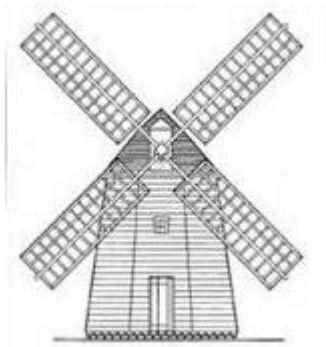


P.7 Science Class work Notes Week one (3/June/2020)

Qn. Name any two games played by wind.

1. Flying kites
2. Flying balloons

Structure of a wind mill



Questions

1. Name the device above.
2. What energy resource does it use?
3. What is the advantage of using the energy resource you have given above in (2)?
4. Give two applications of the above device.

Uses of a wind mill

- To generate electricity.
- To pump water from underground
- To mill grains like: maize

Sun

Energy resources from the sun

1. Solar electricity
2. Sunlight energy
3. Heat energy

Qn. What are the advantages of using the sun as an energy resource?

1. Cannot be exhausted.
2. Energy resources from the sun do not pollute the environment.
3. It is freely and readily available.

Qn. What are the disadvantages of using the sun as an energy resource?

1. Too much sunshine dries water sources.
2. Too much sunshine dries unready crops in the garden.

Qn. Why is solar electricity said to be environmental friendly?

- It does not pollute the environment.

Uses of sun as an energy resource

- The sun provides light that enables us to see.
- The sun provides heat that is used to dry crop produce.
- Heat and light energy from the sun is used in solar cells to produce solar electricity.

NB: Solar electricity is produced using solar panels.

Components of a solar panel

Solar cells: convert solar energy into solar electricity.

Solar battery: To store electric energy.

N.B A solar panel traps heat from the sun.

- A solar panel is painted black to trap sun's heat.

Conservation of resources

- Environmental conservation is the protection and wise management of the environment.

Importance of conserving the environment.

1. To ensure reliable rainfall.
2. To ensure a constant supply of resources.
3. To prevent extinction of wild life.

How to conserve the environment.

1. By planting trees.
2. Protecting water sources from pollution.
3. Keeping endangered animal species in wild life centres.
4. Recycling non-biodegradable waste.

Questions

1. How do trees clean the environment?
2. How does planting trees help to reduce global warming?
3. Why should we plant trees around our homes and school?
4. How do trees control soil erosion

How to conserve the following:

Fish in water

- use of safe methods of fishing.
- Re-stocking over fished water.
- Controlling water pollution.

Water

- Planting trees to ensure reliable rainfall.

- Collecting rain water from roofs.
- Controlling water pollution.

Wild life

- Protecting forests.
- Banning poaching
- Put endangered animals in wild life centres to breed.

Ways of conserving non - renewable resources

- Using the available non renewable resources sparingly.
- Recycling plastic material (non - biodegradable waste)
- Repairing cars in poor mechanical condition should be done to control fuel consumption.
- Using other sources of energy like solar energy instead of oil products.

CONTROLLING AND MANAGING RESOURCES IN THE ENVIRONMENT

- Environment refers to people and their surrounding.

Components of the environment

- Physical components/ Abiotic components
- Biological component/ Biotic components

NB:Physical components of the environment are non - living components of the environment

Examples:

- | | |
|-----------|---------------|
| • The sun | • water |
| • Air | • land (soil) |

Examples (biological environment)

- | | |
|----------|-----------|
| • plants | • Animals |
|----------|-----------|

Importance of the environment to man

- | | |
|--------------------------------|------------------------------|
| • Source of food. | • It is a habiat for people. |
| • It is a source of water. | • Source of craft materials |
| • Source of building materials | • Source of herbal medicine |
| | • For recreation |

Environmental degradation

- Environmental degradation is the destruction of resources in the environment

Or

- Environmental degradation is the lowering of the quality of resources in the environment

Or

- Environmental degradation is the way in which the productivity and usefulness of the environment is lowered.

Environmental degradation involves;

- Pollution of air, water and soil
- Devegetation
- silting of rivers, lakes, dams and wells
- wetland degradation
- land/soil degradation

Pollution

- Pollution is the releasing of harmful substances into the environment.

Pollutants

- Pollutants are harmful substances released into the environment

Examples of pollutants:- industrial fumes, smoke, dust, green house gases, un treated waste, polythene, metal, scrap, plastics, rubber etc

Types of pollution

air pollution

water pollution

soil pollution

sound pollution

Air pollution

Air pollution is the releasing of harmful substances into the air.

Examples of air pollutants:

- smoke
- harmful gases from sewage, burning plastics/rubber and vegetation.
- oxides of carbon e.g. carbon monoxide, carbon dioxide.
- exhaust fumes

Causes of air pollution

- Exhaust fumes from vehicles
- Smoke from kitchens, burning vegetation, rubber and plastics
- fumes from herbicides, insecticides, fumigants, pesticides, sprays.
- tobacco smoke from smoking

Effects of air pollution

- It leads to respiratory health problems
- It leads to acidic rain
- it leads to global warming
- It damages the ozone layer exposing people to chances of skin cancer

Control measures for air pollution

- Using lead free fuel in vehicles
- Treat gases released by car exhaust systems
- Avoid using sprays and agrochemicals that pollute the air.
- Control bush burning, burning rubber and plastics
- people should avoid smoking
- Treating gaseous waste from factories before release

Water Pollution

Water pollution is the releasing of harmful substances into water sources

Water pollutants

- Human wastes
- Agrochemicals
- Silt
- untreated sewage

Causes of water pollution

- Disposing chemicals from factories into lakes and rivers
- Disposing untreated sewage into water sources
- Use of excess fertilizers on farms that are eroded into water sources
- Silting from farms and bare land
- Animals drinking in water sources
- Animals defecating or urinating in water sources
- Dumping human, animal and domestic wastes in water sources

Effects of water pollution

- It makes water unsafe for domestic use
- It leads to water associated diseases
- silt makes water bodies shallow which may lead to floods.
- It leads to blocking of water channels
- It leads to destruction of water sources.
- It leads to destruction of aquatic life. (Plants and animals)

Control measures for water pollution

- Treat sewage before disposing it
- protecting bare land from erosion by environment friendly practices like afforestation mulching etc)
- Protecting water sources by fencing them
- Avoid cultivating along river banks or lakes shores
- Industrial wastes should be treated before they are released off.

Use the 5R's of waste management i.e.

- Recycle
- Re use
- Reduce
- Reject
- Return

Soil Pollution

Soil pollution is the releasing of harmful substances into the soil

Soil pollutants

- Agro chemicals
- Engine oil
- Polythene
- Glass
- plastic

Causes of soil pollution

- Excessive use of artificial fertilizers on farms
- dumping non - biodegradable wastes on land e.g. plastics, polythene, rubber, glass, metals etc
- Disposing untreated wastes from factories into the soil.

Effects of soil pollution

- It leads to soil exhaustion
- It leads to poor crop production
- It kills living organisms in the soil
- It makes cultivation of land difficult and tiresome

Control measures for soil pollution

- Use organic manure instead of artificial fertilizers
- Ensure proper management of non-biodegradable wastes
- Use the lowest possible amounts of herbicides and pesticides on farms.

- Use biological and environment friendly methods of weed control, pest control and improving soil fertility.
- Treat wastes from factories before disposing them off.
- Use the 3R's of waste management.

Devegetation

It is the removal of plant cover in an area.

Causes of devegetation

- bush burning
- deforestation
- overgrazing
- overstocking
- industrialization

Effects of devegetation

- Land is left bare and exposed to agents of soil erosion
- animal habitats are destroyed
- some plant species become extinct
- leads to air pollution
- reduction of rainfall amounts
- Leads to global warming
- food for many wild animals is destroyed
- Medicinal herbs are destroyed
- It results in desertification

Control measures of devegetation

- planting many tree types and maintaining them
- practicing afforestation
- practicing reafforestation
- practicing agro forestry
- conserve forests
- controlled bush burning
- practicing rotational grazing
- sensitizing people about the importance of vegetation

Silting of water bodies

Silting is the deposition of eroded soil into water sources

Agents of silting

- running water
- wind

Causes of silting

- deforestation
- cultivating along riverbanks and lake shores

- clearing vegetation around/near riverbanks and lakes

Effects of silting

- It leads to water pollution
- It kills aquatic life.
- Make water bodies shallow.
- It causes floods.
- Affects generation of hydro electricity.

Qn. How does silting cause floods?

Qn. How are floods related o silting?

Qn. How to control silting

1. Avoid cultivating along river banks and lake shores
2. Protecting vegetation in catchment areas

THEME: MATTER AND ENERGY

Topic 4: SIMPLE MACHINES AND FRICTION.

Friction

- Is the force that opposes movement of objects.

Types of friction

1. **Static friction:** It is found in objects which are fixed in one position.
2. **Sliding or rolling friction:** It is found in moving objects.
3. **Viscosity friction:** This occurs in liquids and gases.

Friction as a useful force in our daily life.

It helps in moving and stopping vehicles.

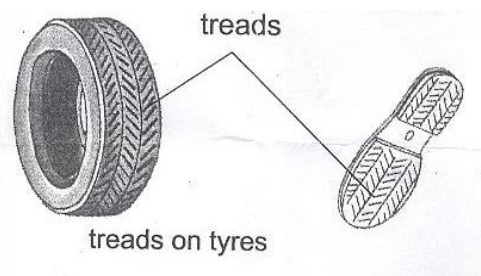
- It helps when writing.
- It helps when sharpening objects.
- It helps when walking.
- It helps in lighting match sticks.

Friction as a nuisance force/ disadvantage.

1. It wears away things e.g. shoe soles, parts of engines.
2. It hinders work as it makes us use a lot of force.
3. It produces unnecessary heat and noise.

How to increase friction.

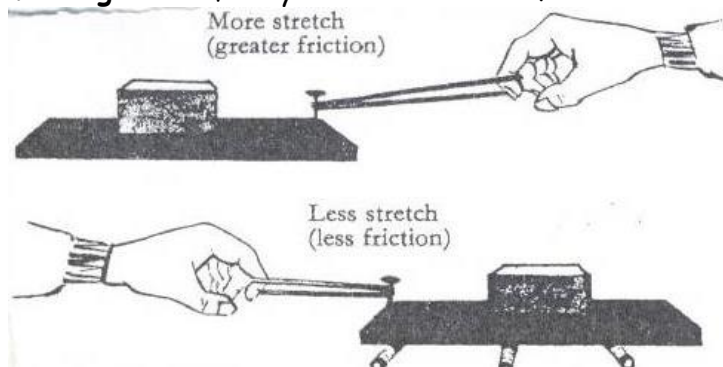
- Making smooth surfaces rough.
- Putting treads on vehicle tyres / on shoe soles.



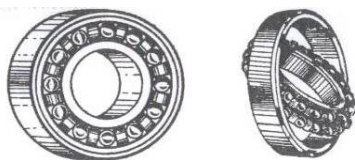
- Putting spikes on sports boots.
- Putting grips on handles of bicycle.

Qn. How friction can be reduced.

i. **Using rollers;** they decrease areas of contact between moving parts.



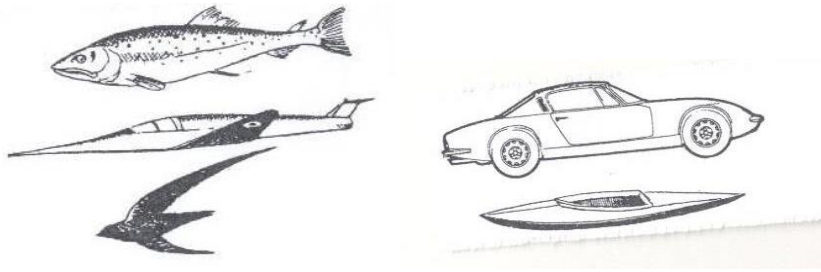
ii. **Using ball bearings;** these are round metallic balls they reduce friction by keeping moving parts separated.



iii. **Lubricating;** This involves using oil or grease.

Oil and grease are referred to as **lubricants**.

iv. Stream lining objects like planes, cars



v. Making rough surfaces smooth.

MACHINES

- It is a device that simplifies work.

How machines simplify work

1. By changing the direction of force.
2. By reducing the effort required to do work
3. By increasing the speed of work.

Types of machines

1. Simple machines.
2. Complex machines.

A complex machine

- It is a machine that is made up of many parts and simplifies work.
- When two or more simple machines (tools) are put together a complex machine is made

Examples of complex machines:

- Tractor
- Bicycle
- Sewing machine
- Car
- Aeroplane etc.

Advantages of machines

- They make work easier (simpler) by reducing the force applied to do work.
- They do work quicker (they save time in doing work)
- They increase the speed of doing work.
- They change the direction of effort.
- How machines reduce effort needed to do work
- By increasing the effort distance

Dis advantages of machines

- Machines cause laziness
- Machines may cause accidents
- It is expensive to maintain some machines

Simple Machine.

- It is a device that is made up of few parts and simplifies work.

Examples of simple machines.

A hoe	See saw	Claw hammer	Nut cracker.	Human arm.	Nut cracker.
A wheel barrow	Pincers.	Water pump	Sugar tongs.	Spade.	Sugar tongs.
A pair of scissors	Crow bar.	Bottle opener	Fishing rod	Ladder.	Stairs.

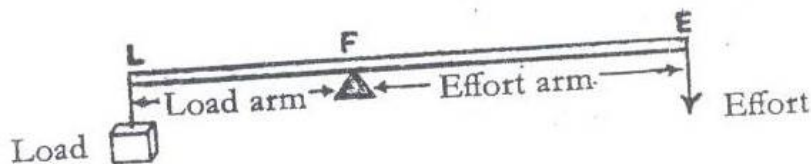
Classes of simple machines.

1. Levers
2. Inclined planes/slope
3. Pulleys.
4. Screws.
5. Wheel and axle
6. Wedges

Levers

- Is a stiff rod that turns on a fixed point called a pivot or fulcrum.

Parts of a lever



1. **Effort:** is the force exerted on a machine to overcome the load.

2. **Load / resistance:** it is the weight of the body to be lifted.
3. **Fulcrum or Pivot:** is the turning point of a machine.
4. **Load arm** is the distance between the fulcrum and the load.
5. **Effort arm** is the distance between the fulcrum and the effort.

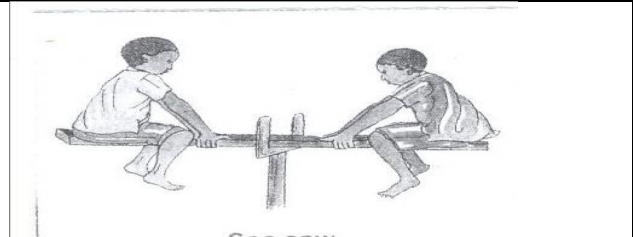
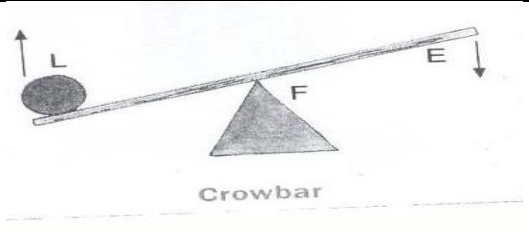
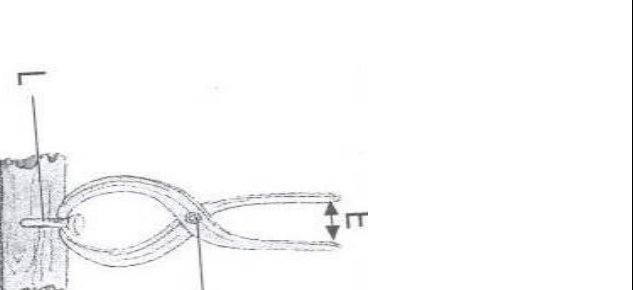
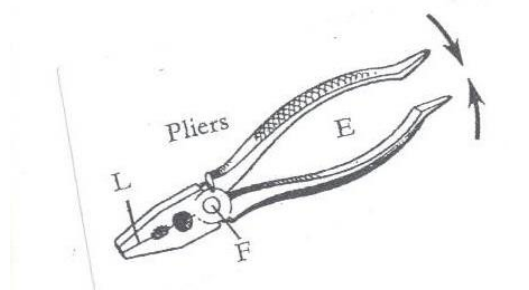
Classes of levers.

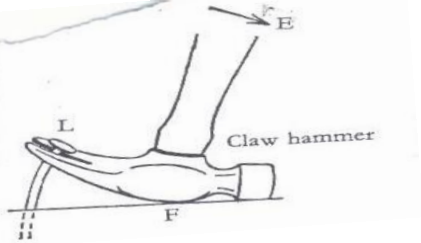
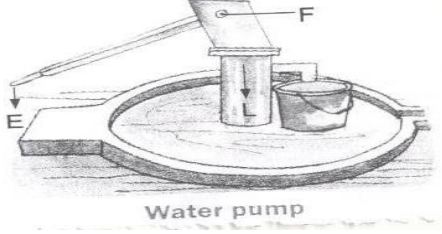

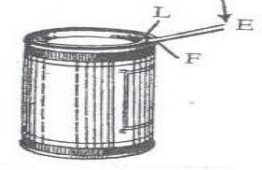
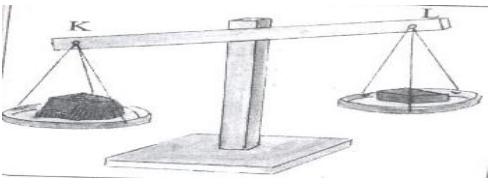
- There are three classes of levers depending on the position of the fulcrum (f), Load (l) and effort (E)

First class levers

- Fulcrum/pivot is between the load and effort
- In this class, the effort arm is longer than the load arm.
- The longer the effort arm, the smaller the effort applied.
- The advantage of the first-class lever is that less effort is used.

Examples of first-class levers.

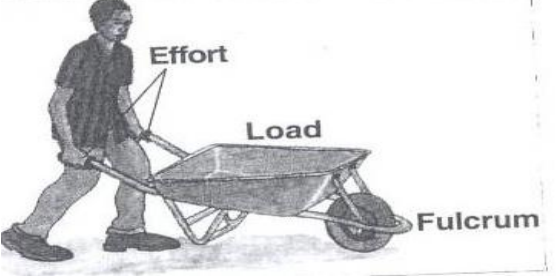
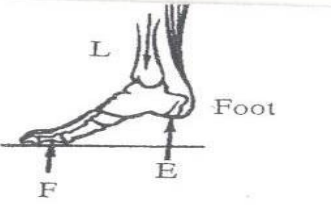
1	See saw	5	Crow bar
			
2	pincers	6	pliers
			
3	Claw hammer	7	Borehole

		
4	Pair of scissors	8 Lid opener
		
9	scales	
		

Second class lever

- **Load** is between the **fulcrum** and **effort**.
- The fulcrum and the effort are on either side. (**FLE OR ELF**)
- The load is closer to the fulcrum than the effort.
- The effort applied is smaller compared to the load.
- First and second-class levers are referred to as force multipliers

Examples of second-class levers.

1	Wheel barrow	3	Human Foot
			
2	Nut cracker	4	Bottle opener
	