapourizing, melting and the like can be caused by heat energy.

- Write down the instances where heat energy is used in day to day life as much as possible.

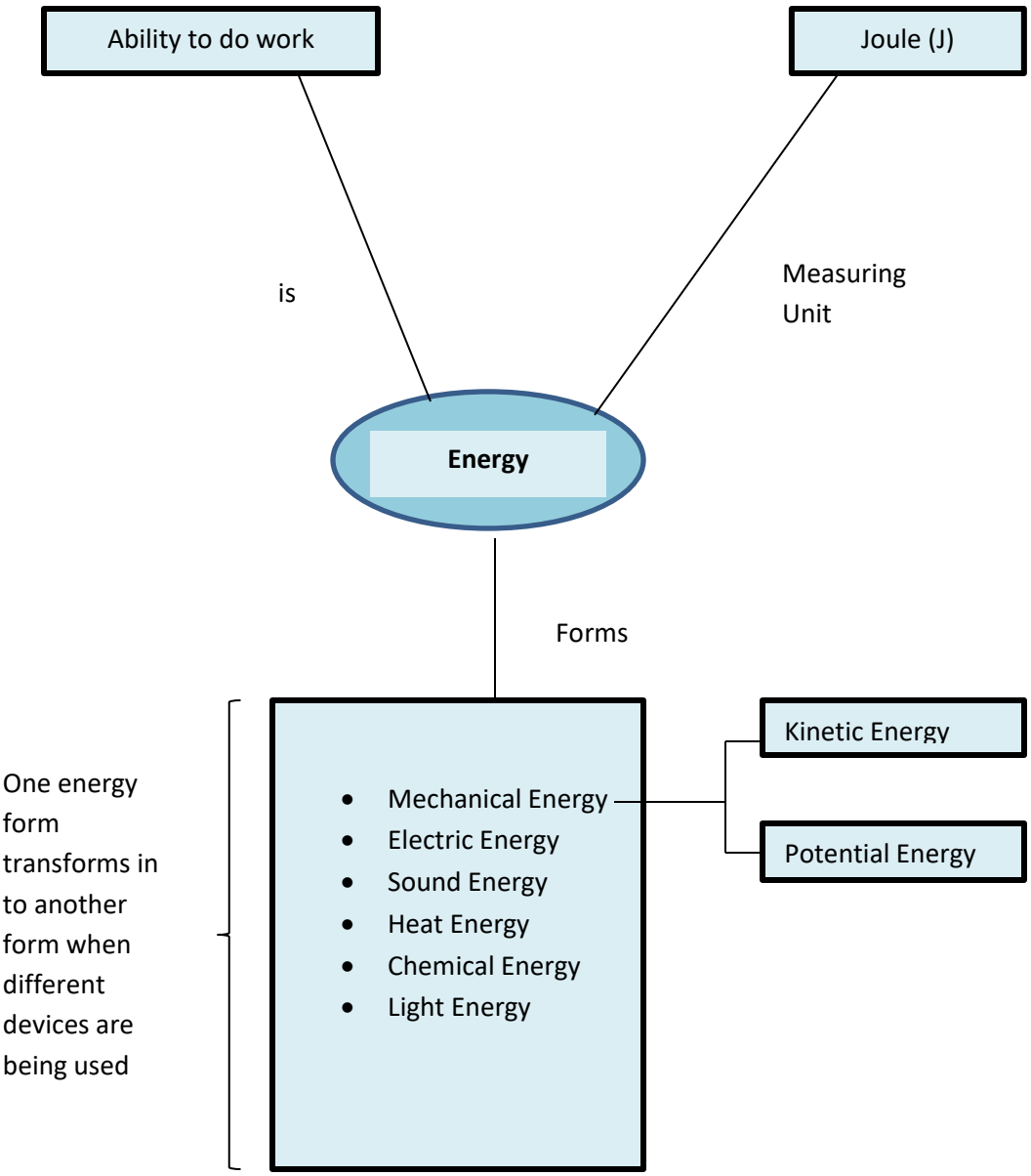
1. Operating steam engine
2. Occurrence of wind
3. Maintenance water cycle
4. ……..
5. ……..

Activity 6

The substances that contain chemicals are shown in the diagram. Mention the energy transformation that takes place during the usage of those substances/devices.

Substance/Devices	**Energy Transformation**
Candle	……
Dry cells	……..
Car battery	……..
Match sticks	……

Summary


Ability to do work
Joule (J)
is
Measuring Unit
Energy
Forms
One energy form transforms in to another form when different devices are being used
Mechanical Energy
Electric Energy
Sound Energy
Heat Energy
Chemical Energy
Light Energy
Kinetic Energy
Potential Energy

Assessment

1) Write down five forms of energy you identified in Activity 2.

   ……. …… ……

   ……. …….

2) Write down the energy transformation of the appliances you used in activity 2.

   i. A small radio - ……

   ii. A bicycle dynamo - ……..

   iii. A winding toy car - ……..

   iv. A wall clock - ……..

   v. An electric bell - ……

   vi. An electric torch - ……..

   vii. A battery powered motor - ……

3) Tabulate the occasions where potential energy and kinetic energy are used.

Occasions where potential energy is used	Occasions where kinetic energy is used

4) Operate the following electric appliances at your home and complete the following chart.

Energy transformation ……

Importance ……..

Energy transformation ……..

Importance ……..

Energy transformation ……

Importance ……..

Energy transformation ……

Importance ……..

Energy transformation ……..

Importance ……

Translated By :

Mrs. J.A.S. Yapa.

President's College

Galle.