**THEME 3: YOU AND TECHNOLOGY**

1. Unit I Safety - Meaning of Safety - Meaning of accident - Causes of accident - Methods of preventing accident - Safety Devices

- First Aid box (items in first aid box)

YOU AND ENERGY

2. Unit II Simple Machines - Definitions of simple machine - Levers (Meaning) - Example of Lever - Parts of Lever - Uses of Lever

3. Unit III Pulleys (Meaning) - Examples of pulley - Types of pulley - Application of pulley

4. Unit IV Inclined planes (Meaning) - Examples of inclined planes - Advantages of inclined planes

5. Unit V Forces - Meaning of force - Examples of force

- Types of force - Effects of force

6. Unit VI Frictional force - Meaning of friction - Effects of friction - Advantages and disadvantages of friction - Reducing friction

7. Unit VII Magnetism - Meaning of Magnet - Properties of Magnet - Uses of Magnet - Making Magnets

8 & 9. Unit Revision of 1st Term’s work

10 & 11. Unit Revision of 2nd Term’s work

12 Unit Examination

**Week: ONE**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: SAFETY AND ACCIDENTS**

**SUB TOPIC(s):**

**1.** Meaning of Safety

2. Causes of Accident and Objects that Causes Accident

3. Prevention of Accident

4. Some Safety Devices

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. define safety;

2. state two causes of accident;

3. state some objects that causes accident;

4. Mention three prevention of accident;

5. list some safety devices.

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

Safety devices; Apron, Boots, Hand gloves, Eye shield, Reflective caution triangle

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topics.

**INTRODUCTION**

**MEANING OF SAFETY**

Safety means keeping yourself and others free from harm or danger. That’s being careful not to fall, bump or run into things.

**MEANING OF ACCIDENT**

Accidents are unplanned or unexpected events that happen to human beings. Accidents can happen everywhere, for example, in the schools, homes, roads and markets.

**COMMON ACCIDENTS**

1. Falling objects

2. Bruises

3. Cuts

4. Burns

5. Poisoning

6. Drowning

7. Choking

8. Electric Shock

**CAUSES OF ACCIDENT**

***At home***

1. Running or playing football on a slippery floor.

2. A leaking gas cylinder.

3. Children playing with matches.

4. Use of naked light near a petrol container.

5. Careless use of boiling rings.

6. Leaving water taps open when there is no water.

***In the school***

1. Slippery football field.

2. Use of naked electric wire in laboratories and classrooms.

3. Failure to keep the school premises clean and tidy.

**OBJECTS THAT CAUSES ACCIDENT**

1. Broken bottles or plastic

2. Nail

3. Knife

4. Blade

5. Broken chair or table

6. Broken glass

7. Naked wire

**PREVENTION OF ACCIDENTS**

***At home***

1. Do not allow children to run around on slippery floors.

2. Help old people to climb and descend staircases.

3. Children should not operate gas cylinders.

4. Keep all medicines out of reach of children.

5. Disconnect all electrical appliances when not in use.

6. Always lock water taps when not in use.

***In the school***

1. Do not play on waterlogged football field.

2. Keep the school compound clean and tidy always.

3. All electrical connections in the laboratory should be done under the supervision of the science teacher.

**SAFETY DEVICES**

1. Fire extinguishers

2. Apron

3. Boots

4. Hand gloves

5. Eye shield or goggles

6. Caution signs

7. Seat belts

8. Road signs -zebra crossing

9. Face masks,

10. Dust masks

11. Hearing protection

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

**1.** define safety and accident.

2. list at least three objects (each) that causes accident at home and in the school.

3. state three (3) causes of accident (each) at home and in the school.

4. list at least four (4) safety devices.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**

**Week: TWO**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: LEVERS**

**SUB TOPIC(s):**

1. Definitions of simple machine

2. Levers (Meaning)

3. Example of Lever

4. Parts of Lever

5. Uses of Lever

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. collect and identify simple machines;

2. identify the parts of the lever;

3. list common uses of levers.

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topics.

**INTRODUCTION**

A machine is a simple object which makes our work easier to do.

Many objects in the school and at home such as a pair of scissors, bottle opener and cutlass, are examples of simple machines.

In science, anything that makes us to use less energy to do much work or overcome a large force is called a machine.

Examples of simplest machines are the levers and pulleys.

**MEANING OF LEVER**

A lever is a simple machine that has the point of motion where effort can be made to carry a load.

**EXAMPLES OF LEVER**

1. Seesaw

2. Scissor

3. Crowbar

4. Hammer

5. Nut cracker

7. Pliers

8. Hockey stick

9. Wheel barrow

10. Door handle

11. Dolly

12. Hole puncher

**PARTS OF LEVER**

The three most important parts of a lever are:

1. Load

2. Effort

3. Fulcrum or Pivot.

***Teacher’s Activities – Guides pupils to identify load, effort and fulcrum in the listed examples of levers.***

**USES OF LEVER**

1. Seesaw is used to have fun with a friend;

2. Scissor is used for cutting;

3. Crowbar used for split something apart or take out nails;

4. Hockey stick used to play hockey;

5. Wheel barrow is used move dirt or anything else;

6. Door handle is used to get through a door;

7. Dolly it is used to move heavy boxes and freight;

8. Hole puncher it is you for making hole on belt; etc.

**Teacher’s Activities – Asks pupils mention the important uses of each of the lever listed above – examples of lever.**

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

. Name five common levers and machines in their homes;

2. Locate the pivot (fulcrum) load and effort arms in common lever machines;

3. State five common uses of levers.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**

**Week: THREE**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: PULLEYS**

**SUB TOPIC(s):**

Pulleys (Meaning)

2. Examples of pulley

3. Types of pulley

4. Application of Pulleys

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. Recognize and identify simple pulley machines;

2. Identify and describe the different uses of pulley machines in everyday life;

3. Distinguish between fixed and movable pulleys;

4. Make and use pulley machines to do work.

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

Strings, Metal/wooden/plastic rollers, Nails, Wood ,Charts showing uses of simple pulleys , Simple pulleys

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topic(s).

**INTRODUCTION**

A pulley is a wheel that has a smooth groove in its rim, with a rope passing through the groove. At times, there are loads that are too heavy to lift.

**MEANING OF PULLEY**

A pulley is a simple machine that is used to lift heavy objects. A simple machine for overcoming this difficulty is the pulley.

**EXAMPLES OF PULLEY MACHINES**

1. Flag pole

2. A sewing machine

3. Photocopy machine

4. Spring balance

5. A grinder machine

6. A modern elevator

7. A crane

**TYPES OF PULLEYS**

Basically, there are two (2) types of pulleys:

**Single Fixed Pulley**

A fixed pulley’s wheel and axle stay in one place.

A good example of a fixed pulley is a flag pole: When you pull down on the rope, the direction of force is redirected by the pulley, and you raise the flag pole.

**Movable machine**

A movable pulley is a pulley that is free to move up and down, and is attached to a ceiling or other object by two lengths of the same rope.

Examples of movable pulleys include construction cranes, modern elevators, and some types of weight lifting machines at the gym.

**Compound pulley**

A compound pulley is a combination of fixed and movable pulleys. The third type of pulley is the compound pulley, which consists of combinations of fixed and movable pulleys.

The more complex the pulley, the more the effort needed to move the object decreases.

**COMMON APPLICATIONS OF PULLEY *As stated in examples.***

Revision and summary of the lesson.

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

1. Give three examples of simple pulleys;

2. State two applications of pulley machines;

3. Differentiate between fixed and movable pulleys;

4. Construct and use pulleys.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**

**Week: Four**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: SIMPLE MACHINES – INCLINED PLANE**

**SUB TOPIC(s):**

1. Meaning of Pulleys and Examples of Inclined Plane

2. Construction of Inclined Planes

3. Advantages of Inclined plane

4. Note/Revision and Test

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. mention examples of inclined plane.

2. construct and use inclined plane to lift loads

3. state the advantages of inclined plane.

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

Wooden plank.

Charts showing, inclined plane and staircases, Cement, etc.

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topic(s).

**INTRODUCTION**

An inclined plane is a simple machine. It allows one to use less force to move an object. Examples of inclined planes are ramps, sloping roads and hills, plows, chisels, hatchets, carpenter’s planes, and wedges.

**MEANING INCLINED PLANE**

An inclined plane is a simple machine used to raise a load to places higher than the floor level.

**EXAMPLES OF INCLINED PLANE**

1. An axe

2. Wedge

3. Automatic screwdriver

4. Screw jack

5. Office chair

6. Sliding board on children playground

7. Staircase

8. Ladder

**ADVANTAGES OF INCLINED PLANE**

1. An axe is used to slide wood.

2. Wedge is used to cut wood.

3. Automatic screwdriver is used to screw a nut.

4. Screw jack is used to lift up a car.

5. Office chair is used for balance and position.

6. Sliding board is used by children on playground.

7. Staircase is used to one floor to another.

8. Ladder is used to access to a point on top.

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

1. Mention three examples of inclined plane.

2. Construct and use inclined plane to move objects.

3. State two advantages of inclined plane.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**

**Week: FIVE**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: FORCES**

**SUB TOPIC(s):**

1. Meaning of Force – Push and Pull

2. Types of Forces

3. Effects of Forces

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. explain forces as a push or pull;

2. give examples of forces – gravity, friction, magnetic, etc.;

3. demonstrate the effect of force on objects.

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

Stones and pebbles; Rough surfaces, e.g. wood; Smooth surfaces, e.g. glass; Magnets; Batteries; Pieces of foam; Springs; Rubber band.

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topic(s).

**INTRODUCTION**

In the school and at home, we see many moving things. We move about on our legs, vehicles move on roads, trains on the rails, aeroplanes fly in the sky and ships sail on the seas.

Movement occurs when a force is applied on a thing or object. That is, force causes things to move.

It can also prevent things from moving.

**MEANING OF FORCE**

A force is a pull or push on a object. That’s, force opposed movement or causes objects to movement. For example, car’s accelerator and break or to change direction (steering).

**TYPES/EXAMPLES/ EVIDENCE OF FORCE**

There are many types of forces, but only five are discussed below:

1. Muscular Force

2. Gravitational Force

3. Magnetic Force

4. Electrical Force

5. Frictional Force

**DEMONSTRATING DIFFERENT TYPES OF FORCE**

**EFFECTS OF FORCE**

A force acting on an object may cause the object:

1. to change shape and size.

2. to start moving.

3. to stop moving.

4. to accelerate or decelerate.

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

1. Define force.

2. Give three examples of Force.

3. Describe the effect of force on materials.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**

**Week: SIX**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: FRICTIONAL FORCES**

**SUB TOPIC(s):**

1. Meaning of Frictional Force
2. Effects of Frictional Force
3. Advantages and Disadvantages of Frictional Force
4. Methods of Preventing Frictional Force

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. Meaning of Frictional Force

2. Effects of Frictional Force

3. Advantages and Disadvantages of Frictional Force

4. Methods of Preventing Frictional Force

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

Stones and pebbles, balls bearings, matched, knife, floor, water, Vaseline, sand paper, glass, oil, soapy water.

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topic(s).

**INTRODUCTION**

To stop a moving object, a force must act in the opposite direction to the direction of motion. For instance, if you push your book across your desk, the book will move. The force of the push moves the book.

As the book slides across the desk, it slows down and stops moving. The force that opposes the motion of an object is called friction.

**MEANING OF FRICTION**

Friction is the force that opposes the motion of an object. Friction can slow down or stops any moving objects.

**EFFECTS OF FRICTION**

What effect does friction force have on motion?

1. It opposes the motion of all objects.

2. It slow down any moving objects.

3. It counteracts the acceleration of an object.

4. It prevents surfaces from sliding against each other.

5. It causes objects to accelerate.

PERIOD 2

**ADVANTAGES OF FRICTION**

Friction plays a vital role in our daily life. Without friction we are handicap.

1. It prevents slipping while walking.

2. It stops cars from moving.

3. We cannot fix nail in the wood or wall if there is no friction. It is friction which holds the nail.

4. A horse cannot pull a cart unless friction furnishes him a secure Foothold.

**DISADVANTAGES OF FRICTION**

Despite the fact that the friction is very important in our daily life, it also has some disadvantages like:

1. The main disadvantage of friction is that it produces heat in various parts of machines. In this way some useful energy is wasted as heat energy.

2. Due to friction we have to exert more power in machines.

3. It opposes the motion.

4. Due to friction, noise is also produced in machines.

5. Due to friction, engines of automobiles consume more fuel which is a money loss.

**PERIOD 3**

**METHODS OF REDUCING FRICTION**

There are a number of methods to reduce friction in which some are discussed here.

**1. Use of Lubricants**

The parts of machines which are moving over one another must be properly lubricated by using oils and lubricants of suitable viscosity.

**2. Use of Grease**

Proper greasing between the sliding parts of machine reduces the friction.

**3. Use of Ball**

Bearing In machines where possible, sliding friction can be replaced by rolling friction by using ball bearings.

**4. Design Modification**

Friction can be reduced by changing the design of fast moving objects. The front of vehicles and airplanes made oblong to minimize friction.

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

1. Define friction;

2. State two instance of the application of friction in daily activities;

3. Mention two advantages and disadvantages each of friction.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**

**Week: SEVEN**

**Date:**

**Class**: Basic Six

**Subject**: BST

**Duration**: 40 minutes

**Topic: FRICTIONAL FORCES**

**SUB TOPIC(s):**

. Magnet, Magnetic Materials and Non Magnetic Materials

2. Properties of Magnets

3. Uses of Magnets

4. Making Magnets

**Behavioural objectives**: At the end of the lesson, pupils should be able to;

1. State the properties of magnets;

2. Group materials into magnetic and non-magnetic;

3. State common applications of magnetism;

4. Make and use magnets

**Instructional material/Reference material**: Basic Science and Technology for Primary six by P. Asun, T. Bajah et al.

rubber bands, paper, cork, thread, wires, wool, wooden blocks etc.

**Building Background/ Connection to prior knowledge**: The pupils are familiar with the topic(s).

**INTRODUCTION**

Magnetism is a force that can attract (pull closer) or repel (push away) objects that have a magnetic material like iron inside them (magnetic objects).

Magnets can be affected by electricity, which makes them very useful in machines and computers. Magnets are used to make a tight seal on the doors to refrigerators and freezers, etc.

**MEANING OF MAGNET**

A magnet is a substance which can attract iron or steel material to itself.

Magnet are made of iron or steel.

**TYPES OF MAGNETS**

There are two types of magnets:

**1. Permanent Magnets**

Permanent magnets remain magnetized even without the influence of external magnetic field, such as a horseshoe magnet.

**2. Temporary Magnets**

Temporary magnets may lose their magnetism when removed from the external magnetic field, such as an iron pin.

**LESSON TWO – PROPERTIES OF MAGNETS**

1. Magnets attract ferromagnetic materials, such as iron, nickel, and cobalt.

2. All magnets have two poles: North Pole and South Pole.

There are no magnets containing only one pole.

3. Like poles of two magnets repel each other; opposite poles of two magnets attract each other.

4. The magnetic force of a magnet is stronger at its poles than in the middle.

5. The stronger the magnets and the closer two magnets are to each other, the greater the magnetic force exerted on each other.

6. When a bar magnet is suspended by a thread freely in horizontal position, its north pole will move towards the North Pole of the earth and its south pole will move towards the South Pole of the earth. This is because the earth is a giant magnet, and its geographical north pole is its magnetic south pole, and vice versa.

**USES OF MAGNETS**

Magnets have their lot of applications in the daily life. The major 10 uses of the magnets are as follows:

1. They are also used to sort out the magnetic and non-magnetic substances from the scrap.

2. They are used in TV screens, computer screens, telephones and in tape recorders.

3. They are used by the candy or cold drink vendors to separate the metallic cap from the lots.

4. They are used in cranes.

5. They are also used in the speakers which can convert the electrical energy into sound energy.

6. They are used in the electrical bells.

7. They are used in the refrigerators to keep the door close.

8. The most important use of the magnet is the magnetic compass which is used to find the geographical directions.

9. They are used to construct the electrical motors and the generators which convert the electrical energy into mechanical energy and vice versa.

10. They are used in the Maglev trains. In the Maglev trains, the super conducting magnets are used on the tracks on which the train floats. These types of the trains are working on the repulsion force of the magnets.

**MAKING A TEMPORARY MAGNETS**

1. Rub the magnet against the paperclip.

2. Move it in the same direction, rather than back and forth.

3. Use the same quick motion you’d use to light a match.

4. Continue rubbing the paperclip with the magnet 50 times as quickly as you can.

**Strategies & Activities**

**Step: Teacher revises the previous topic**

**Step 2:Teacher introduces the new topic.**

**Step3:Teacher endeavors to explain all the points to the pupils thoroughly.**

**Step 4: Teacher welcomes pupils’ questions.**

**Step 5: Teacher evaluates the pupils.**

**Assessment& Evaluation**

1. State two of properties of a magnet;

2. Name three common appliances that use magnets;

3. Group materials into magnetic and non-magnetic materials;

4. Make temporary magnets.

**Summary: Teacher goes over the topic once again to enhance better understanding.**

**Wrap-up [conclusion]: Teacher corrects and marks pupils’ notes.**