

**Dawood Public School**  
**Course Outline 2018-19**  
**Science**  
**Grade IV**

**Book & Workbook:**

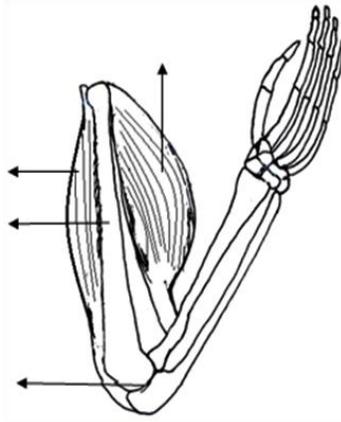
- International Primary Science 4 (Ho Peck Leng)
- Marshall Cavendish Education

<b>Month</b>	<b>Syllabus Breakdown</b>	<b>Page Numbers</b>
August	Moving and Growing	31 - 56
September	Habitats	115 - 150
October	Solids and Liquids	1-25
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<b>December</b>	<b>Mid Year Examinations</b>	-
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<b>April</b>	<b>Revision for Final Examinations</b>	-
<b>May</b>	<b>Final Examinations</b>	-

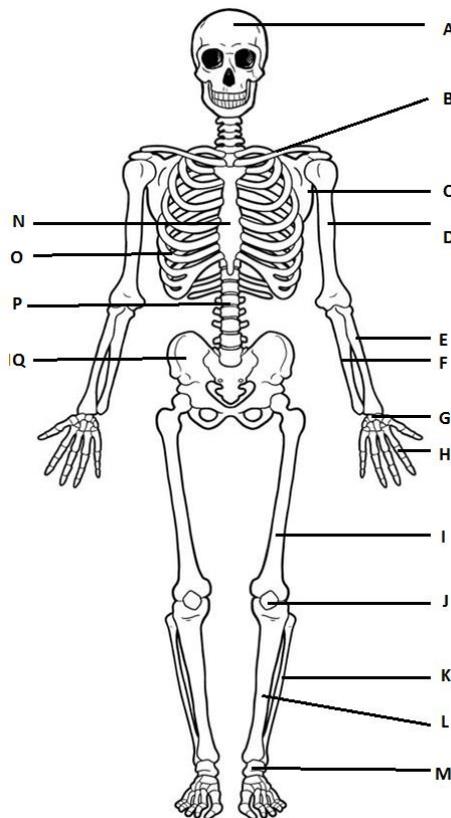
Contents	Learning Outcomes
<p><b>The Human Skeleton</b> The human skeleton is the internal framework of the body comprised of 206 bones that can be categorized according to their different types. There are four types of bones;</p> <ul style="list-style-type: none"> <li>• Long bone</li> <li>• Short bone</li> <li>• Flat bone</li> <li>• Irregular bone</li> </ul>	<ul style="list-style-type: none"> <li>• Define skeletal system.</li> <li>• List the functions of a skeleton.</li> <li>• Identify, label and learn the scientific and common names of the different bones of the axial and appendicular skeleton.</li> <li>• Classify bones according to their types.</li> <li>• List some facts about the human skeleton.</li> <li>• Explain why the number of bones in a baby is less than that of an adult human being.</li> <li>• State the function of bone marrow.</li> <li>• Name the nutritional components that are used to strengthen bones.</li> <li>• Compare the human skeleton with the skeleton of other animals.</li> </ul>
<p><b>Types of skeleton</b> There are three different types of skeleton systems that fulfils the requirement of the different organisms;</p> <ul style="list-style-type: none"> <li>• Endoskeleton</li> <li>• Exoskeleton</li> <li>• No skeleton</li> </ul>	<ul style="list-style-type: none"> <li>• Compare the three types of skeleton.</li> <li>• Classify the animals with exoskeleton, endoskeleton or no skeleton from given group of animals.</li> <li>• Give examples of animals with exoskeleton, endoskeleton or no skeleton.</li> </ul>
<p><b>Joints</b> Joint is the point where two or more bones meet. There are three types of joints;</p> <ul style="list-style-type: none"> <li>• Immovable Joints <ul style="list-style-type: none"> <li>➤ Skull</li> <li>➤ Pelvis</li> </ul> </li> <li>• Movable Joints <ul style="list-style-type: none"> <li>➤ Ball and Socket Joint</li> <li>➤ Hinge Joint</li> <li>➤ Saddle Joint</li> <li>➤ Pivot Joint</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Define joints.</li> <li>• Compare the three different types of joints.</li> <li>• Identify and label the types of joints at different parts of the body.</li> <li>• Describe the movement of the different types of joints.</li> <li>• Give examples of the different places where a specific type of joint is found.</li> <li>• State the functions of ligaments.</li> </ul>
<p><b>Muscles and Tendons</b> Muscles are soft tissues found in the animals they contract and relax enabling to movement. Tendons are the cords that connect muscles to bone.</p>	<ul style="list-style-type: none"> <li>• Define muscles.</li> <li>• Identify, label and learn the names of the skeletal muscles found in the human body.</li> <li>• Describe antagonistic movement of biceps and triceps.</li> <li>• Identify the skeletal muscles and tendons.</li> <li>• Define tendons.</li> <li>• Differentiate between ligaments and tendons.</li> <li>• Narrate the story of Achilles.</li> </ul>
<p><b>Key words:</b> framework, skeleton, scientific names, common names, protection, support, vertebrae, backbone, skull, cranium, scapula, shoulder blade, clavicle, collar bone, patella, knee cap, sternum, pelvis, radius, ulna, humerus, phalanges, tibia, fibula, femur, carpals, tarsal, bone marrow, ribcage, brain, lungs, heart, ball and socket joint, hinge joint, pivot joint, saddle joint, biceps, triceps, boredom, tendons, Achilles.</p> <p><b>Types of Questions:</b></p> <ul style="list-style-type: none"> <li>• Multiple choice questions</li> <li>• Differences</li> <li>• Short reasoning questions</li> <li>• Experimental questions</li> <li>• Drawing/Labeling</li> </ul>	

**Sample Questions:**

1. Define skeletal system and explain how it helps the body.
2. Label the diagram of human arm.



- Color the tendons with blue, muscles with red and bones with yellow.
  - Describe the movement of the joints shown in the above diagram.
3. Label the given figure of the human skeleton. Write the scientific and common names in the given table.
- Shade the axial skeleton with blue color.
  - Shade the appendicular skeleton with red color.

**Workbook Activities:**

- Activity 2.3, 2.5

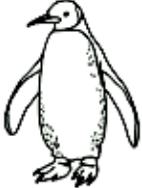
**Creative Applications:**

- To examine the inflation of balloon with CO<sub>2</sub> produced in reaction of vinegar and baking soda.
- To check out the oxidation of lemon/Baking soda on heating (Invisible Ink)
- To investigate the refraction of light and optical; inversion.
- To examine a Leak Proof Bag.
- To design and build a working hand out of craft materials that demonstrates how a real robot hand might work.

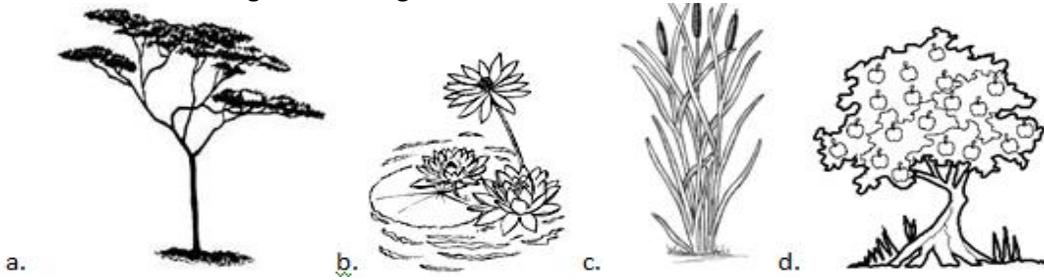
**IT Surf :**

<https://www.youtube.com/watch?v=lUP-D4dKp14>  
<https://www.youtube.com/watch?v=i42FSNA9bAY>  
<https://www.youtube.com/watch?v=ChhPpAKKqHl>  
[https://www.youtube.com/watch?v=0cYal\\_hitz4](https://www.youtube.com/watch?v=0cYal_hitz4)  
[https://www.youtube.com/watch?v=C6u0u\\_59UDc](https://www.youtube.com/watch?v=C6u0u_59UDc)

Contents	Learning Outcomes
<p><b>Habitat</b> Habitat is a place where organisms lives and find food, shelter, protection and mates. Types of habitats:</p> <ul style="list-style-type: none"> <li>• Aquatic</li> <li>• Terrestrial</li> </ul>	<ul style="list-style-type: none"> <li>• Define habitat.</li> <li>• Name the four components of habitat.</li> <li>• Name the two basic types of habitat found on Earth.</li> <li>• Name different examples of habitat.</li> <li>• Categorize different habitat according to their types.</li> <li>• Identify the habitat for a given variety of organisms.</li> </ul>
<p><b>Flora and Fauna</b> Animals of a particular area/ region are called fauna and plants of a particular area/region are called flora.</p>	<ul style="list-style-type: none"> <li>• Define flora and fauna.</li> <li>• Name flora and fauna of different habitats.</li> </ul>
<p><b>Levels of Organizations</b> The highest level of organization of living things is arranged from the simplest to complex. Organism, Population and Community.</p>	<ul style="list-style-type: none"> <li>• Define: <ul style="list-style-type: none"> <li>➤ Organization</li> <li>➤ Population</li> <li>➤ Community</li> </ul> </li> <li>• Compare the terms organism, population and community.</li> <li>• Identify and categorize the level of organization by observing any given group of organisms.</li> </ul>
<p><b>Invertebrates</b> Animals without backbone/spinal cord are called invertebrates.</p>	<ul style="list-style-type: none"> <li>• Define invertebrates.</li> <li>• Enlist the characteristics of invertebrates.</li> <li>• Identify the invertebrates from the group of organisms.</li> </ul>
<p><b>Producers and Consumers</b> Plants are called producers because they can make their own food while animals are called consumers because they depend on others.</p>	<ul style="list-style-type: none"> <li>• Define producers and consumers.</li> <li>• Differentiate between producers and consumers.</li> <li>• Categorize producers and consumers from given group of organisms.</li> <li>• Describe the food source of producers and consumers.</li> </ul>
<p><b>Types of Consumers</b> Animals are categorized into three types on the basis of their type of food consumption.</p> <ul style="list-style-type: none"> <li>• Herbivores</li> <li>• Carnivores</li> <li>• Omnivores</li> </ul>	<ul style="list-style-type: none"> <li>• Define: <ul style="list-style-type: none"> <li>➤ herbivores</li> <li>➤ carnivores</li> <li>➤ omnivores</li> </ul> </li> <li>• Identify herbivores, carnivores and omnivores by the shape of their teeth.</li> <li>• Give examples of herbivores, carnivores and omnivores.</li> <li>• Sort different types of consumers from given organisms.</li> </ul>

<p><b>Food Chain</b> A food chain is a linear sequence, showing feeding relationship between the organisms.</p>	<ul style="list-style-type: none"> <li>• Define food chain.</li> <li>• State the characteristics of food chain.</li> <li>• Construct 4 – 5 linked food chains.</li> <li>• Describe the impact and effect of a disturbance in food chains.</li> <li>• Identify the energy source in a food chain.</li> </ul>
<p><b>Adaptations</b> Adaptation is an alteration in the structure or function of an organism or any of its parts by which the organism becomes better fitted to survive and multiply in its environment.</p> <ul style="list-style-type: none"> <li>• Adaptations of Camel</li> <li>• Adaptations of Cactus</li> <li>• Adaptations of Water lily</li> <li>• Adaptations of Fish</li> </ul>	<ul style="list-style-type: none"> <li>• Define adaptations.</li> <li>• Describe the adaptations of different organisms (specifically camel, cactus, water lily and fish) to help them survive in their particular habitat.</li> <li>• Describe what will happen if an organism is unable to adapt a habitat.</li> <li>• Explain the features of the following organisms: <ul style="list-style-type: none"> <li>➤ camel</li> <li>➤ cactus</li> <li>➤ water lily</li> <li>➤ fish</li> </ul> </li> <li>• Describe how various organisms adapt to a particular habitat.</li> </ul>
<p><b>Changing Habitat</b> Habitats rarely stay the same. When it rains, plants are green and colorful flowers appear. When the rain stops, plants turn brown and lose their leaves. Over longer periods of time, some species disappear and new species take their place. Sometimes the actions of people can also change habitats.</p>	<ul style="list-style-type: none"> <li>• Describe how habitats change.</li> <li>• Explain the effects of changes in habitat.</li> <li>• Define deforestation.</li> <li>• State the effects of deforestation.</li> <li>• Give reasons for deforestation.</li> <li>• Define soil erosion.</li> <li>• State the effects of soil erosion.</li> <li>• Define pollution.</li> <li>• Name types of pollution.</li> <li>• Define pollutants.</li> <li>• Explain the phenomenon of oil spills and describe its consequences.</li> </ul>
<p><b>Key words:</b> organisms, flora, fauna, habitat, grassland, tundra, population, community, rotting log, invertebrates, vertebrates, backbone, segments, adaptations, conserve, evaporating, spines, reduce water loss, gills, fins and tail, streamlined body, smoke, harmful gases, toxic metals, wastes, garbage, oil spill.</p> <p><b>Types of Questions:</b></p> <ul style="list-style-type: none"> <li>• Multiple choice questions</li> <li>• Differences</li> <li>• Short reasoning questions</li> <li>• Experimental questions</li> <li>• Drawing/Labeling</li> </ul> <p><b>Sample Questions:</b></p> <p>1. Multiple choice questions.</p> <p>i. Which of the following organism does not belong to Arctic region?</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>a.</p>  </div> <div style="text-align: center;"> <p>b.</p>  </div> <div style="text-align: center;"> <p>c.</p>  </div> <div style="text-align: center;"> <p>d.</p>  </div> </div>	

ii. Which of the following flora belongs to desert?



2. Identify the habitats, its type and name a flora/fauna of each of the following shown in the pictures.

Habitat:	Habitat:
Type of Habitat:	Type of Habitat:
Flora:	Flora:
Fauna:	Fauna:

**Workbook Activities:**

- Activity 1.1, 1.2, 1.4, 1.6

**Practical Applications:**

- To investigate the stored energy of catapult.
- To investigate why a balloon filled with water does not blow up.
- To investigate the procedure for cleaning an oil-spill over water.
- To investigate the compressibility of three states of matter.

**IT Surf :**

- <https://www.youtube.com/watch?v=CxrlEajA398>
- <https://www.youtube.com/watch?v=dG1kTNPo8x4>
- <https://www.youtube.com/watch?v=9SSOpYZRNZw>
- [https://www.youtube.com/watch?v=LB8nLZmxN\\_M](https://www.youtube.com/watch?v=LB8nLZmxN_M)
- [https://www.youtube.com/watch?v=2j\\_aXQoLe-o](https://www.youtube.com/watch?v=2j_aXQoLe-o)
- <https://www.youtube.com/watch?v=MquNoZqX5WM>

**October:**

**Chapter 5: Solids & Liquids**

**Pages: 115-150**

Contents	Learning Outcomes
<p><b>Matter</b> Matter is any substance that has mass and takes up space by having volume. Mass and Volume are the two basic characters of matter.</p>	<ul style="list-style-type: none"> <li>• Define matter.</li> <li>• Differentiate between mass and volume.</li> <li>• Name the instruments used to measure mass and volume.</li> <li>• Write the standard units used for measuring mass and volume.</li> <li>• Measure the volume of liquids in provided measuring cylinders.</li> </ul>

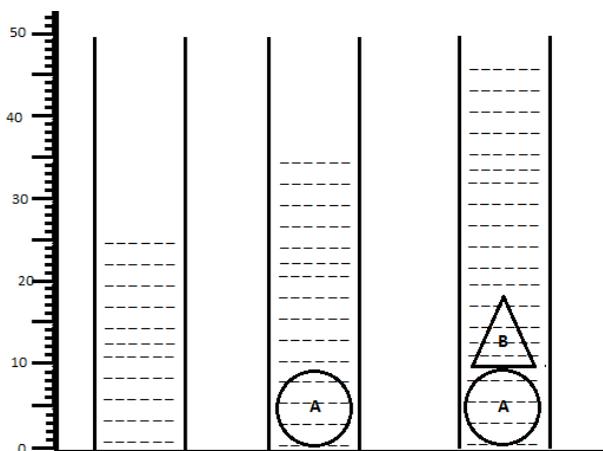
	<ul style="list-style-type: none"> <li>Calculate the volume of different objects by using measuring cylinders through displacement method.</li> </ul>
<p><b>States of Matter</b></p> <p>There are three states of matter:</p> <ul style="list-style-type: none"> <li>Solids</li> <li>Liquids</li> <li>Gases</li> </ul>	<ul style="list-style-type: none"> <li>Compare the properties of three states of matter.</li> <li>List the differences and similarities of three states of matter.</li> <li>Draw the particle arrangement of solids, liquids and gases.</li> <li>Prove with the help of the common examples that gases are matter.</li> <li>Give reasons of the fluidity of liquids and compressibility of gases.</li> <li>Give reason of the compressibility of a sponge despite of its solid state.</li> </ul>
<p><b>Freezing &amp; Melting</b></p> <p>These are examples of changes in the state of matter of substances. Substances freeze at exactly the same temperature as they melt. The temperature at which liquids and solids exist in equilibrium is defined as melting and freezing point.</p>	<ul style="list-style-type: none"> <li>Define freezing.</li> <li>Define melting.</li> <li>Differentiate between freezing and melting in terms of gain and loss of energy.</li> <li>Identify the objects that gain or lose heat/energy, when substances of different temperatures are added into them.</li> <li>State the melting and freezing point of water.</li> <li>Identify the different states of water at different temperatures.</li> </ul>
<p><b>Reversible &amp; Irreversible Changes</b></p> <p>The changes which cannot be undone / reversed are called reversible changes while the changes that can be reversed are called Irreversible changes.</p>	<ul style="list-style-type: none"> <li>Differentiate between reversible and irreversible changes.</li> <li>Give examples of reversible and irreversible changes.</li> </ul>
<p><b>Mixing and separating solids and liquids.</b></p> <p>Mixture is a material made up of two or more different substances which are not chemically combined.</p> <ul style="list-style-type: none"> <li>Mixture can be separated by sieving and filtration.</li> <li>Solids and liquids that are dissolved and form a solution can be separated by distillation.</li> </ul>	<ul style="list-style-type: none"> <li>Define: <ul style="list-style-type: none"> <li>solute</li> <li>solvent</li> <li>solution</li> <li>soluble substances</li> <li>insoluble substances</li> <li>mixtures</li> </ul> </li> <li>Give examples of soluble and insoluble substances.</li> <li>Differentiate between solution and mixtures.</li> <li>Name the process through which dissolved substances are separated.</li> <li>Describe the process of filtration.</li> <li>Differentiate between residue and filtrate.</li> <li>Identify the solute, solvent, solution, mixture, residue and filtrate in diagrams.</li> <li>State the role of the filter paper in the process of filtration.</li> </ul>
<p><b>Key words:</b>  matter, mass, volume, milliliters, liters, cubic centimeters, measuring cylinders, kilograms, grams, electronic balance, lever balance, definite, compressibility, water vapor, heat gain, heat loss, temperature, freezing point, melting point, reversible changes, irreversible changes, soluble substances, insoluble substances, solute, solvent, solution, residue, filtrate, evaporation, mixtures.</p>	

**Types of Questions:**

- Multiple Choice Questions.
- Structural Questions.
- Short Reasoning Questions.
- Descriptive Questions.

**Sample Questions:**

1. Calculate the volume of the following objects.



- a. Volume of water: \_\_\_\_\_
- b. Volume of water and object A : \_\_\_\_\_
- c. Volume of object A : \_\_\_\_\_
- d. Volume of water, object A and object B: \_\_\_\_\_
- e. Volume of object B : \_\_\_\_\_

**Workbook Activities:**

- Activity 5.1, 5.2, 5.4, 5.5, 5.7, 5.8, 5.9

**Practical Applications:**

- To examine air as matter.
- To examine the dissolving capability of water with different substances and proving it to be a best solvent.
- To evaluate the mixing of solute (Sugar/Copper Sulphate) in a solvent (Water) until the formation of a supersaturated solution.
- To separate mixtures through the process of filtration.

**IT Surf :**

- <https://www.youtube.com/watch?v=C33Wdl64FiY>
- [https://www.youtube.com/watch?v=Nzs\\_Oc\\_dzps](https://www.youtube.com/watch?v=Nzs_Oc_dzps)
- <https://www.youtube.com/watch?v=yjJ3eSD77zE>
- [https://www.youtube.com/watch?v=r8M7mah\\_QaY](https://www.youtube.com/watch?v=r8M7mah_QaY)
- [https://www.youtube.com/watch?v=mFGv\\_d6h45U](https://www.youtube.com/watch?v=mFGv_d6h45U)

**November: Revision for Mid Year Examination 2018-19**

**December: Mid Year Examination 2018**

**January:**

**Chapter 3: Friction and how objects move**

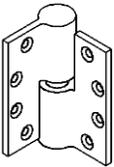
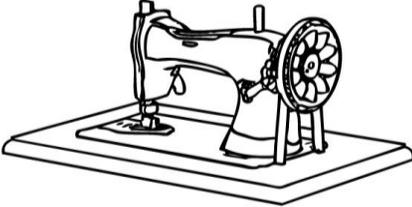
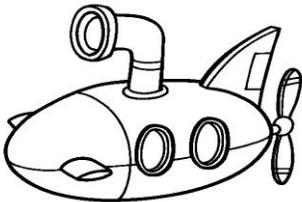
**Pages 59-83**

Contents	Learning Outcomes
<p><b>Friction</b> Friction is the force resisting the relative motion of solid surfaces, fluid layers, and material elements sliding against each other. Or Friction is a force that opposes the relative lateral motion of two solid surfaces in contact.</p>	<ul style="list-style-type: none"> <li>• Define friction.</li> <li>• Describe the importance of friction.</li> <li>• Analyze situations without friction.</li> <li>• State the characteristics of friction.</li> <li>• State some ways to reduce friction.</li> </ul>

	<ul style="list-style-type: none"> <li>• Give reasons for the following scenarios; <ul style="list-style-type: none"> <li>➤ Why the moving parts a machine gets warmer.</li> <li>➤ Why the car’s engine is bathed in the oil.</li> <li>➤ Why a match stick catches fire.</li> <li>➤ Why the tread pattern of a shoe’s sole or tires wear out.</li> <li>➤ Why oil is applied on door hinges.</li> </ul> </li> </ul>
<p><b>Factors Affecting Friction</b> Friction is affected by the following factors;</p> <ul style="list-style-type: none"> <li>• Surface area</li> <li>• Type of surface</li> <li>• Weight</li> </ul>	<ul style="list-style-type: none"> <li>• Define fair test.</li> <li>• State the characteristics of the fair test.</li> <li>• Investigate a test.</li> <li>• Describe the aim of the fair test.</li> <li>• Draw conclusions from described experiments.</li> <li>• Identify the changed variables in fair test.</li> <li>• Identify the constant variables in fair test.</li> <li>• Design a fair test with respect to a given aim.</li> <li>• Describe the effect of increased or decreased surface area on friction.</li> <li>• Describe the effect of rough and smooth surface on friction.</li> <li>• Describe the effect of increased or reduced weight on friction.</li> </ul>
<p><b>Air Resistance</b> Air resistance describes the forces that are in opposition to the relative motion of an object as it passes through the air. Eventually, the force of air resistance becomes large enough to balance the force of gravity.</p>	<ul style="list-style-type: none"> <li>• Define air resistance.</li> <li>• State the importance of air resistance.</li> <li>• Suggest possible reasons for the following: <ul style="list-style-type: none"> <li>➤ Why cyclists wear skin suits, helmets and bend down low during racing.</li> <li>➤ Why cars have converging bonnets.</li> <li>➤ Why a rain drop comes to the earth in the shape of a tear drop.</li> </ul> </li> <li>• Investigate the effect of surface area on air resistance through a parachute.</li> <li>• Describe the effect of increased or decreased surface area on air resistance.</li> <li>• State the ways to reduce air resistance.</li> </ul>
<p><b>Water Resistance</b> Water resistance describes the force that is in opposition to the relative motion of an object as it passes through the air.</p>	<ul style="list-style-type: none"> <li>• Define water resistance.</li> <li>• Suggest possible reasons for the following: <ul style="list-style-type: none"> <li>➤ Why fish have a streamlined shape.</li> <li>➤ Why swimmers wear swim suits.</li> <li>➤ Why a marble ball doesn’t spin in a bowl containing water.</li> </ul> </li> <li>• Investigate the effect of different shapes on water resistance.</li> <li>• State some ways to reduce water resistance.</li> </ul>
<p><b>Key words:</b> frictional force, motion/movement, wear and tear, surface area, tread patterns, lubricants, opposes, spring balance, air resistance, water resistance, streamlined shape, swim suits, skin suits, torpedo.</p> <p><b>Types of Questions:</b></p> <ul style="list-style-type: none"> <li>• Multiple Choice Questions.</li> <li>• Structural Questions.</li> <li>• Short Reasoning Questions.</li> <li>• Descriptive Questions.</li> </ul>	

**Sample Questions:**

1. Give reasons for the following situations.

Situations	Reasons
 Why oil is applied to a door's hinges.	
 Why skate blades are made up of metal.	
 Why the moving parts of the sewing machine get warm.	
 Why submarines have a streamlined shape.	

**Workbook Activities:**

- Activity 3.2, 3.3, 3.4, 3.

**Practical Applications:**

- To evaluate the flowing speed of different liquids with different densities.
- To make parachutes with different surface area.
- To examine crystallization by growing sugar crystals.
- To evaluate the capillary action of water.

**IT Surf :**

- <https://www.youtube.com/watch?v=PNDRIcw4E0>
- <https://www.youtube.com/watch?v=Ek8fWzmWxgk>
- <https://www.youtube.com/watch?v=vZYwsAvHgVw>
- <https://www.youtube.com/watch?v=xEtYq0G4erA>

**February**

**Chapter 6: Discovering Plants**

**Pages: 153-190**

Contents	Learning Outcomes
<p><b>Parts of a Plant</b>                      Plants are made up of four basic parts that play an important role in their growth and development.</p> <ul style="list-style-type: none"> <li>• Flowers/Fruits</li> <li>• Leaves</li> <li>• Stems</li> <li>• Roots</li> </ul>	<ul style="list-style-type: none"> <li>• State the functions of different parts of a plant.</li> <li>• Describe the effect on a plant if any of the following were missing:                             <ul style="list-style-type: none"> <li>➤ flower/fruit</li> <li>➤ leaves</li> <li>➤ stem</li> <li>➤ roots</li> </ul> </li> </ul>

<p><b>Roots</b></p> <p>Root is the organ of a plant that lies below the surface of the soil. The first root that comes from a plant is called the radical. A root's major functions are absorption of water and nutrients. Roots anchor the plant body to the ground, support it and help to store food and nutrients.</p> <p>There are two types of roots:</p> <ul style="list-style-type: none"> <li>• Fibrous roots</li> <li>• Tap root</li> </ul> <p>There are three parts of the roots:</p> <ul style="list-style-type: none"> <li>• Root hair</li> <li>• Root tip</li> <li>• Root cap</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the functions of roots.</li> <li>• Differentiate between the two types of roots.</li> <li>• Give examples of plants that have tap and fibrous root system.</li> <li>• Categorize plants with tap and fibrous roots from group of plants.</li> <li>• State the function of different parts of the roots.</li> <li>• Describe the effect on root function in the absence of any of its parts.</li> <li>• Identify and label the parts of roots.</li> <li>• Give reason why roots of a plant get swollen.</li> <li>• State the names of some edible roots.</li> </ul>
<p><b>Stem</b></p> <p>The plant stem is a component of the shoot system. The main function is to provide support to the plant, holding leaves, flowers, and buds; in some cases stems also store food for the plant. The stem of the plant connects the roots to the leaves, helping to transport absorbed water and minerals to different parts of the plant. The tubes of the stem responsible for the transportation of water and minerals:</p> <ul style="list-style-type: none"> <li>• Xylem</li> <li>• Phloem</li> </ul> <p>There are two types of the stem:</p> <ul style="list-style-type: none"> <li>• Woody stems</li> <li>• Non woody stems</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the functions of the stem.</li> <li>• State the functions of: <ul style="list-style-type: none"> <li>➤ xylem</li> <li>➤ phloem</li> </ul> </li> <li>• Identify the position of xylem and phloem in the vascular bundles.</li> <li>• Construct a flow chart on the types of stems.</li> <li>• Differentiate between woody and non woody stem.</li> <li>• Give examples of plants with woody and non woody stem.</li> <li>• Give a reason for formation of swollen stem with examples (underground stem).</li> <li>• Differentiate between climbers and creepers.</li> <li>• Give examples of climbers and creepers.</li> </ul>
<p><b>Leaves</b></p> <p>Leaves are the parts of the plant that are responsible for making food through the process of photosynthesis.</p> <p>There are four basic parts of the leaves:</p> <ul style="list-style-type: none"> <li>• Leaf blade</li> <li>• Branch leaf vein</li> <li>• Main leaf vein</li> <li>• Leaf stalk</li> </ul> <p>Leaves are classified into many types on the basis of their structure;</p> <ul style="list-style-type: none"> <li>• Colors of leaves</li> <li>• Shape of leaves</li> <li>• Sizes of leaves</li> <li>• Vein of leaves</li> <li>• Edges of leaves</li> <li>• Texture of leaves</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the function of leaves.</li> <li>• Identify and label different parts of the leaves.</li> <li>• State the function of different parts of leaves.</li> <li>• Differentiate between hibiscus and orchid leaf.</li> <li>• Construct a flow chart describing the different types of leaves.</li> <li>• Classify the different leaves on the basis of their respective type.</li> <li>• Describe the shape, size, color, veins, edges, textures of different leaves.</li> <li>• Describe the process of photosynthesis.</li> <li>• Write the word equation about the process of photosynthesis.</li> <li>• State the role of chlorophyll.</li> <li>• State the importance of sunlight during the process of photosynthesis.</li> </ul>
<p><b>Flowers</b></p> <p>Flowers are the parts of the plants responsible for reproduction; they turn into fruit after fertilization.</p> <p>The following parts of the flower play an important role in reproduction:</p> <ul style="list-style-type: none"> <li>• Petal</li> <li>• Sepal</li> <li>• Pedicel</li> <li>• Pistil</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the functions of a flower.</li> <li>• Identify and label the different parts of flower.</li> <li>• State the functions of the different parts of a flower.</li> <li>• Analyze the absence of different parts of the flower affecting plant reproduction.</li> <li>• Define unisexual and bisexual flower.</li> <li>• Differentiate between a unisexual and bisexual flower.</li> </ul>

- Stigma
  - Style
  - Ovary
  - Ovule
  - Eggs/Female reproductive cells
  - Stamen
    - Pollen
    - Anther
    - Filament
- Plants undergo the following processes for its reproduction;
- Pollination
  - Fertilization
  - Seed Dispersal
  - Germination

- Describe the process of pollination.
- Differentiate between wind pollinated and insect pollinated flowers.
- Give examples of the wind and insect pollinated flower.
- State the distinct characteristics of the following flowers:
  - Titan arum
  - Rafflesia.
- Describe the process of fertilization.
- Explain what happens to each part of a flower after fertilization.
- Name some edible and inedible fruits.
- Name some fruits that are regarded as vegetables.

**Key words:**

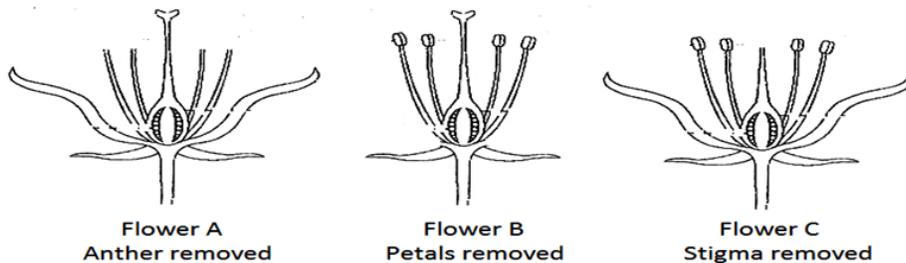
roots, stem, leaves, flower, fruits, photosynthesis, chlorophyll, transportation, minerals, absorption, reproduction, nutrients, firmness, anchor, root hair, root tips, branch root, xylem, phloem, clasping roots, buttress roots, tap roots, woody stem, non woody stems, climbers, creepers, vines, leaf blade, midrib, branch veins, leaf stalk, toothed edges, parallel veins, netlike veins, carbon dioxide, oxygen, pigment, raw material, byproduct, green pigment, petal, sepal, pedicel, pollen, anther, filament, stamen. Pistil/carpel, stigma, style, ovary, ovule, female reproductive cells/eggs, pollination, fertilization, unisexual, bisexual

**Types of Questions:**

- Multiple Choice Questions.
- Structural Questions.
- Short Reasoning Questions.
- Descriptive Questions.

**Sample Questions:**

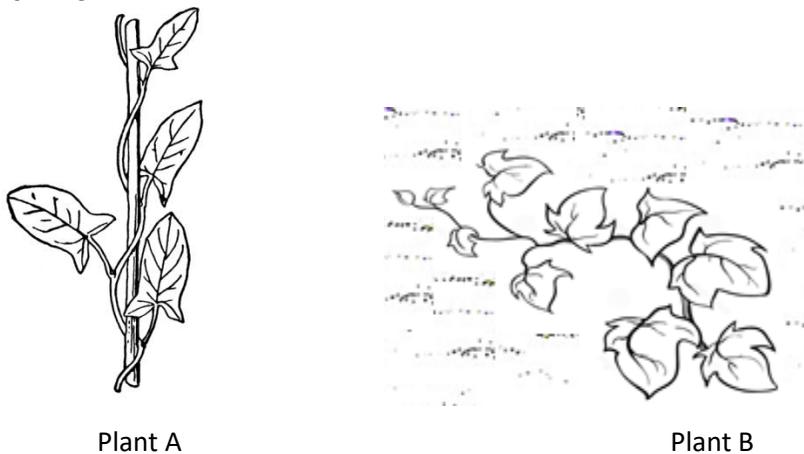
1. Hazel has carried out an experiment with 3 bright colored flowers and removed certain parts of the flower as shown in the diagram.



Hazel dusted the pollen on the flower A, B and C.

- a. Which of the flower(s) will not be able to turn into the fruit? Give reason.
- b. Flower B is most likely to have the least number to attract the insects. Give reason.

2. The diagram below shows plants A and B. Both plants A and B have weak stems but they are adapted to grow well.



- a. Based on the diagram above, state the structural adaptations of each of the plant which enable them to grow well.
- b. Give a common reason why these structural adaptations allow the plants to grow well?
- c. State an example of plant A and plant B.

**Workbook Activities:**

- Activity 6.1, 6.2, 6.3, 6.5, 6.6, 6.8, 6.10

**Practical Applications:**

- To test different densities of liquids layering up.
- To test the presence of starch on different food items.
- To examine the reduced evaporation of air bubble by glycerin/sugar.
- To examine the particles of salts over cling wrap due to sound vibrations.

**IT Surf :**

<https://www.youtube.com/watch?v=X6TLFZUC9gl>  
<https://www.youtube.com/watch?v=yHVhM-pLRXk>  
[https://www.youtube.com/watch?v=HuKa57OJ\\_iA](https://www.youtube.com/watch?v=HuKa57OJ_iA)  
[https://www.youtube.com/watch?v=djPVgjp\\_bdU](https://www.youtube.com/watch?v=djPVgjp_bdU)  
<https://www.youtube.com/watch?v=aXT1DZEHSMk>

**March:****Chapter 4: Keeping Warm****Pages 87-114**

Contents	Learning Outcomes
<p><b>Temperature</b>            The degree or intensity of heat present in a substance or object, especially as expressed according to a comparative scale and shown by a thermometer or perceived by touch.            Thermometer is the instrument used to measure temperature. There are different types of thermometer.</p> <ul style="list-style-type: none"> <li>• Kitchen thermometer</li> <li>• Digital clinical thermometer</li> <li>• Clinical thermometer</li> <li>• Room thermometer</li> <li>• Ear thermometer</li> <li>• Laboratory thermometer               <ul style="list-style-type: none"> <li>➤ Mercuric</li> <li>➤ Alcoholic</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Define temperature.</li> <li>• Describe the gain and loss of heat with respect to change of temperature.</li> <li>• Define thermometer.</li> <li>• Label and identify the different parts of a thermometer.</li> <li>• State the units that are internationally recognized to measure temperature.</li> <li>• Measure the temperature of different objects.</li> <li>• List the different types of thermometers and describe their uses.</li> <li>• State the boiling and melting point of water.</li> <li>• Describe the two types of laboratory thermometers.</li> <li>• Note down the reading of thermometer.</li> <li>• Explain the rise and fall of a liquid that is present in a thermometer.</li> </ul>
<p><b>Heat</b>            Heat is a form of energy created by the movement of atoms and molecules in any material. The higher the temperature of a material, the faster the atoms are moving, and hence the greater the amount of energy present as heat.            There are two sources of heat:</p> <ul style="list-style-type: none"> <li>• Natural</li> <li>• Man-made/Artificial</li> </ul>	<ul style="list-style-type: none"> <li>• Define heat.</li> <li>• Construct a flow chart showing the different sources of heat.</li> <li>• Name some natural and man-made heat sources.</li> <li>• Categorize natural and man-made heat sources.</li> </ul>
<p><b>How does temperature affect human beings and animals?</b>            The body temperature of a healthy person varies during the day by about 0.5°C (0.9°F) with lower temperatures in the morning and higher temperatures in the late afternoon and evening, as the body's needs and activities change. Other circumstances also affect body temperature.</p>	<ul style="list-style-type: none"> <li>• State the internal temperature of a healthy human body.</li> <li>• Explain how human body adjusts itself to survive during the seasonal changes.</li> <li>• Identify and categorize the materials used in winters and summers.</li> <li>• Suggest possible reasons for the following:               <ul style="list-style-type: none"> <li>➤ Why birds fluff up their feathers during winters.</li> <li>➤ Why birds migrate during winters.</li> <li>➤ Why marmots hibernate.</li> <li>➤ How lizards manage to survive during summers.</li> </ul> </li> <li>• Explain how hibernation is helpful for animals.</li> </ul>

### Heat Conductors and Insulators

Heat travels quickly through thermal conductors, like metals. Thermal insulators, like plastic and wood, do not let heat travel through them easily.

- Differentiate between conductors and insulators.
- Give examples of conductors and insulators.
- Identify the materials through which heat can and cannot pass.

### Key words:

data logger, lava, volcano, scarce, dry ice, breathing rate, heart rate, hibernation, hot springs, geysers, fragile, mercury, alcohol, temperature, sensor, poisonous, polystyrene, bubble wrap, aluminum, insulators, conductors

### Types of Questions:

- Multiple Choice Questions.
- Structural Questions.
- Short Reasoning Questions.
- Descriptive Questions.

### Sample Questions:

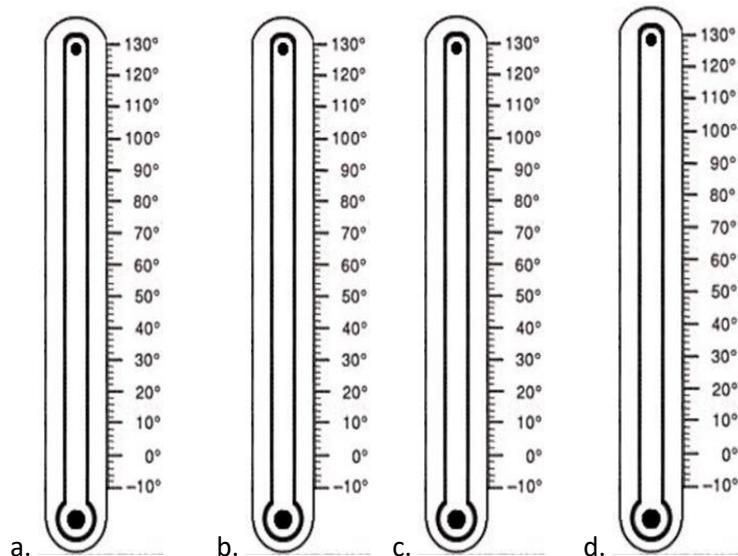
1. Sana kept the following in a room that had temperature of 35° C.



- What will be the possible temperature after 3 hours?
- Why temperatures change?

2. Colour on the thermometers given below to show the following.

- Melting point of ice.
- Boiling point of water.
- Freezing point of water.
- Normal body temperature.



### Workbook Activities:

- Activity 4.2, 4.3, 4.4, 4.8

### Creative Applications:

- To evaluate the absorbency of heat by different colors, through melting of ice.
- To measure the temperatures of different substances/ places.
- To examine the transfer of heat from hotter body to colder body.
- To examine the diffusion rate in hot and cold water.

### IT Surf :

<https://www.youtube.com/watch?v=W5teyd8srp8>  
<https://www.youtube.com/watch?v=7VG945bbPbQ>  
<https://www.youtube.com/watch?v=1L7EI0vKVuU>  
<https://www.youtube.com/watch?v=1EvsTKh8m8Q>  
<https://www.youtube.com/watch?v=Bht8d2vEmsA>

April: Revision for Final Examination 2018-19

May: Final Examination 2019