

GRADE 7 TERM 1
PRE-TECHNICAL STUDIES LESSON NOTES

SAFETY

Personal safety

Observing personal safety is doing activities that will protect us from accidents or getting injured.

Potential hazards relating to personal safety

Unsafe conditions or objects that harm us or cause injuries to us are known as potential safety hazards

Examples of potential safety hazards in day to day life are

1. Fires and hot surfaces which can cause burns
2. Sharp tools like knives which can cause cuts
3. Spills on floors which can cause falls
4. Poorly disposed waste such as fruit peels which can cause falls
5. Heavy objects like rocks, stones which can roll over us or fall on us
6. Items or objects that are properly kept on high shelves which can fall on us
7. Poisonous chemicals that are not store properly can harm us if we touch or drink them.
8. Poorly arranged equipments such as desks that can cause falls
9. Exposed naked electric wires that can lead to shocks
10. Poorly ventilated rooms that can lead to suffocation

Demonstrating safety while performing various tasks in the locality

Examples of task that we can do in our locality include digging, splitting firewood, pruning plants, riding bicycles

Some of the safety measures to observe while forming the above different tasks include

1. Always clean spills on the floor immediately to avoid falls
2. Keep a safe distance from your friend when performing tasks such as digging
3. Ask for help when you want to get things that are out of your reach
4. Always be alert around fire. Avoid loose clothing when near fires
5. Use kitchen gloves or a piece of cloth to hold hot kitchen tools and equipment
6. Handle different tools or equipments with care
7. Wear appropriate protective clothing when performing different tasks
Eg wear gumboots while collecting and disposing waste

Handling tools and equipments safely while performing tasks

Tool or equipment	Safe use of the tool or equipment
Knife	Hold the handle firmly while using it Keep sharp edges away from your hands You can also use a chopping board when using it
Sewing needle	Wear a thimble Hold the thread end of the needle firmly between your fingers and push the sharp end into fabric

Wheelbarrow	Hold the handles and push it forward carefully. Ensure the wheel is moving freely
Pliers	Hold the two handles and press them together Do not touch the cutting parts while in use
Rake	Hold the handle and pull it towards you carefully
Ladder	Place it against a firm object like a wall or tree trunk and climb on its steps carefully

General safety rules and regulations for various tasks

- The various task we do at home or school can expose you and other people to safety hazards.
- You should follow general safety rules when performing these task to avoid injuries to self and others.
- The general safety rules include
 1. Work in a place with proper ventilation
 2. Ensure you are working in a place that has enough lighting
 3. Avoid crowding in the working area
 4. Ensure the working area is well arranged when working and after working
 5. Use tools and equipments for their correct purpose
 6. Ensure all the tools you are using are in good working conditions
 7. Do not touch sharp edges of cutting tools or test their sharpness with your hand
 8. Ensure that your hands are dry before touching electric plugs or electrical appliances that have been plugged in
 9. Do not pull heavy materials or objects towards your body
 10. If working with or near fire, always stay alert and use moderate flame
 11. Store tools and equipments safely after use

Careers related to safety

A career is a profession which one trains for, acquires the skills and applies them for a long period

1. Crossing guards

These are people who help children or adults to cross busy roads

2. Safety engineers

These are people who monitor a working environment and inspects buildings and machines. They later recommend the safety precautions to be observed in the working environment

3. Life guards

These are people who help children and adults to swim safely.

There also ensure that all people are following rules set by the swimming place.

Attends to those who face challenges while swimming

4. Risk manager

This person researches and makes a report on the safety of a particular work and the hazards that are expected.

5. Environment health and safety consultants

They perform some roles similar to those of safety engineers

They offer advice on how to minimise health and safety risks in the workplace

Importance of safety in day to day life

- It is important to observe safety when performing different tasks at home, in school or in the community

- You should always keep your working areas clean and orderly to avoid accidents, injuries and illness.
- When you are free from injuries you can work well, attend school as expected, reduce hospital bills and live healthy

INJURIES

An injury is damage to your body.

Types of injuries

Examples of common injuries include

1. Scalds
2. Fractures
3. Sprains
4. Burns
5. Cuts
6. Pricks
7. Bruises

Causes of injuries in the locality

1. Cuts

Caused by sharp tools and equipments like knives

Can also be cause by sharp furniture corners or rough edges

2. Burns

Are caused by touching open flames, hot objects like sufurias

May also be caused by chemicals and electricity

3. Scalds

Are caused by touching hot liquids like boiling water, hot tea.

May also be caused by steam from boiling foods or water

4. Minor fractures

Occurs after falls or slips

May also occur when there is abnormal movement during activities or sudden change of speed during movement

First aid procedures for cuts

You will need clean water, a bandage, cotton wool and an antiseptic or salty water

- a. Wash your hands
- b. Apply gentle pressure around the cut with a clean piece of cloth or cotton wool until bleeding stops
- c. Clean the cut with clean water. Do not use soap
- d. Once the cut is clean and is not bleeding, apply some antiseptic
- e. Cover the cut with a bandage or clean piece of cloth to keep away dirt

First aid procedures for minor fractures

You will need ice cubes, a bandage or a clean piece of cloth

- a. Let the injured person rest and avoid moving the injure part completely

- b. Place an ice pack on the injure part to prevent swelling
- c. Wrap the affected part in a soft bandage to compress it
- d. Raise the injure part higher than other body parts

First aid procedures for burns

You will need cold water and a clean piece of cloth

- a. Move away from the source of burn
- b. Remove clothing or jewellery around the burnt area
- c. Cool the burn under cold running water for about 5 minutes. You can also deip the part in cold water
- d. Cover the burnt area with a loosely clinging clean piece of cloth

First aid procedures for scalds

You will need cold water, a clean piece of cloth or bandage

- a. Remove clothing or jewellery where the injury has occurred
- b. Place the injured area under cold water for about 20 minutes
- c. Do not pop the blister or blisters if they form
- d. Cover the scalded area with a loosely clinging clean piece of cloth or gauze

Safety measures that minimise injuries in the locality

Injury	Way of preventing it
Cut	<ol style="list-style-type: none"> 1. Avoid holding sharp edges of cutting tool 2. Use a chopping board when using cutting tools such as knives 3. Pass cutting tools from one person to another using their handles 4. Keep sharp tools out of reach of children
Burns	<ol style="list-style-type: none"> 1. Do not touch hot surfaces with bare hands 2. Use moderate flame when cooking 3. Use kitchen gloves when holding hot kitchen equipments and surfaces 4. Switch off or put out equipments such as iron boxes after use
Scalds	<ol style="list-style-type: none"> 1. Avoid carrying hot liquids close to your body 2. When cooking food, take care not to get burnt with the hot steam. You should open the lids from cooking food carefully
Minor fractures	<ol style="list-style-type: none"> 1. Walk carefully especially when in places that have obstacles such as stones 2. Avoid walking on wet floors 3. Dispose waste such as banana peels properly to avoid falls 4. Wear fitting and comfortable shoes

Careers related to first aid and management of injuries

- First aid is important because it helps to save lives and reduce pain.

- It also makes the affected people feel cared for.
- The following are common careers related to first aid and management of injuries
 1. Emergency reponse nurses
 2. Paramedics
 3. Ambulance drivers
 4. Fire fighters
 5. Flight attendants
 6. Professional baby sitters
 7. Lifeguards
 8. Games instructors
 9. Gym instructors
 - 10.

Importance of observing safety

1. Prevent unnecessary injuries or even death
2. Avoid lost time
3. Increase productivity
- 4.
- 5.
- 6.

Pupil's activity

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MATERIALS

Any useful substance is called a material

COMMON MATERIALS

1. Timber
2. Sand
3. Stones
- 4.
- 5.

Identifying common materials in the locality

Different localities have different common materials

Examples of common materials are

1. metals
2. Soil
3. Reeds
4. Sisal fibres
5. Hides and skins
6. Trees
7. Diatomite
8. Soapstone
9. Soda ash
10. Fluorspar

Categorising common materials in the locality as either metallic or non metallic

Pupil's activity

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Metallic	Non metallic
1. Iron	1. Soil
2. Copper	3. Trees
	4. Reeds
	5. Stones
	6. Sand
	7. Sisal fibres
	8. rubber

Distinguishing between metallic and non metallic materials

Items made of metallic materials	Items made of non metallic materials
Bottle tops	A grass broom
A piece of iron sheet	Floor tiles
Coins	An exercise tiles
A blade of a jembe	A school sweater
Pins	An eraser
A door hinge	A plastic plate
A piece of wire mesh	A drinking glass
A key	A cooking stick

Physical properties of materials found in the locality

Physical property	Metal	Non metals
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Colour	Can be grey, silver, reddish brown or golden	Have a wide range of colours
Texture	May be rough or smooth	May be rough or smooth
Hardness	Most are strong and cannot break easily	Most are fragile and brittle
Shape	Can be formed into various shapes	Can be formed into various shapes
Fire resistance	Most are fire resistant and cannot burn easily	Most burn easily

Careers related to materials in the locality

1. carpentry
2. carving
3. masonry
4. welding
5. pottery
6. weaving
7. blacksmith
8. farming
9. mining
- 10.

Importance of materials found in the locality

1. create job/employment opportunities
2. improves the standard of people living in the locality
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

METALS

- Metals occur naturally within the earth's surface
- They are mined and converted into forms that are easy to use
- Metals are used to make various items we use in our day to day life

Different types of metals in the locality

- Some metals exist in pure form or as alloys
- An alloy is a combination of a metal with another metal or metal with a non metal
- Examples of pure metal
 1. Aluminium
 2. Iron
 3. Zinc
 4. Silver

5. Copper
6. Lead
7. Magnesium
8. Tin
9. Gold

- Examples of alloys
 1. Steel
 2. Brass
 3. Bronze
- Metals can be identified easily by their surface appearance

Type of metal	Description
Copper	Shiny reddish- brown surface May turn green if exposed to moisture
Brass	Yellow coloured with a slightly dull surfaces It is an alloy of copper and zinc
Aluminium	Has a shiny silvery surface It is very light and flexible
Iron	It is dull grey in colour It rusts when exposed to moisture
Stainless steel	It has a shiny silvery colour
Zinc	It is dull grey in colour It develops a light grey coat which may peel off after some time
Gold	It is shinny orange yellow in colour

Physical properties of metals

- Identification of a metal by its physical appearance is not a sure way of knowing the exact type of metal
- There are some other physical properties that we need to consider to correctly identify the metals
- Metals can further be identified as
 - a. Ferrous and non ferrous
 - b. Magnetic and non magnetic
 - c. Conductors and non conductors of heat
 - d. Conductors and non conductors of electricity

Ferrous and non ferrous

Ferrous metals are metals that contain iron in its original form or alloys or iron

Non ferrous metal are metals that contain iron

Ferrous metals	Non ferrous metals
Iron steel	Aluminium, copper, zinc, cobalt, tin, lead, silver, bronze, brass, mercury

Magnetic and non magnetic

Magnetic metals are metals that are attract by magnet if it is brought near.

Non magnetic metals are not attracted by a magnet

Magnetic metals	Non magnetic metals
Iron, tin, nickel, cobalt, chromium, tungsten, alinco	Silver, copper, aluminium, bass, magnesium, lead, zinc, titanium

Conductors of heat in metals

1. Copper
2. Aluminium
3. Graphite
4. Silver
5. Gold
6. Steel spoon

Conduction of electricity

1. Zinc strip
2. Silver strip
- 3.
- 4.
- 5.

NB

Metals are good conductors of heat and electricity although some metals may be better conductors than others.

Uses of metals in the locality

<u>METAL</u>	<u>USES</u>
Gold	It is used to make jewellery It is used to make valuable medals and trophies
Silver	It is used to make mirrors since it reflects a lot of light Used to make jewellery It is used to make utensils commonly referred to as silverware It is used to make solar panels and screens of some electronic gadgets
Zinc	It is used to coat surfaces of other metals to protect them from corrosion It is used to make roofing sheets.
Lead	Used to make car batteries Used to make paints Used to make pipes used to carry corrosive materials
Steel	Used to make rails and bridges Used to make rods and beams for building houses and other structures Used to make household utensils like sufurias, pans, and cutlery
Aluminium	Used to make kitchen utensils such as sufurias, pans and spoons Used to make foils and cans for packaging food and medicine Used to make window frames
Copper	Used to make electrical wires Used to make water pipes, taps and sinks

Iron	It is used to make utensils like pans, sufurias and house hold appliances like iron boxes It is used to make machineries and farm tools Used to make building materials like iron sheets and window frames
Brass	It is used to make plumbing valves, doors hinges, door knobs and door locks Used to make dental braces It is used to make gears and bearings that are found in locomotives

Careers related to uses of metals

Career	Description
Mining	Miners blast or break rocks or the ground in order to obtain metals
Moulding	Moulders shapes metals obtained from the ground into mould or blocks
Metal cutting	This career involves cutting moulds of metal into a variety of desired shapes
Blacksmithing	Blacksmiths make objects from iron and other metals by hitting or blending them using a hammer
Welding	Welders use heat to create or repair metallic products
Metal polishing	Metal polisher use metal smoothing equipment and machines to enhance the appearance and smoothness of surface of metals
fabrication	Fabricators design and make products out of metals

Importance of metals

- Metals are important in the locality in many ways
 1. People purse careers related to metals, they earn a living
 2. It helps people improve their living standards
 3. Metals are important in making most items such as kitchen and farming tools which will be used to perform different tasks within the households.
 4. Can earn the government foreign exchange if imported to other countries
 - 5.

Non metallic materials

Are any materials both synthetic and natural which do not contain metal

Distinguishing between synthetic and natural non metallic materials

- ✓ Natural materials are those that exists on their own in or the earth without any actions of humankind.
- ✓ They may be part of the earth material or from plants and animals.
- ✓ Synthetic materials are those that are created by human beings through different process.

Material	Description	
	Natural	Synthetic
1. Stone	✓	
2. Tiles		✓
3. Timber		
4. Sand		

5. Plastic jerry cans		✓
6. Glass panes		✓
7. Sisal ropes		
8. Reeds		
9. Rubber		
10.		

Natural non metallic materials include soil, timber, reeds, rubber, stones, hides and skins, plant fibres like banana fibres, sisal fibres, cotton and linen

Categorising non metallic materials in the locality as either natural or synthetic

Pupil's activity

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Physical properties of non metallic materials

- Different types of non metallic materials have different properties

Physical property	Explanation
1. Hardness	Most non metallic can easily bend, break or crumble when pressure is applied on them.
2. Colour	Non metallic materials have a wide range of colours
3. Conduction of heat	Non metallic materials are poor conductors of heat
4. Conduction of electricity	Non metallic materials do not conduct electricity
5.	

Uses of non metallic materials in the locality

1. Fibres like cotton and line are used to make cloths.
Cloths re then made into different types of garments that we wear.
2. Rubber is used to make Items such as tyres, erasers and footwear
3. Timber or wood is used to make furniture, doors, floors, ceilings and walls of some houses. Wood is used as fuel in most homes.
4. Different types of soil have different uses
Sand soil is mixed with ballast, cement and water to make concrete for constructon.
Loam soil is used for farming
Clay soil is used in pottery and brick making.
5. Grasses and reeds are used to make items like mats, baskets and brooms
Grasses are also used as roofing materials
6. Hides and skins are used to make shoes, belts and bags
7. Glass is used to make window panes and household items like furniture and utensils.
It is also used in making laboratory equipments such as test tubes.
8. Plastic is used to make items such as utensils, cutlery, footwear, buckets, basins
9. Minerals such as soda ash are used to manufacture soap, paper and glass.

Careers related to processing and use of non metallic materials

- A. ROPE MAKING
Rope makers harvest sisal fibres, dry and use them to make ropes
- B. Building and constructions
Builders use timber, grass, clay and other materials to construct houses.
- C. Brick making
Brick makers make bricks from clay soil.
- D. Logging
Loggers are authorised to cut trees selectively from a given area to get logs.
- E. Saw milling.
Saw millers cut the logs into timber or shapes them into boards.
- F. Carpentry
Carpenters use timber and boards to make furniture and other useful items.
- G. Pottery
Potters make pots and other earthen items.
Some potters may also use of cement or concrete to make flower pots and flower vases
- H. WEAVING
Weavers make baskets, mats brooms, and other items from grasses and reeds
Plastic straws can also be made in weaving
- I. FARMING
Crop farmers cultivate the soil using hand tools or farm machinery and plants crops into it
- J. GLASS SMITHING
This is a career where people are involved in making objects out of glass
- K. SHOE MAKING
Shoe makers make shoes from non metallic materials like leather, rubber and plastic

Identifying common problems in the community

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Effects of common Problems affecting the community

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Problems faced in the community	Causes of the problem	Effects of the problem to the community	Can the problem be solved
1			
2			
3			
4			
5			
6			

Skills need to solve problems in the community

- Some of the problems can be solved by learners, intervention of adults, experts or the government
- When solving these problems, we apply some of the technical skills that we have learnt.
- We can also involve other members of the community who have the skills and experience
- Example of technical skills are
 1. Masonry skills
Are applied where structures such as houses, water pans and animal housing need to be constructed
 2. Carpentry skills
Are applied when joining pieces of wood to make desired items
 3. Design and drawing skills
Are applied where items or structures need to be sketched or drawn before they are made
 4. Farming skills
Are applied when carrying out activities such as digging, planting, weeding and when using farming tools and equipments
 5. Sewing skills
Are applied when joining and mending pieces of fabric to make desired items
 6. Welding skills
Are applied when joining materials to make desired items

TOOLS

HOUSEHOLD HAND TOOLS

A TOOL is any instrument held in the hand and used to do work.

A hand tool is any tool that is powered by hand in order to perform an activity

Identifying household hand tools

1. Scissors
2. Tape measure
3. Hammer
4. Knife
5. Chisel
6. Spade
7. Mallet
8. Pliers
9. Rake
10. Axe

Categorising household tools according to their use

Cutting tools	Layout and Measuring tools	Assembling tools	Sharpening tools	Holding and tightening tools
Panga	Tape measure	Hammer	File	Pliers
Chisel	Ruler	Screw driver		Spanner
Paper cutter		Mallet		G-clamp
Axe				Pipe wrench
Hand saw				Screw driver
Knife				

Using household hand tools to perform different tasks

1. PANGA

Can be use to cut grass

- A. Hold the pang firmly by the handle with one hand
- B. Hold the grass with the other hand
- C. Maintain a safe distance between the panga and the hand holding the grass
- D. Lift the panga and cut the grass

2. TAPE MEASURE

- a. Put the piece of timber on a fat surface
- b. Carefully put the hook of the tape measure at the edge of the timber
- c. Ask your friend to hold the end of the tape measure. Pull back the tape measure across the timber to let more tape out
- d. Let out the tape until it stretches across the whole length of the timber
- e. Look at the point where the tape align with the end of the timber
- f. Read the measurement in centimetres and record in your notebook
- g. Carefully let the tape measure to roll back into the casing
- h. Store the tape measure carefully

3. HAMMER

- a. Wear protective eye goggles
- b. Ensure there is no one behind you to avoid injuries
- c. Grip the hammer by the end of the handle
- d. Line the nail and the piece of wood that you want to hammer
- e. Hold the nail on the surface of the wood and gently tap the nail with the hammer until it holds in place
- f. Once the nail is in place, increase the hammering force to drive the rest of the nail into the wood.
- g. Remove your hand and hit the nail completely inside the wood
- h. Store your hammer safely after use

Care and maintenance of household hand tools

1. Clean the tools after use
2. Replace broken handles if any
3. Sharpen blades of cutting tools
4. Tighten loose screws and nuts of tools like saws
5. Oil moving parts of tools like pliers
6. Straighten bents and teeth of saws
7. Store tools safely in a clean dry place after use
You can hang saws on a hook
8. When storing tools with metallic parts for a long period of time, oil the metallic parts to avoid rusting.

Careers related to household hand tools

1. Masonry
2. Plumbing
3. Mechanics
4. Electrical installations
5. Building and constructions
- 6.

The role of household hand tools in the community

1. Perform tasks easily as they improve efficiency
2. Save on time required to perform different tasks
3. Do simple repairs at home
This helps us to save money that would be required to pay experts to perform the repairs
- 4.
- 5.

Farming hand tools

Farming hand tools are tools that are powered by hand and used to perform different tasks

Identifying farming hand tools

1. Slasher
2. Panga
3. Rake
4. Jembe

5. Pruning shears
6. Garden fork
7. Sickle
8. Garden trowel
9. Axe
10. Fork jembe

Categorising farming hand tools according to their uses

Cutting and clearing tools	Digging and cultivating tools	Harvesting tools	Pruning tools	Scooping and lifting tools
Slasher	Jembe	Panga	Secateurs	Spade
Panga	Fork jembe	Knife	Pruning shears	Garden trowel
Axe	Garden fork	Sickle	Pruning saw	Shovel
	Spade	Jembe		
		Fork jembe		

Using farming hand tools to perform different tasks

Farming hand tool	How to use it
Jembe	Digging <ol style="list-style-type: none"> 1. Hold the handle with both hands. One hand should be on the lower part of the handle 2. Raise the jembe and bring it down onto the soil 3. maintain a safe distance between the blade of the jembe and your feet 4. dig the required area
Grass slasher	Clearing grass or weeds <ol style="list-style-type: none"> 1. ensure that nobody is close to you 2. hold the wooden handle firmly 3. maintain a safe distance between your body and the slasher 4. swing the slasher to cut the grass or other weeds
Panga	Cutting grass or shrubs <ol style="list-style-type: none"> 1. hold the panga firmly by the handle with one hand 2. hold the grass with the other hand and put it on the cutting board 3. maintain safe distance between the panga and the hand holding the grass 4. lift the panga and cut the grass
Spade	Scooping the soil or manure <ol style="list-style-type: none"> 1. hold the handle of the spade with one hand 2. the other hand should hold the middle part of the handle 3. maintain safe distance between the spade and your feet 4. scoop the soil or manure

Care and maintenance of farming hand tools

We maintain and care for farming tools so that they serve as for a long time

We can care for farming hand tools by:

1. cleaning them after use
2. oiling the metallic parts of tools such as pangas to prevent rusting
3. sharpening the cutting edges
4. replacing broken handles
5. oiling the moving parts of tools such as secateurs to reduce friction
6. storing the tools safely after use

Careers related to farming hand tools

1. crop farming

This is a common career in our country because agriculture is the backbone of our economy.

In crop farming, we use jembes, ploughs

2. gardening

Gardeners use different hand tools when planting weeding

3. landscaping and planning

Landscapers use farming hand tools to perform tasks such as

- A. Weeding and mulching landscape beds
- B. Trimming small trees, hedges and shrubs
- C. Planting shrubs, flowers and trees
- D. Removing unwanted, dead or damaged trees

4. Welding and blacksmithing

Welders and blacksmiths take part in making and repairing metallic parts of farming hand tools

5. Carpentry

Carpenters make items using board and timber.

They also replace wooden handles of farming hand tools

6. Sugarcane cutting

Sugarcane cutters use pangas and machetes to harvest sugarcanes from farms

7. Fencing

People who erect and repair fences use tools such as pliers, jembes, shovels and hammers in their work.

8. Livestock farming

Livestock farmers use pangas for chopping napier grass for their livestock

Importance of farming tools

- Farming hand tools helps us in performing different tasks in the farm.
- This helps to improve efficiency with then results to productivity

Farming hand tool	Importance
Slasher	Helps in clearing long grass and small bushes around the compound The compound remains neat and free from mosquitoes and rodents
Pruning shear	Helps in trimming fences, hedges and shrubs Well trimmed fences are neat and beautiful
Plough	Helps in cultivating land This makes it easy to sow seeds or plant cutting
Spade	It makes it easier to scoop soil This helps to save on time and energy
Jembe	It helps to dig and remove weeds from crop fields Crops that are free from weeds give healthy produce

DRAWING

TYPES OF DRAWINGS

Drawing are types of diagrams used for communication to show the shape and structure of a given idea or product.

Technical fields use drawings to draw designs of different items before they are made

Types of drawing used in technical fields

Drawing involves making marks on a surface to create images of forms and shapes.

1. Artistic drawing – are made to visualize an idea and portray the general shape of an item, building or product.
They give a 3D view of an object.
2. Technical drawings – are made to give a precise and detailed view of an object.
They give information about how an object functions or how it is constructed.

Distinguishing artistic and technical drawings

Artistic and technical drawing can be distinguished using the characteristics like

1. Purpose
Technical drawing provide accurate information about an object to allow easy manufacturing or repair
Artistic drawing are done to express one's idea while beautifying the appearance of an object, a surface or a place
2. Presentation
Technical drawings are drawn on surface such as tracing paper, ammonia print or computer screens and are usually in standard sizes.
Artistic drawings can be drawn on paper, boards, walls canvas or fabric. These drawings do not have standard size
3. Interpretation
Technical drawing must be drawn to scale such that they are interpreted uniformly regardless of the geographical boundaries.
The interpretation of artistic drawings depends on the viewer
4. Level of precision
Technical drawing have to be drawn to scale for the accurate production and maintenance of the product
Artistic drawing show the general appearance of the product hence do not consider dimensions, shape or proportion

Uses of artistic and technical drawing in different fields

Uses of artistic drawings

1. They are used to understand how the object or building will appear when in real life
2. They help to keep records of historical events
3. They are used to express imagination and creativity
4. They represent feelings, actions and ideas
5. They help us to develop observation and interpretative skills in order to understand the world

Uses of technical drawing

- 1.** They bridge communication between designers and producers
- 2.** They guide people in careers such as engineering when constructing and repairing different structures
Eg. An engineer relies on technical drawings to make some parts of machines
- 3.** Technical drawing are used to represent objects whose dimensions follow set of international standards

Applications of drawings in various careers

People in careers that use both artistic and technical drawings include

1. Architects
They use artistic drawings to show the outward appearance of the building and how the building will be intergraded with other items within its locality
They also use technical drawings to show the actual measurements and location of features such as windows and doors within the design
2. Construction workers
They use artistic drawings to create the finishing designs of the floor, roofs and walls.
They also use technical drawing to determine the location of doors, windows and other fixtures within the building
3. Electricians
4. They use technical drawing to identify the position of electrical ducts within a building wiring, installation or repair
They also use artistic drawings to determine the neatness and finish requires after installation or repair of electrical systems
5. Interior designers
They use artistic drawings when visualising the style, colour and other suitable to use
They also use technical drawings to determine the placement of different furnishing within a room or a building
6. Plumbers
They use artistic drawings to identify how to finish an area after installation of drainage pipes and other fixtures in the buildings
They use technical drawings to identify access points to areas having blockages or repairing repairs within the drainage points of a building
7. Product designers
They use artistic drawings to identify how different shapes, colours, images and writing will appear on a given object.
They use technical drawings to determine the size, material and shape of the product when viewed from different positions such as top, bottom and sides

Importance of drawing in day to day life

- Some of the objects created from drawing are vehicles, roads, houses, furniture and electronics
- Drawing helps us to learn to write and think creatively, develop hand to eye coordination and conceptualise ideas

Drawing instruments and equipments

- Drawing can be done using a variety of instruments and equipments.
- These instruments and equipments helps us to make neat and accurate drawings






Drawing instruments and equipments used in technical drawing

1. Pencils
2. Tee squares
3. Drawing boards
4. Drawing pens
5. Rulers
6. Sharpeners
7. Drawing templates
8. Erasers
9. Pair of compass

Uses of drawing instruments and equipments

Drawing instrument or equipment	USE
1. Pencils	Used to make initial sketches
2. Erasers	Used to eliminate mistakes made while drawing
3. Pens	Used to outline the final work
4. Templates	Help to draw repeated letters, numbers and shapes accurately
5. Drawing board	Used as a support surfaces to hold the paper when drawing
6. Sharpeners	Used to make tips of pencils sharp
7. Rulers	Used for measuring and marking accurate measurements
8. Compasses	
9.	

Drawing lines and shapes using drawing instruments

Name of the line	Image of the line	How the line is used in technical drawing
Construction line		A faint line used for sketching and drawing the initial details of a drawing
Centre line		
Hidden line		
Phantom line		
Break line		
Drawing line		
Break line		
Dimension line		
Leader line		
Cutting line		

Care and maintenance of drawing instruments and equipments

1. Clean them well after use
2. Avoid dropping the instruments or equipments. This prevents them from cracking and breaking

3. Sharpen pencils when necessary. Do not press the pencil lead on a hard surface when sharpening
4. Use each instrument or equipment for its intended purpose
Eg measuring tools should be used for measuring
5. Always store the instruments and equipments safely when they are not in use

NB

Drawing instruments and equipments are cared for and maintained well in order for them to work well and make neat and accurate drawings.

Uses of drawing instruments and equipments in various careers



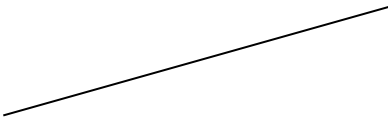
1. Architects
Use different drawing instruments to design good buildings
2. Interior designers
Use drawing instruments and skills to help people plan and decorate the spaces they live in
3. Fashion designers
Use drawing instruments to come up with creative ideas on how different outfits should be made.
Most of the clothes we wear were design by somebody
Fashion designers work closely with tailors
4. Tailors
Use drawing instruments to draw designs of clothes before they are made
5. Illustrators
Draw pictures both in hard copies and in digital form
Most of the pictures in textbooks were drawn by illustrators
6. Carpenters
Draw furniture before making them

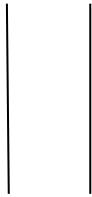
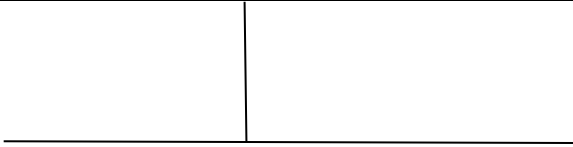





Freehand sketching

Free hand sketching is drawing without the use of measuring instruments

How to sketch lines freehand

- Different types of lines are used in freehand sketching
- The measurement, direction and thickness of the lines can be varied to enhance the mood and character portrayed in the drawings

Type of line	
Horizontal	
Vertical	
Diagonal	

Parallel	
Perpendicular	
Thick and thin	
Curved	
Zigzag	
Wavy	
Spiral	
Varied	
Dotted	

How to sketch two dimensional shapes using freehand