Dear Students, you can also visit the following link on YouTube for better understanding of the story.  
https://youtu.be/YKNZiKzBAGQ

A HORSE AND TWO GOATS is a short story written by an acclaimed Indian writer R.K. Narayan.

SUMMARY
The story takes place in Kritam, one of the smallest of India’s seven hundred thousand villages. Despite its small size, the village has an impressive name: Kritam means 'crown' or 'coronet' in the Indian language of Tamil. There are less than thirty houses in the village, most of them made of bamboo thatch, straw, mud etc. The only sophisticated residence in the village is the Big House, a brick and cement building. It is painted in a brilliant yellow and blue colour with carvings of gods and gargoyles (carvings of human or animal faces) on several posts.

Muni, an old goat herder, lives with his wife in one of the huts. He is one of the poorest residents of the village but he has not always been poor. There was a time when he had a flock of forty sheep and goats. Years of drought, a great famine and an epidemic had ruined Muni’s flock. Now he is left with two goats.

One day, Muni picks some drumsticks, or seed pods, from the tamarind tree in front of his home and asks his wife to cook them in a sauce for him to eat. Due to the couple’s abject poverty, Muni’s daily meals usually consisted of only millet and an onion at lunch. Muni’s wife agrees to make the sauce if he could get all of the necessary ingredients from the village shop: dhal, chili, curry leaves, mustard, coriander and a potato. Muni has no money to pay for the items, but tries to convince the shop owner to give them to him on credit by engaging in conversation and laughing at his jokes. However, the shop owner shows Muni a ledger of past debts that he owes, and says he must pay them off before he can apply for credit. Muni tells him that his daughter will give him some money for his fiftieth birthday (he was probably lying). The shop owner does not believe him and says that he looks at least seventy.

Muni goes home and tells his wife to sell the drumsticks since he could not get the ingredients for the sauce. He then takes his goats and goes to the highway to let them graze as usual. While he is there, he sits on a pedestal at the base of a life-sized statue of a horse made of clay. The horse was as white as a dhobi-washed sheet and had on its back a cover of pure brocade of red and black lace. The statue had been there since Muni was a young child, and his grandfather had explained to him that the horse was a reference to the mythical horse named ‘kalki’ who according to the Tamil legend is their guardian and, will come to life, when the world ends and will trample all bad men.
While Muni is sitting there, he sees a yellow station wagon coming towards him down the highway. The car runs out of gas (petrol) and comes to a stop on the road in front of the statue. A red-faced man dressed in khaki clothing comes out of the car and asks Muni in English whether there is a gas station nearby. However, Muni cannot communicate with him because he does not speak English and the foreigner does not speak Tamil. The foreigner, who tells Muni that he is a coffee trader from New York, takes an interest in the statue and wants to buy it. He offers to pay Muni for the statue, thinking that it belongs to him. Muni does not understand what the foreigner wants, and initially mistakes him for a police officer because he is dressed in khaki (the color of the uniform worn by a policeman). Muni believes that the man has arrived to investigate a dead body that was found on the border between Kritam and a neighbouring village a few weeks before. He tells him that he does not know anything about the incident and that the murderer probably lives in the other village. The foreigner does not understand. He then takes out his wallet and presents his business card, but Muni is frightened as he thinks that it is a warrant of some kind. The American asks questions about the horse statue which he found very fascinating and wanted to buy. He presumed that Muni is the owner of the statue. Muni eventually realises that the foreigner is interested in the statue, and starts explaining the history of the statue and the legend of Kalki to him. He talks about the Hindu religion and asks the foreigner about his family while the latter tries to negotiate a price for the statue and says that it would look good in his living room. He assures Muni that the statue would have the best home in USA. Despite being unable to understand each other’s languages the conversation continues for a while before the foreigner gives Muni a hundred rupee note and asks him to help him to move the statue to his car. Muni believes at first that the foreigner is asking him for some change, and suggests that he should go to the village money-lender. When the foreigner looks at his goats, however, Muni mistakenly believes that the man is giving him a hundred rupees to buy them. Elated, Muni accepts the money and leaves the goats behind, for him.

Thinking Muni had agreed to sell him the statue, the foreigner flags down a passing truck and pays the men to help him detach the statue from the pedestal and move it into his car. He also pays to siphon off (pump off) some of their gas so he can restart his engine. Muni goes home and shows his wife the hundred-rupee note, telling her that he received it from a foreigner who stopped to buy his goats. Muni’s wife does not believe the story. Her suspicion is confirmed when at that moment the couple hears the goats bleating outside their door. Muni is confused, while his wife suspects him of stealing the money and says she will go to her parents’ home because she does not want to be there when the police comes to apprehend him.

Answer the following questions:
Q1. Give a brief description of the village Kritam.
Q2. Give the meaning of the word ‘Kritam’ in Tamil. Where did Muni live in the village?
Q3. Describe the ‘Big House’.
Q4. In his prosperous days how many sheep and goats did Muni have? What happened to most of them later?
Q5. Where did Muni usually go to graze his goats? Where would he rest?
Q6. What was Muni craving for?
Q7. Explain why the shopkeeper was reluctant to give Muni any items on credit.
Q8. From where did Muni say that he would get money?
Q9. Describe the statue of the horse.
Q10. What did Muni see on the highway? Why did it stop?
Q11. Looking at the clothes of the foreigner, what did Muni think he could be?
Q12. Explain why Muni spoke about the murder with the foreigner.
Q13. How does Muni react when the American gives him his business card?
Q14. How did the American businessman conclude that Muni was the owner of the statue?
Q15. How did Muni’s wife react when she saw the money?

Answer key of English Worksheet-5

Class 10 DIRECT AND INDIRECT SPEECH

ASSIGNMENT 1.
1. B He said that he had passed the examination.
2. B She said that she was sick then.
3. B She said to me, “I can easily beat you in dancing.”
4. B The farmer said that it might rain that evening.
5. B I said to her, “What do you want?”
6. B Peter said that the rain had prevented him from coming to that place.
7. B He asked me where I lived.
8. B Susan said, “There was a storm last night.”
9. B He said that his master was typing letters.
10. B He said to Mark, “Come with me.”

ASSIGNMENT 2.
1. Father told Ronnie that he could help him with his homework.
2. Leela wished to have some coffee.
3. She said, “I have been very foolish.”
4. He prayed that God might bless me.
5. Kim asked me if I was still angry with her.
6. The boy asked why he was lying on the road in that manner.
7. The policeman told the young boy not to use the mobile phone while driving.
8. Samantha said that she had read an interesting novel the previous week.
9. The porter told me that he would take my luggage to the retiring room, provided I gave him a good tip.
10. The teacher asked how many of them thought that the answer was correct.
दो कलाकार
"मनु भण्डरी"
(3) शहीद की चाँदी की कीमत कहिं?
(4) चाँदी की कीमत कहिं?
(5) निर्देशानुसार परिवर्तन कीजिएः-
(अ) ग्राम पंचायत की वार्ता भरी की निर्देशानुसार कीजिए।
(ब) एक वार्षिक राशि निर्देशानुसार लकड़ी की जाना था।
(व) बालक गुड़ा में खेल रहा है। (वापसी दिन नवविवाही)
(श) (भ) वास्तव में अवसर नहीं है।
(ण) वास्तव में अवसर नहीं है।
हिंदी कार्यप्रणाली नंबर-5 की मान्यतालीका।
कक्षा: - II

4.प्रश्न: - "जो दुःख वह अपनी ओरों के देखकर आ गयी थी - "

(i) उत्तर: - प्रस्तुत वाक्यांश में 'उसका' शब्द अस्पष्ट के लिए प्रयुक्त हुआ है। वह स्वयं सेवक दल के साथ बाहु पीढ़ियों की सहायता के लिए बाहेर थी। अतः वह नल गुस्सा के हेतु उभरी थी।

(ii) उत्तर: - "बस, ही दुःख मरी भी अंकित है।" पंक्ति का आसार यह है कि अरुणा बाहु गुस्सा के हेतु लोटकर उबर आई तो उसके देख कि चित्रा ने बाहु के दुःख के स्थिर बनारा हुई थी। अतः बाहु जैसे इसमें उसे घरी भी देखने की सिलेची।

(iii) उत्तर: - बाहु से लोटने के बाद अरुणा की स्थिति ठीक नहीं थी, उसकी हालत का खत्म (खराब) थी। उसकी मृत्यु आरक घड़ी थी। इसके बाद वह यह आफ़ा बनी हो। चित्रा के स्वयं भावनाएँ और संबंधित हो। अंतिम समय वह सेवक की भूमिका गई थी। इसके बाद वहीं ले लौटने के बाद उसकी स्थिति खराब हो गई थी।

(iv) उत्तर: - चित्रा अत्यन्त प्रसन्न ही, क्योंकि वह अपनी चित्रा को सहायता के लिए विदेश में जाने वाली थी। चित्रा के पिता को उसे चित्रा जाने की अनुमति दी थी।

2. प्रश्न: - "आज चित्रा को जाना था। अरुणा सवेरे से - "

2. उत्तर: - प्रस्तुत वाक्यांश के अनुसार चित्रा की विदेश जाना था, क्योंकि वह अपनी चित्रा को और निखारना चाहती थी। वह अपने दुःख के साथ चित्रा की बहन गृहरू के लिए लखनऊ जा चाहती थी।

2. उत्तर: - अरुणा चित्रा की सैलेबल भी। वह और चित्रा रूप में होटल में रहकर पढ़ाई करती थी। वह रूप संबंध सेवन की थी। वह भावुकता और संबंधित होती थी। वह भावुकता और संबंधित होती थी।
3. उत्तर: → चिन्ता देर से इसलिए आई, क्योंकि लॉटे समय उस्ने रात्रे में देखा कि मेड़ के मीठे बॉटी रहने वाली भिखारिया मदरी पड़ी है और उसके दोनों बच्चों उसके पूर्व शरीर से चिपक-कर बुरी तरह झेलते है। उससे रहा नहीं राया और उसने उस दृश्य का स्कैच बना ठाळा। इसी कारण उसे देर हो गई।

4. उत्तर: → चिन्ता की ऑरेंज अपनी सहीली अस्तित्व की ट्रूंड रही थी। हॉस्टल की बहुत सारी लड़कियाँ उसे स्टेजन तक भी छोड़ती थीं, परन्तु अस्तित्व उसे कहीं दिखाई नहीं दी। नाढ़ कलने के समय के अंत तक चिन्ता की अस्तित्व नहीं दिखाई दी। अतः अंत तक वह नहीं आई।
ਆਪਣੀ ਪਾਠ-ਪੁਸਤਕ ਵਿੱਚ ਕਥਾ ਸਰਵਵੇਦਨਾ ਵਿੱਚ ਕਹਾਣੀ ਜੀਨਤ ਆਪਾ ਚੰਗੀ ਤਰਹਾਂ ਩ੜ੍੍੅, ਨੀਚੇ ਦਦਿੱਤ੃ ਕਹਹਣੀ ਦ੃ਸਹਰ ਨੂੰ ਵੀ ਩ੜ੍੍੅, ਅਤ੃ ਅਦਿਆਸ ਲਈ ਦਦਿੱਤ੃ ਩ਰਸ਼ਨਹਾਂ ਦ੃ ਉੱਤਰ ਦਲਖ੅।
स्थल वाहन-व्यवसाय विषय के बाद, बड़ी बेटी है और वह वेबसाइट—स्थल वाहन-व्यवसाय नई रूप में बदल उठा रहा है। उपलब्धी में मुद्दा में तिलक लगाना चाहिए, तक की बोली बड़ी बेटी से घर गई हुई नई रूप में बदल उठा रहा है। उपलब्धी में मुद्दा में तिलक लगाना चाहिए।

सेवक वाहन-व्यवसाय विषय के बाद, बड़ी बेटी है और वह वेबसाइट—स्थल वाहन-व्यवसाय नई रूप में बदल उठा रहा है। उपलब्धी में मुद्दा में तिलक लगाना चाहिए, तक की बोली बड़ी बेटी से घर गई हुई नई रूप में बदल उठा रहा है। उपलब्धी में मुद्दा में तिलक लगाना चाहिए।
श्रीकुमार दी हित करिः करका किर नीतज आपर्यं पितव चरित्रम् की हिरे मनद यदि
वार्या। इति बृजसेन उत्त्रां पेईट, लौर वफदे सुंदरता एवं केवल अंगुरेद विवर। यहि निधि
प्राप्तां ते सारं, स्वसा बुनाय एवं बुनाय एवं बुनाय एव। निधि बुनाय एवं बुनाय एवं बुनाय एव।
जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।

1-इस कहानी में धूम दिखने से पहले, जिस स्थान में यह जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
2-जीत आप ने सार दी माय, जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
3-जीत आप ने कहानी दी, जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
4-जीत आप ने कहानी दी, जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
5-जीत आप ने कहानी दी, जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
6-जीत आप ने कहानी दी, जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
7-जीत आप ने कहानी दी, जीत आप ने कहानी दी सार नूं चूंगी तरहां पूरी, समझ अती नीचे दिती गए दर्शनां हां आदर कर।
THE UNION JUDICIARY – THE SUPREME COURT

(PART- II)

JURISDICTION & FUNCTIONS OF THE SUPREME COURT

Jurisdiction refers to the power that a Court of Law exercises to carry out judgement, to interpret laws and to settle disputes. The Supreme Court has an extensive jurisdiction. The Supreme Court is the Final Interpreter of the Constitution.
ORIGIN ALL JURISDICTION

It extends to those cases which Supreme Court has authority to hear and decide in the first instance. The Supreme Court in its original jurisdiction entertains suits in the following cases:

1. A dispute between the Government of India & one or more States.
2. Disputes between 2 or more States.
3. A Dispute between the Union and any State on one side & other States on the other side.
4. The Supreme Court entertains suits for the enforcement of Fundamental Rights also.
5. It also extends to cases in which interpretation of the Constitution is involved.

APPELLATE JURISDICTION

It is the power of a court to review, amend & overrule decisions of a lower court. An appeal lies to the Supreme Court from any judgement or final order of a High Court in India. The appellate jurisdiction extends to the following cases:

1. Constitutional Cases: Every High Court has the power to interpret the Constitution but the decision of the Supreme Court is final. An appeal lies to the Supreme Court from any judgement of the High Court, if the High Court certifies that the case involves the interpretation of the Constitution.
2. Civil Cases: Appeals in civil matters lie to the Supreme Court, if the High Court certifies (a) that the case involves a substantial question of law of general importance, (b) that the question needs to be decided by the Supreme Court.
3. Appeals in Criminal Matters: There are 2 ways in which an appeal in criminal matters can be presented before the Supreme Court:
   (a) Without a certificate of the High Court
   (b) With a certificate of the High Court

ADVISORY JURISDICTION

The President may seek the opinion of the Supreme Court on any question of law or fact of public importance on which he thinks it is important to seek such advice.

REVISORY JURISDICTION

The Supreme Court is empowered to review any judgement or order made by it with a view to removing any mistake that might have crept in the judgement.
SUPREME COURT IS A COURT OF RECORD

The Supreme Court is a Court of Record. A Court of Record is one whose judgements are recorded for evidence & testimony. They are not to be questioned when they are produced before any Court.

- A court of record is a court where records are admitted with evidentiary value and they are not to be questioned when they are produced before the court.
- Power to punish for Contempt of itself
JUDICIAL REVIEW

It is the power of the Supreme Court to examine the laws passed by the legislature & the orders issued by the executive officials to find whether or not they are permitted by the Constitution.

POWER OF THE JUDICIAL REVIEW

The judiciary in India is provided the power of judicial review through the constitution which means that all the laws passed by the parliament and State Legislatures, constitutional amendments, ordinances and executive orders issued by the executive are reviewed by the judiciary and in case judiciary finds that any one of these is against the constitution, the judiciary has the power to declare it unconstitutional.

ENFORCEMENT OF FUNDAMENTAL RIGHTS

A writ is a “legal instrument to enforce obedience to the orders of a Court.”

The Constitution empowers the Supreme Court & the High Courts to issue the writs for the enforcement of fundamental rights conferred by the Part-III of the Indian Constitution under Article 32 & Article 226. The following writs can be issued by the Supreme Court & High Courts:

WRIT

HABEAS CORPUS
MANDAMUS
PROHIBITION
CERTIORARI
QUO-WARRANTO
1. Writ of Habeas Corpus: Habeas Corpus is a Latin term which means “you may have the body”. The purpose of this writ is that it provides a remedy for a person who has been unlawfully held in prison, in police custody or by a private individual.

2. Writ of Mandamus: The Latin term ‘mandamus’ means “we command”. The purpose of this writ is to compel a lower court or an individual to perform their duty.

3. Writ of Prohibition: A writ of prohibition is issued to prevent a lower court from exercising powers with which it is not legally vested.

4. Writ of Certiorari: The term ‘certiorari’ means “to be informed of what is going on”. By this writ the lower court is asked to hand over the record of a particular case to the higher court.

5. Writ of Quo Warranto: This writ is directed against a person who has wrongfully usurped an office. The office must be a ‘public office’.

Answer the following questions:

Q.1 Explain the meaning of the term ‘jurisdiction’.

Q.2 Name the different types of Jurisdictions. Mention 2 types of cases regarding which the Supreme Court exercises Original Jurisdiction.

Q.3 What is meant by the term “Writ”?

Q.4 What is the scope or purpose of:
(a) Writ of Mandamus (b) Writ of Habeas Corpus

**Q.5** What is meant by ‘Judicial Review’?

**Q.6** What do we mean when we say that the Supreme Court is a Court of Record?

**Q.7** What is meant by “Appellate Jurisdiction”? Name the 2 types of cases in which an appeal shall lie to the Supreme Court.

**Q.8** Name the Courts which are competent to issue Writs for the Enforcement of Fundamental Rights.

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**Answer key of History Civics Worksheet-4**

**Q.1** Which court is known as the Apex Court and why?

**Ans.1** Supreme Court is also known as the Apex Court or the Top Court. Judiciary is the most important pillar of a democratic set-up. Supreme Court is at the apex of Indian Judiciary and is the highest authority to uphold the constitution of India, to protect rights and liberties of citizens and to uphold the values of rule of law. Hence it is known as the guardian of our Constitution.

**Q.2** Mention the composition of the Supreme Court.

**Ans.2** The Supreme Court consists of one Chief Justice of India and 30 judges.

**Q.3** What is the term of office of a judge of the Supreme Court?

**Ans.3** A judge retires at the age of 65 years.

**Q.4** Mention the ground on which a Judge of the Supreme Court can be removed.

**Ans.4** A judge may be removed from his office by the President on the ground of proved misbehaviour or incapacity.

**Q.5** Mention any 2 ways in which the Constitution ensures the independence and impartiality of the judges of the Supreme Court.

**Ans.5** (students you can mention any 2 ways of your choice)
1. APPOINTMENT OF JUDGES

In appointing the judges the President shall consider the recommendations of the Collegium (a group of persons-judges), headed by the Chief Justice of India. Therefore, neither the President (executive) nor the Chief Justice have full control over the appointment of judges.

![Composition of Collegium System]

2. SECURITY OF TENURE

A judge can be removed by the President on the ground of “proved misbehaviour”, therefore the allegation must be thoroughly examined by an impartial tribunal; only then it can be presented in the Parliament.
THE AIMS OR OBJECTIVES OF SOCIAL FORESTRY ARE

1. To remove pressure from the forests.
2. Utilize all vacant and fallow land.
3. Planting of trees in and around agricultural fields, alongside of railway lines, roadsides and rivers etc.
4. Providing the common man with timber, fuel wood and fodder for cattle, etc., thereby protecting forests.
5. Providing efficient conservation of soil and water.
6. Developing local cottage industries and providing employment opportunities to the rural people.
7. Increasing agricultural production by using cow dung as manure.
8. Fulfilling the recreational needs of the people
9. Improving the aesthetic scene of the area.
10. Achieving all around rural development was a part of integrated rural development programme.

FEATURES OF SOCIAL FORESTRY-

1. Raising plantations by local people's participation.
2. Taking the pressure off the forests and making use of all unused and fallow land.
3. Letting local socio- economic conditions govern the structure and function of the forestry.
4. Ensuring quick benefits, sustainable forestry along with short crop rotation.
5. Making use of easily implementable technology.
6. Distributing the benefits derived from such projects equally among the people and socio- economically backward people.

CLASSIFICATION OF SOCIAL FORESTRY –

1. **FARM FORESTRY** - In this scheme, the farmers are encouraged to plant trees on their farm land, which not only meets their domestic needs of providing fuel wood, etc. but also helps to give shade for the crops.
2. **COMMUNITY FORESTS**: This scheme raises trees on community land for the entire community. The government helps by providing seeds and fertilisers, etc. The responsibility of protecting the trees lies with community itself.

3. **EXTENSION FORESTRY**: helps to increase the boundaries of forests. The villagers are encouraged to grow trees on wasteland especially on common land i.e. growing quick growing species on the sides of roads, canals, railway lines etc.

4. **AGRO FORESTRY**: It is an intermediate stage between forestry and agriculture. It is a collective name for Land Management System where trees grow with crops and livestock.

**OBJECTIVES OF AGROFORESTRY**:

1. To reduce pressure on natural forests.
2. To check soil erosion.
3. To maintain natural fertility of the soil.
4. To maintain ecological balance.
5. To make the best use of all the available resources.

**ADVANTAGES OF AGROFORESTRY**:

1. Provides long term economic stability
2. Provides year around production
3. Provides resources like firewood, animal fodder, construction material etc.
4. Increases soil fertility as a variety of soil micro-organisms can thrive on it.
5. Reduces pollution and global warming etc.

**PROBLEMS FACED IN INDIA'S SOCIAL FORESTRY EFFORTS**:

1. Uncertainty of co-ordination among government department.
2. Lack of information on existing land, demand of fuel, wood and fodder, etc.
3. Lack of awareness among villagers about government's plan.

**IMPORTANT TERMS**:

1. **Natural Vegetation**: refers to the plant cover that has not been disturbed over a long time, so as to allow its individual species to adjust themselves fully to the climate and soil conditions. i.e. vegetation that grows on their own without any interference.
2. **Forestry**: The science, art and practice of managing and using trees, forests and their associated resources.
3. **Ecosystem**: - The inter-dependence of species of plants and animals in a given area is known an ecosystem.

4. **Biome**: - A very large ecosystem on land having different type of vegetation and animal life.

5. **Pure Stand**: - A timber stand in which at least 75% of the trees are of a single species.

6. **Afforestation**: - To increase the area under forests, more and more trees are planted.

7. **Reforestation**: - Re-establishing a forest by planting or seeding an area from which forest vegetation has been removed.

8. **Reafforestation**: - In regions where the forests have experienced great damage, two small seedlings are planted in place of a felled tree.

9. **Deforestation**: - Cutting down the trees of a forest

10. **Silviculture**: - means timber farming ie. the preparation of soil to grow trees at the same time all the trees mature together and need clearing cutting possible.

11. **Social Forestry**: - It is the awareness regarding conservation of forests and to meet the needs of the rural people regarding fuel and timber.

12. **Van Mahotsav**: - A festival of planting new trees every year during the rainy season, practised to create public awareness for the need for tree planting.

13. **Chipco Movement**: - A classic approach to save the trees is the Bahuguna's chipco Movement of 1974 by the women of Reni in North India, where they rescued the trees at the cost of their own life. This is a living example of general public awareness which has become a widespread movement in the country to conserve trees.

14. **Joint Forest Management**: -(JFM) It is a programme to develop and to protect the forest with the help of local communities.

15. **Agro Forestry**: - It represents the intermediate stage between forestry and agriculture. A system of managing a piece of land through combined production of agricultural crops and forest crops and animal rearing, to ensure the most efficient land use.

16. **Phenmatopthores**: - or breathing roots which act as respiratory organs. These roots grow out from the water surface. These are aerial roots.

17. **Degradation of forest**: - Reduction of forest cover due to factors such as forest fires, climate change, pests and diseases and so on.

18. **Tree Line**: - Above the tree line, no trees and plants can grow as these areas are too cold and windy for trees to grow. 'Birch' is the tree which can grow up to the height of tree line.

19. **Xerophytic**: - species of plants and trees that can survive with little water.

20. **Stilt roots**: - are large roots on all sides of a tree. They prevent the tree from being uprooted, this happens often when the tree is out washed by rising sea level.
Questions and answers:-

Q1. Differentiate between the following:-

1. Afforestation and Deforestation
2. Afforestation and Re-afforestation
3. Evergreen and Deciduous forests
4. Social forestry and agro forestry.

Q2 Answer the following questions: -

Q1. Mention the types of vegetation prevailing in India?
Q2. Identify the type of vegetation: -
   a) The forest are found in areas having rainfall between 70 cm to 100 cm.
   b) The forests are found in areas with annual rainfall of 200 cm or more.
   c) The forests are found in areas of less than 70 cm of rainfall.

Q3. Mention two main characteristics of Tropical Rain Forests?

Ans: - Two main characteristics of Tropical Rain Forests: -
   i) They are found in the areas of heavy rainfall which is more than 200 to 300 cm.
   ii) Forest looks green always because trees of this forest do not shed their leaves in a particular season.

Q4. Name the tree, the timber of which could be used for the following:
   i) A soft and white timber used for making toys and match boxes.
   ii ) A hard durable timber used for shipbuilding and furniture making.
   iii) A sweet smelling timber which yields an oil, used for making handicrafts.

Ans:-
   i) Silver fir
   ii) Sal
   iii) Sandal wood.

Q5. Write reasons why monsoon deciduous forests are commercially more valuable than other types of forests.
Ans: 1. Provide valuable timber and other forests products.
2. These forests are not as dense as tropical evergreen forests.
3. The wood of the trees is not so heavy as to be difficult to transport
4. These trees grow in pure-stands and are therefore easier to exploit for commercial purposes.
5. Forests are accessible.
6. Yield hard wood or durable word accept any product.

Q6. How do forests- i) Have a favourable effect on the climate of the region?
ii) act as a flood control measure?

Ans - i) Forests control humidity, lower the temperature and can be responsible for rain.
ii) The groots of the trees check the speed of running water which then does not overflow it's banks and also because the roots take in some of the water. Absorb or increase percolation or reduce surface run off.

Q7 what are Tidal Forests? Name two typical trees found there?

Ans: Tidal forests are common in areas along the coasts and the mouth of the rivers which are affected by tides. It can survive both in fresh and salt water. Sundari, Gorjan and Hintal are typical examples of tidal forests.

Q8. Explain why is the forest cover in India shrinking?

Ans : The forest area is reducing in India due to :
(a) Deforestation for timber and fuel.
(b) Shifting cultivation practised by tribals.
(c) Overgrazing
(d) Increase in population and demand for food and shelter.

Q9. (i)What is Social Forestry? (ii)Give any three features?
(iii) Give any four of its objectives?

Ans: (i) Social forestry refers to the management and the protection of forests. It includes the planting of trees on land which is barren. The main aim is the development of the environment as well as social and rural upliftment.
(ii) 1. Raising plantations by local people's participation.
2. Taking the pressure off the forests and making use of all unused and fallow land.
3. Ensuring quick benefits, sustainable forestry along with short crop rotation.

(iii) Objectives -
1. To reduce pressure on natural forests for obtaining timber as well as non-timber forest produce.
2. To check soil erosion and to maintain the natural fertility of the soil.
3. To maintain ecological balance along with proper utilisation of farm resources.
4. To make best use of all the available resources like land, manpower, livestock, ecological factors, etc. to obtain a variety of forest products such as food, fuel, fodder, livestock, recreation and a variety of forest products.

Q10. What is the National Forest Policy of India? What are its objectives?

Ans: The National Forest Policy was initially launched in 1952 but was renewed later in 1988. This step was taken primarily for the development and conservation of forests. The main objectives of the policy is to -
1) Conserve the forests by planting more trees and encourage other programmes related to forestry like social forestry, agro-forestry, community forestry etc.
2) Prevent soil erosion and denudation of land.
3) Prevent the encroachment. Of land by sand dunes along coastal regions and dry areas.
ANSWER THESE

- A force \( F \) acts on a body and displaces it by a distance \( S \) in a direction at an angle \( \theta \) with the direction of force.

(a) Write the expression for the work done by the force.

(b) What should be the angle between force and displacement so that the work done is

(i) zero

(ii) maximum?

- State whether work is done or not by writing yes or no, in the following cases?

(a) A man pushes a wall.

(b) A coolie stands with a box on his head for 15 min.

(c) A boy climbs up 20 stairs.

- A coolie X carrying a load on his head climbs up a slope and another coolie Y carrying the identical load on his head move the same distance on a frictionless horizontal platform. Who does more work? Explain the reason.

- A water pump raises 50 litres of water through a height of 25m in 5 s. Calculate the power of the pump required.

\[(\text{Take } g = 10\text{N kg}^{-1} \text{ and density of water } = 1000\text{kg m}^{-3}).\]

- (a) A body of mass \( m \) is moving with a velocity \( v \). Write the expression for its kinetic energy.

- (b) Show that the quantity \( 2K/v^2 \) has the unit of mass, where \( K \) is the kinetic energy of the body.

* A boy of mass \( m \) climbs up a stairs of vertical height \( h \).

(a) What is the work done by the boy against the force of gravity?

(b) What would have been the work done if he uses a lift in climbing the same vertical height? Explain.

* If a boy of mass 60kgf jumps from point A to point B, find the velocity of the boy at point B if 30 percent of potential energy is lost.
Which device converts chemical energy into electrical energy?
Which device converts chemical energy into mechanical energy?
What energy transformations occur in a steam engine?
What is the work done by Earth to revolve around sun? Explain.

Answer key of Physics Worksheet-5

Here
force $F = 5000 \text{ N}$
velocity $v = 90 \text{ km/h} = 25 \text{ m/s}$

Power is given by
$P = F \cdot v$
$P = 5000 \text{ N} \times 25 \text{ m/s} = 125000 \text{ W}$
$= 125 \text{ KW}$

So, according to the question, the weight (not mass) of the body is 40N.

And, at the height of 10m the body, has gained some potential energy.

Now, when the body falls from the height of 10m, the body looses a part of its potential energy, which is instead converted to kinetic energy, to keep the total energy constant (provided that we neglect the energy loss due to opposing force by air).

Now, just before the body hits the ground, the entire potential energy that the body had at the height of 10m will be converted into kinetic energy.

So, potential energy at the height (h) of 10m

$= m \times g \times h$

$= \text{weight of the body} \times h$

$= 40 \times 10$
\[ = 400\text{J} \]

So, just before hitting the ground, the body will have a kinetic energy of 400J

- We need to calculate the distance of light object

Using equation of motion

\[ V^2 - u^2 = 2as \]

\[ s = \frac{v^2 - u^2}{2a} \]

We need to calculate the work done by light object

Using formula of work done

\[ W = F \cdot S \]

Put the value of F and s

\[ W = ma \times \frac{v^2 - u^2}{2a} \]

\[ W = \frac{1}{2}m(v^2 - u^2) \]

So, the work done by a light object is equal to the change in kinetic energy.

The kinetic energy of the light object is

\[ K.E = \frac{1}{2}mv^2 \] ...(I)

Momentum of the object is

\[ P = mv \] ...(II)

Multiplying and dividing with m in equation (I)

\[ k = \frac{1}{2} \frac{mv^2 \times m}{m} \]

\[ k = \frac{(mv)^2}{2m} \]

Put the value of mv from equation (II)

\[ k = \frac{p^2}{2m} \]
Momentum is same for light and heavy body.

The kinetic energy of the heavy body is

\[ K.E' = \frac{1}{2} (3m)v^2 \] ....(III)

We need to calculate the ratio of their potential energies

Divided equation (I) by equation (III)

\[
\frac{K.E}{K.E'} = \frac{\frac{1}{2}mv^2}{\frac{1}{2} (3m)v^2} \\
\frac{K.E}{K.E'} = \frac{1}{3}
\]

Hence, The work done by a light object is equal to the change in kinetic energy.

The ratio of their potential energies is 1:3

- Given,
  
  \[ m = 78 \text{ kg}, \text{ height} = 870, v = 62 \text{ m/s} \]
  
  (a) We know that,
  
  \[ K.E = \frac{1}{2}mv^2 \]
  
  \[ = \frac{1}{2} \times 78 \times (62)^2 \]
  
  \[ = 149916 \text{ J} \]

  (b) We know that,
  
  \[ P.E = mgh \]
  
  \[ = 78 \times 9.8 \times 870 \]
  
  \[ = 665028 \text{ J} \]

  (c) Total mechanical energy = K.E + P.E

  \[ = 149916 + 665028 \]

  \[ = 814944 \text{ J} \]

- The kinetic energy decreases and the potential energy becomes maximum at B where it is momentarily at rest, when the bob swings from A to B.
From B to A, again the potential energy changes into kinetic energy and this process repeat again and again. So, while swinging, the bob has the potential energy at the extreme position B or C and kinetic energy at resting position A. The bob has both the kinetic energy and potential energy at an intermediate position (between A and B or between A and C) and the sum of both the energies (i.e the total mechanical energy) remains constant throughout the swing.
Coordinate bonding- It is the type of covalent bonding in which shared pair of electrons belong to single atom which acts as a donor and the other element or atom acts as acceptor. This type of bonding is shown by arrow pointing from donor to acceptor.

DONOR → ACCEPTOR

1. Hydronium ion (H$_3$O)$^+$

Water donates its lone pair of electron to proton and positive charge is shared by whole of the ion.

2. Ammonium ion (NH$_4$)$^+$
Ammonia donates its lone pair of electron to proton and positive charge is shared by whole of the ion.

3. Hydroxyl ion (OH⁻)

What is the difference between Electrovalent Bond and Covalent Bond?

<table>
<thead>
<tr>
<th>Electrovalent Bond vs Covalent Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrovalent bond is a chemical bond between two atoms due to a transfer of electron(s) from one atom to the other.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metals vs Non-Metals</th>
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</thead>
<tbody>
<tr>
<td>Electrovalent bonds can be observed between <strong>metals and non-metals</strong>.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Difference in Electronegativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>The difference in electronegativity between two atoms is higher in electrovalent bonding.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solubility in Water and Electrical Conductivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solubility in water and electrical conductivity is higher in compounds with electrovalent bonding.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boiling and Melting Points</th>
</tr>
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<tbody>
<tr>
<td>Boiling and melting points are higher for electrovalent bonding.</td>
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</table>

Difference between polar and non polar covalent compound
## Polar Bonds Versus Nonpolar Bonds

<table>
<thead>
<tr>
<th>Polar Bonds</th>
<th>Non-polar Bonds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polar bonds are covalent bonds between elements that have different electronegativity.</td>
<td>Non-polar bonds are covalent bonds between elements that have the same electronegativity.</td>
</tr>
<tr>
<td>The electron cloud is distorted.</td>
<td>The electron cloud is not distorted.</td>
</tr>
<tr>
<td>They have charges building up at their poles.</td>
<td>They do not have such a charge build up.</td>
</tr>
<tr>
<td>Polar bonds have a dipole moment.</td>
<td>Non-polar bonds do not have a dipole moment.</td>
</tr>
<tr>
<td>H bonds occur between charged poles of polar bonds.</td>
<td>Van der Waal interactions are commonly seen between non-polar bonds.</td>
</tr>
</tbody>
</table>
QUESTIONS

I. Why is sodium chloride good conductor in molten state?
II. Give 2 difference between polar and non polar covalent compound.
III. Show the bonding in hydronium ion.
IV. Why are the ionic compound mostly solid?

Answers to worksheet -5

1. Directly in notes
2. Directly in notes
3. Directly in notes
4. Lone pair of the electron is the one which do not take part in bonding.
   Rest of the answer directly in notes
ABSORPTION BY ROOTS

Water is very crucial for plants for different metabolic activities. One of the most significant functions of the roots is to absorb water and minerals from the soil. Terrestrial plants obtain their water supply from the soil. The method of water absorption by the roots from the soil is known as "mechanism of water absorption". The two processes involved in absorption are:

Active absorption & Passive absorption. Absorption of water and other essential nutrients takes place in water with the help of roots and leaves.

In this chapter, you will learn about absorption by roots.

Cell sap: A solution contained inside the cell vacuole containing dissolved salts. Semi-permeable membrane: A thin membrane which selectively allows the movement of certain molecules in and out of the cell.

Water is needed for:

- Photosynthesis.
- Maintaining turgidity of the cell.
- Cooling the plant by transpiration.
- Transport of dissolved mineral salts.

Above the region of elongation occur a large number of fine, hair-like outgrowths called root hairs. These arise from the epidermal tissue of the root.

The root hair contains a cell wall made of an outer layer of pectin and an inner layer of cellulose.

Functions of Root Hair:

- Increase the surface area of absorption of the root.
- Allows the entry of water due to imbibition and passive diffusion.
- The cell membrane is selectively permeable in nature and restricts the movement of molecules into and from the root hair.

Ability of roots to absorb water depends on three factors:

- Large surface area,
- Root hairs with cell sap at higher concentration than soil water.
- Thin walled root hairs.

Mineral nutrients are supplied to the plant only in dissolved form.
All processes like photosynthesis, absorption, transpiration and transportation require water.

**Imbibition:**
- The process by which a living or dead cell of plants absorb water and swell up but does not dissolve in it, is called Imbibition.
- Dry seeds soaked in water swell up due to imbibition. The cell and protoplasm take up water by capillary action and diffusion.
- Starch and cellulose are known to undergo passive absorption of water.
- Causes the root hair to take up water in the soil due to difference in the saturation levels of water.
- Occurs only when solid plant material (dry wood/dried seeds) comes into contact with water.
- During the rainy season it is difficult to open or close wooden doors because they imbibe water.
- A can full of soaked seeds can cause the lid to burst open because of the pressure on the lid.

There are multiple forms of passive transport namely:
- Simple diffusion.
- Facilitated diffusion.
- Filtration.
- Osmosis.

No energy is required for these movements.

**Diffusion:** *Diffusion* is the movement of molecules of liquids and gases from their region of higher concentration to their region of lower concentration until it is same he given space. Example: When perfume is spilt in one corner of a room its fragrance spreads all over the room.
- Cell membranes are permeable to both CO$_2$ and O$_2$ so the two gases are able to diffuse freely.
- Respiration occurs due to diffusion.
- Diffusion allows the internal walls of the plant cells to remain moist.
- It allows for transport of ions through cytoplasm.

**Imbibition**

*Imbibition* is a special type of diffusion where water absorbed by solids-colloids causes a tremendous increase in volume. Examples are the absorption of water by seeds and dry wood.
- Causes the root hair to take up water in the soil due to a difference in the saturation levels of water.
- Occurs only when solid plant materials like dry wood, dried seeds or grains come into contact with water.
- Produces a lot of pressure e.g. a piece of dry wood can even break a rock when it has imbibed water.
- During the rainy season, it is difficult to open or close wooden doors because they imbibe water.
- A can full of soaked seeds can cause the can to burst open because of the pressure on the lid.
- Grains imbibe water and crack when godowns are flooded with rain water.

**Osmosis**

*Osmosis* is the spontaneous net movement of water across a semipermeable membrane from a region of low solute concentration to a solution with a high solute concentration, down a solute concentration gradient.
- Osmosis can be regarded as a special kind of diffusion of water molecules from a region of their high concentration to a region of low concentration through a semi-permeable membrane.
- The ability of a membrane to allow the passage of certain substances only to pass through it is called semi-permeability. All biological membranes are semi-permeable in nature. Normally, they allow movement of solvent molecules and restrict entry of solute molecules.

**Functions of osmosis:**
- Helps the absorption of water and minerals by the root hairs.
- Maintains turgor pressure and the water content of the plant cells.
- Ensures flow of water and minerals from one cell to the other.
- Controls the opening and closing of the guard cells.
- The pressure required to prevent the osmotic entry of water in a solution is called osmotic pressure.
When a solution is concentrated it means that the amount of water is less and the amount of solute is more. So water will move into the concentrated solution from outside. When a living cell is placed in solutions of different concentrations, it may shrink, swell or remain unchanged depending on the relative concentration of water and solutes with respect to their concentration in the cell.

Osmosis can also be demonstrated using a peeled potato. If the skin is not removed, no osmosis will be seen. The apparatus used to measure osmosis is called *Osmoscope.*

As the diameter of tubes decreases, capillarity increases. That is why tall trees have very thin xylem vessels.

![Osmosis in a plant cell](image)

**Isotonic solution**--- A solution in which the concentration of water and solute is same on both side of the cell membrane. (No osmosis)

**Hypotonic Solution**--- A solution in which the solution outside the cell is at lower concentration then the fluids inside the cell. (endosmosis will take place)

**Hypertonic solution**--- A solution in which the solution outside the cell is at higher concentration then the fluid inside the cell (exosmosis will take place)

**Answer the following questions**—

1. Define diffusion
2. Define osmosis
3. Define imbibitions
4. Why do the soaked seeds swell up when kept in water overnight.

---

**Answer key of Biology Worksheet-5**

ANS 1—It is the removal of nitrogenous waste products..urea and uric acid from the body.

ANS 2—Liver

ANS 3—Ultrafiltration, Reabsorption & tubular secretion.

ANS 4—It is a process by which the nitrogenous waste is removed by an artificial machine in case of kidney failure.

ANS 5—in glomerulus

..................................................................................................................................................................................
In the modern philosophy of marketing a consumer is supposed to be the king and business is expected to provide maximum possible satisfaction to consumers. But in reality consumers are often exploited. In a country like India there is shortage of many products. A new forms enjoy monopoly powers in the marketplace. A large majority of consumers are ignorant and illiterate and do not know their rights. Due to all these reasons consumers are often deprived of their rights. They are often exploited through misleading advertisements, poor quality goods, overcharging etc.

**MEANING OF CONSUMER EXPLOITATION:**

Consumer exploitation means harming the interest of consumer in various ways. When consumers do not get value for their money due to dishonesty on the part of traders and manufacturers, consumer exploitation takes place. Consumers feel cheated. Sometimes consumers are not even aware that they are being exploited. Consumer exploitation violates the basic rights of consumers. Too greedy retailers or manufacturers want to earn unreasonable profits. Such great makes them to exploit consumers.

**Types of consumer exploitation:**

Consumers are exploited in several ways, such as the following:

1. **Overcharging:** charging unjustified high prices.
2. **Under weighing:** giving less weight or quantity.
3. **Adulteration:** mixing undesirable elements in goods example horse dung in Dhaniya powder.
4. **Misleading advertising**: Use a particular cream and you will become fair within a week.
5. Not informing consumers about adverse impact of the product.

**IMPORTANCE OF CONSUMER AWARENESS:**

Consumer exploitation occurs largely due to the ignorance of consumers full stop consumers who are aware of their rights are not likely to be exploited. Aware and careful consumers can oppose attempt made to exploit them. Government and consumer Association often run campaigns to make consumer aware. "**JAGO GRAHAK JAGO**" is the most popular campaign.

**THE CONSUMER PROTECTION ACT, 1986**

The **Consumer Protection Act, 1986 (COPRA)** is an Act of the **Parliament of India** enacted in 1986 to protect the interests of consumers in **India**. It is replaced by The Consumer Protection Act 2019. It is made for the establishment of consumer councils and other authorities for the settlement of consumer's grievances and matters connected therewith it. The act was passed in Assembly in October 1986 and came into force on December 24, 1986.

**FEATURES OF THE ACT:**

1. **Social Welfare law**: It is a highly progressive piece of social welfare legislation. It is acclaimed as the Magna Carta of Indian consumer. This is a unique law which directly
pertains to consumers in the market place and seeks to redress complaints arising therefrom.

2. **Comprehensive Provisions and Effective Safeguards:** Its provisions are very comprehensive. It provides effective safeguards to the consumers against various types of exploitation and unfair trade practices. In fact, it provides more effective protection to consumers than any other law in India.

3. **Special Consumer Courts:** The Act has created special consumer courts for enforcement of the rights of consumers.

4. **Three-Tier Grievance Redressal Machinery:** The Act provides for a three-tier consumer grievance redressal machinery ---District Forums at the base, the State Commission at the middle level and the National Commission at the apex level. The redressal machinery is quasi-judicial in nature.

5. **Simple and Inexpensive:** There are no complicated or elaborate procedures or other technicalities. The redressal machinery merely to observe the principles of natural justice. No court fee or any other charge is to be paid by the complainant. It is not obligatory to engage any advocate. The complainant can write his grievance on a simple paper along with the name and address of the opposite party against whom the complaint is made. Thus, the Act provides a simple, convenient and inexpensive redressal of consumer grievances.

6. **Covers Goods and Services:** The Act covers both goods and services rendered for consideration by any person or organization including public sector undertakings and Government agencies. However, services rendered free of charge or under any contract of personal service are excluded. All suppliers of goods and services in private, public and cooperative sectors are covered under the Act.

7. **Time Frame:** The Act lays down time limits for the disposal of cases so as to provide speedy redressal of grievances.

8. **Class Action:** The Act allows filing of class action complaints on behalf of groups of consumers having common interest.

9. **Check on Unfair Trade Practices:** The Act also covers complaints relating to unfair trade practices. Thus, a consumer can protect against food adulteration, short weighing and overcharging, directly to the District Forums. The consumer can pick up a food sample from a shop, get it analysed by a chemist and file a complaint on that basis.

10. **Check on Overcharging:** The Act also provides for complaints against charging in excess of the price of a product fixed by a law or rule and/or displayed on the packaged commodities.
1. Right to safety:
Consumers have the right to be protected against the marketing of goods which are hazardous to life and health. Food additives and colours, dangerous toys, flammable fabrics, unsafe appliances are examples of such goods. Consumers are entitled to healthy and safe products.

2. Right to information:
It means the right to be informed about the quality, quantity, potency, purity, standard and the price of goods so as to protect the consumers against unfair trade practices.

3. Right to choose:
Consumers must have access to a variety of goods at competitive prices. Free competition and wide variety enable consumers to choose the best goods.

4. Right to be heard:
Consumers need to be assured that their interests will receive due consideration at appropriate forums. This right includes the right to make protest.

5. Right to education:
Consumers have the right to be made aware of their rights and remedies available to them for redressal of their grievances. This will help to make consumer conscious and protect themselves against frauds by businessman.

6. Right to redressal:

Standing machinery must be provided for quick and satisfactory redressal of consumer grievances against unfair trade practices and exploitation by unscrupulous elements. The consumer has been granted the right of redress if the performance, quality, etc of a product is unsatisfactory.

7. Right to healthy environment:

Consumers have the right to live in a pollution free environment. This is necessary to enhance the quality of human life.

**REMEDIES AVAILABLE TO THE CONSUMER:**

(a) **Removal of Defects:** If after proper testing the product proves to be defective, then the ‘remove its defects’ order can be passed by the authority concerned.

(b) **Replacement of Goods:** Orders can be passed to replace the defective product by a new non-defective product of the same type.

(c) **Refund of Price:** Orders can be passed to refund the price paid by the complainant for the product.

(d) **Award of Compensation:** If because of the negligence of the seller a consumer suffers physical or any other loss, then compensation for that loss can be demanded for.

(e) **Removal of Deficiency in Service:** If there is any deficiency in delivery of service, then orders can be passed to remove that deficiency.
(f) **Discontinuance of Unfair/Restrictive Trade Practice:** If a complaint is filed against unfair/restrictive trade practice, then under the Act that practice can be banned with immediate effect.

(g) **Stopping the Sale of Hazardous Goods:** Products which can prove hazardous for life, their sale can be stopped.

(h) **Withdrawal of Hazardous Goods from the Market:** On seeing the serious adverse effects of hazardous goods on the consumers, such goods can be withdrawn from the market.

(i) **Payment of Adequate Cost:** In the end, there is a provision in this Act that the trader should pay adequate cost to the victim concerned.

Q1. What is Consumer Exploitation?
Q2. State any four rights of a consumer.
Q3. Discuss the types of Consumer Exploitation.
Q5. Mention any two remedies which are available to an affected consumer under the Consumer Protection Act.

Class 10 Commercial Studies Worksheet-4

**Ans:**

1. **Advertising agency** is a company whose business is to create advertisements for other companies or organizations for some fee/commission. It is a service-based business dedicated to creating, planning, and handling advertisements for its clients.

2. Sales promotion consists of all promotional activities other than advertising, personal selling, and publicity that help to increase sales through non-repetitive and one-time communication. According to **American Marketing Association**, “sales promotion refers to those activities other than personal selling, advertising, and publicity that stimulate consumer purchasing and dealer effectiveness, such as – display shows and exhibitions, demonstrations, and various other non-recurrent selling efforts not in ordinary routine.”
**Ans:3**

<table>
<thead>
<tr>
<th>Point of Distinction</th>
<th>Sales Promotion</th>
<th>Advertising</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Meaning</td>
<td>Marketing activities which stimulate consumer buying and dealer effectiveness.</td>
<td>Any paid form of impersonal presentation and promotion of a product, service or idea by an identified sponsor.</td>
</tr>
<tr>
<td>2. Time horizon</td>
<td>Short term perspective.</td>
<td>Long term perspective.</td>
</tr>
<tr>
<td>3. Aim</td>
<td>To increase immediate sales.</td>
<td>To build image of producer and his product</td>
</tr>
<tr>
<td>4. Scope</td>
<td>Narrow — Free samples, coupons, contests, premium offers, displays, exhibitions, etc.</td>
<td>Wide — Newspapers, magazines, TV, radio, posters, films and other media.</td>
</tr>
<tr>
<td>5. Regularity</td>
<td>Limited period, non-recurring.</td>
<td>Regular and recurring.</td>
</tr>
<tr>
<td>6. Emphasis</td>
<td>Supplement to advertising and personal selling, pushes product towards buyers.</td>
<td>Inform, persuades and reminds, attracts customers towards the product.</td>
</tr>
</tbody>
</table>

**Ans:4** **PREMIUM:**

A sales premium or bonus offer is the offer of an article free of cost or at a nominal price on the purchase of a specified product. For instance, one ‘Lux’ toilet soap may be given free on the purchase of an economy pack of ‘Surf’ detergent powder. A premium is also known as a combination offer. Premiums can be of following types:

(a) **With Pack Premium:** In which the bonus item is included either inside or outside the package, e.g. one spoon free in the packet of Horlicks.

(b) **Price off premium:** Which implies a reduction in price on the purchase of a large or economy pack, e.g. save Rs.5 on purchase of family pack.

(c) **Money Refund premium:** Wherein the cost of the article is fully or partially refunded on the presentation of the proof of purchase, e.g. wrapper, cash memo etc.

(d) **Extra quantity premium:** Under which a customer can get one unit of the product free on the purchase of specified units, e.g. one tooth brush free on the purchase of six tooth brushes.

**Ans:5** It is a term used to describe a variety of web based platforms, applications and technologies that enable people to socially interact with one another online. Media messages designed to educate or motivate members of a public to engage in voluntary social activity such as community service, energy conservation, recycling. Beti Bachao Beti Padhao, Blood Donation, Smoking is injurious to health, Swatch Bharat Abhiyan, are some of the examples of social advertising. Examples of social media are Facebook, Twitter, LinkedIn, Instagram, Snapchat etc.

**Ans:6** **1. DISTRIBUTION OF FREE SAMPLES:**

Under this method, the producer distributes free samples of his product among the consumers. Sales representatives distribute these samples from door-to-door. This method is used mostly in case of products of daily-use, e.g., Washing Powder, Tea, Toothpaste, etc. Thus, the consumers willy-nilly make use of free sample. If it satisfies them, they buy it and in this way sales are increased.
2. TRADING STAMPS:
Trading stamp is a stamp with a certain value given as a premium by a retailer to a customer, specified quantities of these stamps being exchangeable for various articles.

3. FREE OFFER:
In order to promote sales, some firms offer a free gift with the purchase of an expensive product. For example, a cordless phone is offered free on the purchase of refrigerator or colour TV.
LET US CONTINUE WITH THE ESTIMATION OF MEDIAN QUARTILES BY OGIVE:

EXAMPLE 1: 40 students enter for a game of short put competition. The distance thrown (in meters) is recorded below:

<table>
<thead>
<tr>
<th>DISTANCE (in meters)</th>
<th>12-13</th>
<th>13-14</th>
<th>14-15</th>
<th>15-16</th>
<th>16-17</th>
<th>17-18</th>
<th>18-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO OF STUDENTS</td>
<td>3</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Use a graph paper to draw an ogive for the above distribution.

Use a scale of 2cm=1m on one axis and 2cm=5 students on the other axis.

Hence, using your graph find

(i) The median
(ii) Upper quartile
(iii) No of students who cover a distance which is above 16.5 m.

SOLUTION:

<table>
<thead>
<tr>
<th>DISTANCE (in meters)</th>
<th>NO OS STUDENTS</th>
<th>C.F.</th>
<th>POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-13</td>
<td>3</td>
<td>3</td>
<td>(12,0)</td>
</tr>
<tr>
<td>13-14</td>
<td>9</td>
<td>12</td>
<td>(13,3)</td>
</tr>
<tr>
<td>14-15</td>
<td>12</td>
<td>24</td>
<td>(14,12)</td>
</tr>
<tr>
<td>15-16</td>
<td>9</td>
<td>33</td>
<td>(15,24)</td>
</tr>
<tr>
<td>16-17</td>
<td>4</td>
<td>37</td>
<td>(16,33)</td>
</tr>
<tr>
<td>17-18</td>
<td>2</td>
<td>39</td>
<td>(17,37)</td>
</tr>
<tr>
<td>18-19</td>
<td>1</td>
<td>40</td>
<td>(18,39)</td>
</tr>
</tbody>
</table>

Here, \( n=40 \)

(i) Median = \( \left( \frac{n}{2} \right) \)th observation
\( = \left( \frac{40}{2} \right) \)th observation 
\( = 20^{th} \) observation 
\( = 14.7 \) meters  

(ii) Upper quartile \( (Q_3) = \left( \frac{3n}{4} \right) \)th observation 
\( = \left( \frac{3 \times 40}{4} \right) \)th observation 
\( = 30^{th} \) observation 
\( = 15.6 \) meters 

(iii) No of students who covers a distance which is above 16.5 meters: 
Let the point C on x-axis represent 16.5 m. Through C, draw a vertical line to meet the ogive at R. Through R, draw a horizontal line to meet the y-axis at L. The ordinate of the point L represent 35 students on y-axis. 
Therefore, the no of students who covers distance above 16.5 m will be = Total no of students – no of students covering less than equal to 16.5 meters 
\( = 40 - 35 \) 
\( = 5 \) students
EXAMPLE 2: A survey regarding height (in cm) of 60 boys belonging to class 10 of a school was conducted. The following data was recorded:

<table>
<thead>
<tr>
<th>HEIGHT (in cm)</th>
<th>135-140</th>
<th>140-145</th>
<th>145-150</th>
<th>150-155</th>
<th>155-160</th>
<th>160-165</th>
<th>165-170</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO OF BOYS</td>
<td>4</td>
<td>8</td>
<td>20</td>
<td>14</td>
<td>7</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

Taking 2 cm = height of 5 cm along x-axis and 2 cm = 10 boys along y-axis.

Draw an ogive then use the graph to estimate the following

(i) The median
(ii) Lower quartile
(iii) If the students having height less than 158 cm are considered as short boys of the class, then find the no of boys in the class who are short.

SOLUTION: You have already learnt the method used to draw an ogive

Median = \( \frac{n}{2} \)th observation
= \( \frac{60}{2} \)th observation
= 30th observation
= 149 cm

Lower quartile \( (Q_1)\) = \( \frac{n}{4} \)th observation
= \( \frac{60}{4} \)th observation
= 15th observation
= 146 cm
(iii) From ogive we can easily find out the no of students having height 158 cm or less than 158 cm (see x-axis is indicating height) So the no of students with height 158 cm or less than 158 cm are 50.

EXAMPLE 3: Marks obtained by 200 students in an examination are given below

<table>
<thead>
<tr>
<th>MARKS</th>
<th>0-10</th>
<th>10-20</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>70-80</th>
<th>80-90</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO OF STUDENTS</td>
<td>5</td>
<td>10</td>
<td>14</td>
<td>21</td>
<td>25</td>
<td>34</td>
<td>36</td>
<td>27</td>
<td>16</td>
<td>12</td>
</tr>
</tbody>
</table>

Draw an ogive and hence find
(i) Median
(ii) The no of students scoring above 65 marks
(iii) The no of students who scored more than 85% marks
(iv) If 10 students qualify for merit scholarship, find the minimum marks required to qualify.

SOLUTION:

<table>
<thead>
<tr>
<th>MARKS OBTAINED (C.I.)</th>
<th>FREQUENCY</th>
<th>C.F.</th>
<th>POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(0,0)</td>
<td></td>
</tr>
<tr>
<td>0-10</td>
<td>5</td>
<td>5</td>
<td>(10,5)</td>
</tr>
<tr>
<td>Class Interval</td>
<td>Frequency</td>
<td>Cumulative Frequency</td>
<td>Midpoint (x, y)</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
<td>---------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>10-20</td>
<td>10</td>
<td>10</td>
<td>(20,15)</td>
</tr>
<tr>
<td>20-30</td>
<td>14</td>
<td>24</td>
<td>(30,29)</td>
</tr>
<tr>
<td>30-40</td>
<td>21</td>
<td>45</td>
<td>(40,50)</td>
</tr>
<tr>
<td>40-50</td>
<td>25</td>
<td>70</td>
<td>(50,75)</td>
</tr>
<tr>
<td>50-60</td>
<td>34</td>
<td>104</td>
<td>(60,109)</td>
</tr>
<tr>
<td>60-70</td>
<td>36</td>
<td>140</td>
<td>(70,145)</td>
</tr>
<tr>
<td>70-80</td>
<td>27</td>
<td>167</td>
<td>(80,172)</td>
</tr>
<tr>
<td>80-90</td>
<td>16</td>
<td>183</td>
<td>(90,188)</td>
</tr>
<tr>
<td>90-100</td>
<td>12</td>
<td>200</td>
<td>(100,200)</td>
</tr>
</tbody>
</table>

Take 2 cm along x-axis = 10 marks
2 cm along y-axis = 20 students
Plot the points and then join them by a free hand drawing.

(i) To find the median
Let A be the point on y-axis representing frequency \( \frac{n}{2} = \frac{200}{2} = 100 \)
Through A draw a horizontal line to meet the ogive at P.
Through P draw a vertical line to meet the x-axis at M.
Therefore, the required median = 58 marks

(ii) To find no of students scoring above 65 marks:
Let the point C on x-axis represent 65 marks. Through C, draw a vertical line
to meet the ogive at R. Through R, draw a horizontal line to meet the y-axis at L. the ordinate of the point L represent 128 students on y-axis.
Therefore, the no of students scoring above 65 marks =
Total no of students – no of students whose marks are less than equal to 65
= 200 - 128
= 72
Let the point B on x-axis represent 85% marks. Through B draw a vertical line
to meet the ogive at Q. Through Q, draw a horizontal line to meet y-axis at N. The ordinate of point N represent 181 students on y-axis.
Therefore, the no of students who scored more than 85% marks i.e.
\[ \frac{85}{100} \] of 100
= Total no of students – no of students who scored less than equal to 85%
= 200 - 181
(iii) To find minimum marks required to qualify for merit scholarship:
As 10 students qualify for merit scholarship and the marks are already arranged in ascending order, so the students from 191-200 qualify for merit scholarship. Note that 190th student does not qualify for merit scholarship but the next one does so.
From ogive, we find that 190th student scores 91 marks and he does not qualify for merit scholarship. Therefore, the next student who qualifies for merit scholarship scores more than 91.
Therefore, the minimum marks required to qualify for merit scholarship= 92.

QUESTIONS FOR PRACTICE:
1. Marks obtained by 200 students in an examination are given below:

<table>
<thead>
<tr>
<th>Marks</th>
<th>0-10</th>
<th>10-20</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>70-80</th>
<th>80-90</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students</td>
<td>5</td>
<td>11</td>
<td>10</td>
<td>20</td>
<td>28</td>
<td>37</td>
<td>40</td>
<td>29</td>
<td>14</td>
<td>6</td>
</tr>
</tbody>
</table>
Draw an ogive for the given distribution taking 10cm=10 marks on one axis and 2cm= 20 students on other axis.

Using the graph, determine:
(i) The median marks;
(ii) The number of students who failed, if minimum marks required to pass is 40.
(iii) If scoring 85 and more marks is considered as grade one, find the number of students who secured grade one in the examination.

2. The daily wages of 80 workers in a project are given below:

<table>
<thead>
<tr>
<th>Wages (in Rs)</th>
<th>400-450</th>
<th>450-500</th>
<th>500-550</th>
<th>550-600</th>
<th>600-650</th>
<th>650-700</th>
<th>700-750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of workers</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>24</td>
<td>13</td>
<td>5</td>
</tr>
</tbody>
</table>

Use a graph paper to draw an ogive for the above distribution.

(use a scale of 2cm=Rs 50 on x-axis and 2cm= 10 workers on y-axis )

Use your ogive to estimate:
(i) The median wage of the workers.
(ii) The lower quartile wage of the workers.
(iii) The number of workers who earn more than Rs. 625 daily.

3. The table shows the distribution of the scores obtained by 160 shooters in a shooting competition. Use a graph sheet and draw an ogive for the distribution.

Use 2 cm= 10 scores on the x-axis and 2cm= 20 shooters on the y-axis.

<table>
<thead>
<tr>
<th>Scores</th>
<th>0-10</th>
<th>10-20</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>70-80</th>
<th>80-90</th>
<th>90-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of shooters</td>
<td>9</td>
<td>13</td>
<td>20</td>
<td>26</td>
<td>30</td>
<td>22</td>
<td>15</td>
<td>10</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Use your graph to estimate the following:
(i) The median;
(ii) The interquartile range;
(iii) The number of shooters who obtained a score of more than 85%.
Answer of Maths Worksheet-5

1.

2.

3. Median = 43 marks, Lower quartile = 30 marks, Upper quartile = 56 marks

4. (i) median = 52.5  (ii) lower quartile = 27  (iii) upper quartile = 67.5
MOBILITY OF LABOUR

Mobility of labour means the ability and the capacity of labour to move easily and quickly from one place to another, from one occupation to another occupation, from one industry to another industry.

OR

Mobility of labour refers to movement of labor from one place to another or changing of profession or status or grade".
Types of Mobility of Labour-

There may be three types of mobility of labour:

1. Geographical Mobility
2. Occupational Mobility
3. Social Mobility

1. Geographical Mobility or Spatial Mobility - The ability of labour to move around an area, region or country for work. It can be both internal and international. It is affected by things such as family ties, religion, immigration, common language, etc.

2. Occupational Mobility - The movement of labour from one occupation to another is known as occupational mobility. This is further classified into horizontal and vertical mobility.

   a) Horizontal Mobility - it is the movement of a worker from one job to another similar job is called horizontal mobility. For example, a teacher teaching in our school shifts to another school.

   b) Vertical Mobility - it is the movement of a worker from a low level job to higher level job in the same or in some other establishment. For example, your school senior teacher becomes principal in another school.

3. Social Mobility - When a worker moves from one type of work to another type of work and his status in the society goes up or down, it is called social mobility. For example, if a cobbler takes up the job of a peon in your school.
Factors Affecting Mobility of Labour-

The mobility of labour depends upon the following factors-

1. **Means of Transport**- Well-developed means of transport and communication encourage mobility of labour. The worker knows that in case of emergency at home, he can easily communicate with the family on phone or travel back by train or airplane.

2. **Industrialisation**- The mobility of labour is also affected by industrial development. Workers tend to move from different occupations and places to work in factories.

3. **Education and Training**- The more a person is educated and skilled, the greater are his chances of moving from one occupation or place to another.

4. **Outlook**- If the workers are optimists and broad-minded, they will move to other jobs and places difference in language, habits, religion, etc. will not be hindrances in their mobility.

5. **Advertisement**- Advertisement related to jobs in newspapers also affects the mobility of labour. Accordingly, workers move between places and occupations.
Importance of Mobility of Labour-

1. It helps in increasing efficiency and productivity of workers when workers move to occupations for which they are suited the best.

2. It also increases the incomes when they shift from low paid to higher paid jobs.

3. It solves the unemployment problem when workers move to places where they are wanted.

4. It helps in economic development when unemployment labour shifts to public works like construction of dams, road etc.

Obstacles to Mobility of Labour:

The main hindrances or obstacles to mobility of labour are as under:

(i) Home sickness.

(ii) Unfavorable climatic conditions.

(iii) Difference in customs.

(iv) Language barrier.

(v) Restrictions imposed by the government.

(vi) Political disturbances.
Self-Evaluation

1. Define mobility of labour?
2. Highlight the different types of mobility.
3. Explain the factors affecting mobility of labour.

Answer key of worksheet-4

1. Efficiency of labour means the productive capacity of a worker. It indicates capacity of a labourer to do more work or a better work or both during a given period.

2. The factors affecting efficiency of labour are: climate, standard of living, working conditions, duration of work, machinery and equipment. (explain any four in detail).

3. The causes for low efficiency of labour are: hot climate, poor working conditions, low wages, poor technology and education and training. (explain any two in detail).
CRICKET

RULES AND REGULATIONS OF CRICKET

Measurements of the Cricket Ground and Specifications of Sports Equipment.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>CRICKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of Players in a team</td>
</tr>
<tr>
<td>2</td>
<td>Number of Umpires in a match</td>
</tr>
<tr>
<td>3</td>
<td>Weight of ball</td>
</tr>
<tr>
<td>4</td>
<td>Circumference of ball</td>
</tr>
<tr>
<td>5</td>
<td>Length of the bat</td>
</tr>
<tr>
<td>6</td>
<td>Widest part of bat</td>
</tr>
<tr>
<td>7</td>
<td>Breadth of pitch on both sides from central wicket</td>
</tr>
<tr>
<td>8</td>
<td>Distance of stumps from one side to the other</td>
</tr>
<tr>
<td>9</td>
<td>Breadth of Wickets</td>
</tr>
<tr>
<td>10</td>
<td>Color of ball</td>
</tr>
<tr>
<td>11</td>
<td>Number of scorers</td>
</tr>
<tr>
<td>12</td>
<td>Time for changing every innings</td>
</tr>
<tr>
<td>13</td>
<td>Time for changing the player</td>
</tr>
<tr>
<td>14</td>
<td>Types of matches</td>
</tr>
<tr>
<td>15</td>
<td>Height of wicket from ground</td>
</tr>
<tr>
<td>16</td>
<td>Radius of small circle</td>
</tr>
<tr>
<td>17</td>
<td>Radius of boundary</td>
</tr>
</tbody>
</table>

PITCH

The size of the field on which the game is played varies from ground to ground but the pitch is always a rectangular area of **22 yards (20.12m)** in length and **10ft (3.05m)** in width. The popping (batting) crease is marked 1.22m in front of the stumps at either end, with the stumps set along the bowling crease

**Wickets or Stumps**

Each Wicket consists of three wooden stumps placed in a straight line and surmounted by two wooden crosspieces called bails. The total height of the wicket including bails is **28.5 inches** and combined width of three stumps is **9 inches**.
Bails

The bails should be placed on the stumps on each side. The bails should be **11.1 cm** long and when placed on the wickets should not rise more than **1.3 cm** above them.

![Diagram of creases and bowling crease](image)

Bat

The bat is made of wood and has the shape of a blade topped by cylindrical handle. The blade must not be more than **4 1/4 inches** wide and the total length of the bat not more than 38 inches. However, the thickness of the edges (40mm) and the overall depth is **67 mm**.

Ball

The ball is a hard leather-seamed spheroid of circumference **8.8125'' to 9'' or 22.4 cm to 22.9 cm**. The weight of the ball should not be less than **5 1/2 ounces** or more than **5 3/4 ounces**.

Creases

Four lines, known as creases, are painted onto the pitch around the wicket areas to define the batsman’s safe territory and to determine the limit of the bowler’s approach. These are called the “popping” (or batting) crease, the bowling crease and two return creases.

The stumps are placed in line on the bowling creases and so these must be **22 yards** apart. A bowling crease is **8 feet 8 inches** long with the middle stump placed or fixed exactly at the centre. The popping crease, has the same length, is parallel to the bowling
crease and is 4 feet in front of the wicket. The return creases are perpendicular to the other two; they are adjoined to the ends of the popping crease and are drawn through the ends of the bowling crease to a length of at least 8 feet.

Fielding Positions
In the previous chapters, you have learnt how to use the sequencing constructs to execute a set of statements in sequence and selection constructs to execute certain set of statements only if a condition is met. In this chapter, you will learn about the looping or iterative constructs that allow a set of instructions to be executed repeatedly until a condition is met.

Java provides three kinds of looping constructs — for loop, while loop, and do-while loop. All three loops repeat a set of instructions as long as the underlying condition remains true. The underlying condition is termed as the test condition. The test condition may be evaluated before the start of the loop or at the end of the loop. Accordingly, the loop is termed as an entry-controlled loop or exit-controlled loop, respectively. Let us understand various segments of a looping construct.

**Segments of a loop**

A loop is a set of instructions that is continually repeated until a certain condition is met. The set of instructions may be repeated any number of times, as per your requirement. The loop consists of a number of segments as explained below:

**9.1.1 Initialization**

This segment initializes the loop control variable before starting the loop. This segment is executed only once at the beginning of the loop.

An example of initialization is:

```java
int counter = e; // initialize the loop control variable
```

**Note**: In the above statement, `counter` is a loop control variable.

**9.1.2 Test-condition**

The test-condition is the expression that is evaluated at the beginning of each iteration. Its value determines whether the body of the loop is to be executed or the loop is to be terminated. If the test-condition evaluates to true, the body of the loop (set of instructions) gets executed. If the test-condition evaluates to false, the loop terminates.

An example of the test-condition is:

```java
Counter <= 50; // check condition
```
9.1.3 Update — the next step

This is the increment or decrement operation of the control variable. This operation is performed at the end of each iteration. An example of update statement is:

```java
//update the loop control variable
counter++;  
```

9.1.4 Body of the loop

The body of the loop contains the set of instructions that is executed repeatedly. The statements are usually grouped together between a pair of curly brackets. For example,

```java
System.out.println("Iteration: "+counter);
sum = sum + counter;
```

The body of the loop is repeated as long as the test-condition remains true. As soon as the condition becomes false, the loop terminates. The process of executing the body of the loop once is called an iteration.

A loop control variable (also known as a counter variable) is used to keep the record of the number of times the loop has been executed.

9.2 The for loop

The for loop is an entry-controlled loop and performs a fixed number of iterations. This loop is generally used when the user knows in advance how many times the set of instructions is to be repeated.

syntax:

```java
for (initialization;  test-condition;  update)
{
   body-of-the-loop;
}
```

Here ,

The initialization part is executed once before the loop begins, such as counter = 0 or i = 1. The variables counter and i are known as loop control variables.

The test-condition is evaluated before each iteration of the loop, such as counter < 10. The loop terminates when this condition evaluates to false.
The update part is executed at the end of each iteration of the loop, such as counter++.  

The curly brackets {} are optional if the body of the loop contains a single statement.

Let us consider a simple program to understand how the for loop works.

**Program 9.1**

```java
/* NaturalNumbersForLoop.java */

public class NaturalNumbersForLoop {
    public static void main(String args[]) {
        for (int i = 1; i < 5; i++) {
            System.out.println(i);
        }
    }
}
```

The execution of the for loop takes place as given below (see Figure 9.1):
1. First of all, the initialization “1” of the control variable occurs giving it the initial value, i.e., i = i.
2. Next, the test-condition i <= 5 is evaluated “2”. Since i = 1 at this stage, the test-condition evaluates to true.
3. Since the test-condition is true, the body of the loop is executed “3” printing the value of i.
4. Once the body of the loop is executed, the update segment increments the value of the control variable i “4” using expression i++ giving it a value of 2.
5. Now, the test-condition I <= 5 is evaluated again “2” and the statements are repeated until the test condition evaluates to false.

<table>
<thead>
<tr>
<th>ITERATION</th>
<th>INITIALISATION</th>
<th>TEST-CONDITION</th>
<th>BODY-OF-THE-LOOP</th>
<th>UPDATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>i =1</td>
<td>i &lt;= 5 evaluates to true</td>
<td>Executed</td>
<td>i = 2</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>i &lt;= 5 evaluates to true</td>
<td>Executed</td>
<td>i = 3</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>i &lt;= 5 evaluates to true</td>
<td>Executed</td>
<td>i = 4</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>i &lt;= 5 evaluates to true</td>
<td>Executed</td>
<td>i = 5</td>
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<tr>
<td>5</td>
<td></td>
<td>i &lt;= 5 evaluates to true</td>
<td>Executed</td>
<td>i = 6</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>i &lt;= 5 evaluates to false</td>
<td>Not Executed</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Various Iterations in the for Loop

**LET’S TRY**

Q1. Write a program to print 10 odd numbers starting from 51, without using “if “ also initialize loop variable to 1.
Q2. Write a program to print table of 17. For eg. 17 * 1 = 17 and so on.
Q3. Write a program to print 89 to 79.