SUMMARY

1. An Angel in disguise is a short story written by T.S Arthur. It beautifully demonstrates the power of love in a situation of hopelessness.

2. The story opens with the death of a poor woman who fell upon the threshold of her own door in a drunken state. Leaving behind two daughters and a son.

3. The woman had been despised, scoffed, and denounced by the village people.

4. Her death brought about sympathy in the hearts of the villagers. They arranged her funeral and felt pitiful for the children.

5. The eldest son, John who was twelve years was adopted by a farmer. Kate who was between ten to eleven years of age was taken begrudgingly by Mrs. Ellis.

6. Maggie, who was the youngest was left alone. There was no one to take her because she had an injured spine and was bedridden. People suggested that she should be taken to the poor house.

7. A man named Joe Thompson, the wheelwright, decided to take her home. He was a kind man who loved children. He planned to put her in the poorhouse the next day as he knew that his wife would be very angry to see Maggie.

8. When Joe Thompson reached his home with Maggie in his arms, his wife was extremely enraged. She did not want a sick child at home.

9. Mr. Thompson pleaded and explained to his wife. He referred to the Bible and made her realise how the Savior (Lord Jesus) rebuked the disciples who would not receive them. He took the children in his arms and blessed them.

10. He told his wife that it was a matter of one night as the next day he would take her to the poor house.

11. A soft feeling crept into Mrs. Thompson’s heart.

12. That evening, after dusk when Joe Thompson returned home, he saw from the window that Mrs. Thompson was sitting with Maggie by the side of Maggie's bed and they were talking.

13. He took a breath of relief, as a weight lifted itself from his heart.
14. The moment he entered the house, Mrs. Thompson came out of the room where she had been with Maggie.

15. While she was getting dinner ready, Mr. Thompson went into Maggie's room and talked to her.

16. After supper Mrs. Thompson took food for Maggie and waited there till the child finished eating.

17. Maggie's innocence and gratitude towards the Thompson's filled the void that had formed in Mrs. Thompson's heart.

18. Mrs. Thompson told her husband to keep Maggie for a day or two longer as she was too weak to be sent to the poorhouse. But Maggie was never sent there. The Thompson's adopted her.

19. The story ends on a happy note. Maggie acted as an object of love to bring happiness in the home of the Thompson's. Especially in the life of Mrs. Thompson which so far had been an unhappy one as she was childless, so she was cold and ill-tempered.

20. Maggie turned out to be a blessing in the Thompson house because she gave Mrs. Thompson a purpose. She brings joy to their sad life. Moreover, no other man in the village was as happy as Joe Thompson.

**Answer the following questions:**

Q1. How did the village people look at Maggie?

Q2. What did the rough man suggest with regard to Maggie? How would the poorhouse be a good place for Maggie?

Q3. Who was Joe Thompson? What did he say about Maggie?

Q4. Why did Joe Thompson go to Maggie's hovel again? What did he observe? What did she tell Joe Thompson?

Q5. What type of person was Joe Thompson? What assurance did he give Maggie?

Q6. What type of person was Mrs. Thompson? What doubt did her husband have about her?

Q7. How did Mrs. Thompson react when her husband reached his home with the sick child in his arms? What type of look did her husband give her?

Q8. How did Joe Thompson comfort his wife with regard to Maggie? What did he tell her about the hearts of women?

Q9. Why did Joe Thompson refer to the Bible? What did he want to convey to his wife?
Q10. What attracted Joe's attention when he returned home after a day's work? Why was he relieved on seeing Mrs. Thompson?

Q11. How did Maggie look at Joe when he entered her little bedroom? What did Joe notice about Maggie in the lamp light?

Q12. What did Maggie's gratitude awake in Mrs. Thompson? What did Mrs. Thompson tell Joe about Maggie?

Q13. What did Maggie, the sick child, bring to the home of Joe Thompson? What type of life did Joe lead before Maggie came to his house?
Q14. What had transformed Mrs. Thompson completely?
Q15. Who is the angel referred to here? What did she bring in the life of Joe

NOTE: Dear students, kindly read the story carefully and answer the extracts given in the workbook (preferably with a pencil).

Answer key of English Worksheet-8

THE BANGLE SELLERS

Stanza 1

A1. ‘Shining loads’ refers to the glass bangles that are carried by the bangle sellers to be sold at the temple fair.

People who have come there with their wives and daughters are its prospective buyers.

A2. The bangle sellers are going to the temple fair, so that they could make some money by selling bangles.

Yes, they are happy and content. Even though they are carrying heavy loads of bangles yet hey refer them to ‘Shining loads’ meant for happy daughters and wives. The enthusiastic way in which they are calling out to the people and advertising their bangles, shows that they are happy.

A3. The bangles are referred to as rainbow-tinted circles of light because they are in a variety of colours. They are referred to as circles of light, hereby describing the round shaped glass bangles which reflects light through them.

The figure of speech used here is Metaphor, as bangles are compared to a rainbow which has vibrant colors.

A4. The bangles are called’ lustrous tokens of radiant lives’because wearing bangles is suggestive of happiness, peace and prosperity. They are directly related to the well-being of a family and the cultural tradition of a typical Indian society.
Stanza 2
A1. Bangles which are silver and blue in colour like the mountain mist are suitable for the maiden’s wrist. Bangles of pink and light red colour which are compared to the colour of flower buds growing beside a woodland stream would also befit a maiden’s wrist.

A2. The Silver and blue coloured bangles are compared to the mountain mist because of resemblance of their colour and also because they symbolize purity, freshness and beauty.

A3. Some are as pink as buds that float on the calm surface of a forest stream. Here bangles are compared to the buds that peep (as if dreaming) from the calm and quiet bank of a river that flows through the woods.

A4 The poet has described the pink coloured bangles as the buds that are set to dream to grow into a flower. As the buds are dreaming to bloom into a flower, similarly maidens are dreaming of their marriage.

A5. The new born leaves are symbolic of the first stage of a woman’s life as a young girl when she is unmarried.

Stanza 3
A1. The golden yellow coloured bangles suitable for a bride are compared to the ‘fields of sunlit corn’. They are compared to the corn fields because of their golden yellow colour which is quite similar to the fields of corn lit up by sunlight in the morning.

A2. The words ‘bridal laughter and bridal tear’ express both the bride’s joy of starting a new life with her husband and the sorrow of leaving her parents behind. She is in a very sentimental state of mind, wavering between laughter and tears.

They have been compared with the bangles that are tinkling, bright, delicate and clear in colour.

A3. Marriage fire is used in the context of bright red bangles which are suitable for brides. The bright red colour of the bangles is compared to the reddish flame of the sacred marriage fire.

A4. The literary device used in the last two lines is Simile. As the tinkling bangles are compared here with the bridal’s laughter and tear by using the word ‘like’.

Stanza 4
A. The ‘purple and gold flecked grey’ bangles are suitable for the woman who has ‘journeyed through life’. These woman are mature, they have experienced life and have reached middle age in their journey of life.

The Purple and golden coloured bangles represent motherhood as these colours are associated with the feelings of pride and fulfillment in the heart of a mother.
A2. These middle aged women have fulfilled their duties perfectly because of which they get the honour to sit at their husband’s side while worshipping the gods.

A3. The phrase ‘fruitful pride’ signifies here that these middle aged women have taken care of their household with pride. They are happy and proud of taking care of their household and bringing up their children.

A4. Yes, I do think so because the poet’s presentation of the Indian scene and ethos is orthodox and in line with the outdated patriarchal ideology. In this poem woman is presented as tender, weak, helpless and dependent. Man as father, husband and son determines her life. By using ‘fair sons’ the poet has only upheld gender discrimination in Indian families. The last line, too, shows woman’s insubordination by her husband which is unacceptable in our times of feminist outlook.

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वक्ता ऑफर शिक्षा कोन-कोन है? दोनों का परिचय दे।

कहा? उसे किस बात का भम था?

उस वस्तु को गाने के लिये उसने उसे कितने वेंसे दिया? वे वेंसे उसने कहाँ से शर्मा किस ऑफर करे?

उस वस्तु का का क्रमोग किस लिये करवा चाहता था? वह उसका क्रमोग कम्यों हैं नहीं कर पाया?

अफरमार शुभ कार्य में विधन की तरह, उसे से धारण किसे किस तरह विश्वस्तवों वहाँ जा पहुँचे?

शुभ कार्य' ऑफर 'विधन' शब्दों का क्रमोग किसे किस संदर्भ में किया गया है?

विश्वस्तव कोन है? उसकी उग्रता का क्या कारण था?

वहाँ कोन - कोन थे और वे कमा कर रहे थे?

विश्वस्तव ने धमकाकर किसके कमा पूछता और उन्हें असलिमत का पता कैसे चला? उन्हें अपाराधी को कमा दूं किया?
उत्तर-
‘भोला सकपका कर एक ही डॉट में मुख्विर हो गया।’
(१) भोला कौन था? वह क्यों सकपका गया?
‘मुख्विर’शब्द का क्या अर्थ है?
(२) डॉटने वाले का परिचय दीजिए? उसके डॉटने का क्या कारण था?
(३) भोला ने डॉटने वाले को क्या बताया? भोला की बात सुनकर डॉटने वाले ने किसे क्या ढंड किया?
(४) भोला की बात सुनकर उन्होंने वाले की कथा प्रति किया हुई?
कश्मीर में अनेक दर्शनीय स्थान देखने में आया है।
सबसे का नाम लिखूँ।
मेरे पास केवल भारत पैच रूप है।
महात्मा गाँधी का देश सदा आधीरी रहेगा।
हारा जी आते खाना खा लो।
पर जाने में पक्षमात्र-चार दिन शान्त हैं।
तम सुमिरा का करे।
चक शीत की बिलाना ला बिलाल।
मेरे की आपकी युध्ध कहना है।
यहाँ शुद्ध गाय का खी मिलता है।
(क) 'उसके' शब्द का प्रयोग किसके लिए किया गया है? उसकी मनोदशा पर प्रकाश डालिए।
उत्तर—उनका उच्च के बेटे प्रयास के लिए किया गया है।

वह 'अबोध' (नासमक) बालक था। वो सारी की सूत्र का समस्त नहीं पाया। वो बालक वर्षा के दो तीन दिन बाद पहली के ऊपर का पानी सुख जाता है। पर भी उसकी नमी तेज़ ही रहती है। उसी तरह रो-रो कर ऊपर से लौटकर आसू सूख गए हैं। पर उसके मन का सुख राजन नहीं हुआ था। वह उदास मन से अकेला बेटा आकाश की ओर देखता रहता।
पदा (ख) 'असल्य के आदर में सत्य बहुत दिन तक छिपा न रह सका'- श्रीमूर को किस सत्य का, कैसे पता चला? इससे उस पर क्या प्रभाव पड़ा?

उत्तर- 'श्रीमूर की मां उमा की मृत्यु की बात उससे कह दी थी। उसे बता दिया कि उसकी माँ मामा के घर नहीं बांटी मर कर अपने भगवान के पास चली गई है। इस बात को उस पर गहरा प्रभाव पड़ा। वह दूर से ही होकर रोता रहता और अपनी मां की बाय करता रहता।

(ग) 'काकी' कहानी के उद्देश्य पर प्रकाश डालिए।

उत्तर- 'काकी' कहानी में 'श्रीमूर जैसे मासूम बालक की मात्रालयों की पीठ को दिखाया गया है। वह अपनी मां से बैठक्क चारा करता था। वह इतना भी लगा कि मां की मृत्यु को समझ कर जाता। उसने की तो मां को वारिस पाने के लिए पोरी तक कर लेता है। उसके उन बच्चों का अपनी मां के अन्त मनुष्य भाव दिखाना चाहता है। नहीं उसका उद्देश्य है।

(घ) 'काकी' श्रीरंग कहानी से बच्चों के किस स्वभाव का पता चलता है?

उत्तर- 'काकी' कहानी में बालमनोविश्वास के बारे में पता चलता है। वह एक बालक का हृदय के अन्तर्गत कोेल, मात्रुक और संवेदनशील होता है। 'श्रीमूर अपनी मां की मृत्यु की पीड़ा सहन नहीं कर पाते। उसका मन कहीं भी रहना। जीवन चर्चा से अलग वह पत्ते से मां की वारिस पाने के लिए किसी भी तरह तक चला जाता है। अतः हमें पता चलता है कि वालक अत्यन्त भावुक, कोमल और संवेदनशील होते हैं।
‘एक दिन उसने ऊपर एक पत्ता उठाकर इतनी देखी। तो जाने क्या रोचकता उसका हुआ एक बार खिल उठा।’

उत्तर: ‘उसने—से फिसली गयी सिरफ़ किया है? यह उससे कैसा करता था?

उत्तर: ‘उसके ऊपर से दमारू की ओर शरीर करता है।

उसके ऊपर अपनी काफी से बहुत रोशनी रहता था।

जब माँ की अवधारणा मृत्यु ही जाती है तो वह इस संस्कार के सम्मत नहीं पाता। माँ से बिन्दु मात्र के बाहर वह उदास रहता था। उसकी माँ उसे कहीं खिल नहीं रही थी।

उत्तर: उठाकर इतना हुआ पत्ता को देखकर उसका इतना रोचकता खिल उठा?

उत्तर: दमारू माँ की मृत्यु के बाद बहुत दुःखी रहता था।

उस दिन उसने अपने उसारे में उठाकर पत्ता को देखा और खुद से भर गया: ‘उसकी काफी से उपर भागने के पर चली’। जिसे उसके बाप्सर होने के लिए भी पत्ता उसे अरेर का साधना ने खिला था। उसे यह माँ को ‘बाप्सर पत्ता’ की आशा से वह खिला उठा।

उत्तर: पत्ता मगवाने के लिए उसने किस वजह से प्राथमिक कर? ऐसी किसकी वजह मुझे प्रतिक्रिया हुई?

उत्तर: पत्ता मगवाने के लिए दमारू ने अपने बिठाव की बिन्दु पर वस्त्र भरने की। उसके बिठाने पत्ता मगवाने के (लेकिन हां) नहीं कर बहुत और मगवाई नहीं। क्योंकि उसके पिता, पत्ता उठा की उत्तर में पूर्व उदास रहते थे। ऐसे उन्होंने दमारू की प्राथमिक पर कई खासी नहीं किया।

उत्तर: पत्ता प्राप्त करने के लिए उसने किस उपाय का सहारा लिया और पत्ता मगवाने के लिए किसी सहारा ली? ऐसा क्या परिणाम मिला?

उत्तर: पत्ता प्राप्त करने के लिए दमारू ने पत्ता की सहारा लिया! उसने अपने पिता के बाद जैसे पत्ता के लिए चलने लगा। उसने पत्ता मगवाने के लिए सुधिता की। उसे बाप्सर भी भोला की मदद लगी। ऐसा परिणाम मह निजित कि दमारू के अपने पिता के क्रूर की हमला करते हुए उनके मारे खारी पड़ी!
ਲਤਉਹਾਰ

(1) ਦੇਣਦੀ ਹਨੀ ਦੀਮੇ ਦੇ ਪੌਟੇ -ਪੌਟੇ 250 ਸਾਲਾਂ ਦੀ ਐਕ ਲੇਖ ਕਰਦੇ। ਦੇਣ ਕੇਥੇ ਹੁੱਕਾਟ ਪ੍ਰੀਨਿੇਟ ਲਾਂ ਕਿਂਹਾਲਾ ਹੈ।

ਲੇਖ ਅਧਿਕਾਰੀ ਦੀ ਬਾਰੱਤ ਤੇ, ਸਾਮ ਤੂ ਜ੍ਰਨੀ ਅਪਨੇ ਪੁਰਨ ਦਵਾਰਾ ਸਹਾਇਤਾ ਦਿੱਤੇ ਗਏ। ਹੋਇ ਦੀਖਾਵਾ ਦਿੱਤੇ ਦੇਣ
ਕਰ ਜਾਂ ਕਰ ਸਾਮੀ ਹੱਕ ਹੋਇ ਜੇ ਚੀਨੀ ਪਤਰਨ ਦਾ ਜਾਂ ਬਹਾਰਜਾਂ ਦੇ ਸਾਮਨੇ ਦੀਖਾਵਾ ਹੁੰਦੀ ਕਵਾਂ ਵਿੱਚ ਕਰਨਾ।

(2) ਦੇਣ ਦੋਂਦੀ ਹਨੀ ਦੇ ਪੌਟੇ-ਪੌਟੇ 120 ਸਾਲਾਂ ਦੀ ਸਿੰਹੀ ਕਰਦੇ। ਦੇਣ ਦੋਂਦੀ ਹਨੀ ਹਾਂਦਰ ਪ੍ਰੀਨਿੇਟ ਲਾਂ ਕਿਂਹਾਲਾ ਹੈ।

ਅਧਿਕਾਰੀ ਮਹੀਨਾ/ਮਹੀਨੀ ਵੁ ਸਹਾਇਤਾ ਦੀ ਦੀਸਿੱਖਣ ਦੇ ਸਾਧਾਰਣ ਦੁਆਰਾ ਦੀਸਿੱਖਣ ਬਣਾਉਣ ਲਗਾ ਵਿੱਚ ਕਿਂਹਾਲਾ ਹੈ।

ਲੇਖ ਸੰਗਰਮਿਤ ਜੁੰਗ ਨਹਿੰਦੀ ਵਿਚਿਤਰੀਆਂ-

ਲੇਖ ਸਾਰਾ ਬਣਾਉਣ ਲਗਾ ਹੈ ਸਾਮਨੇ ਨੀਲਾ ਹੱਤਾ ਕਰਦੀ ਕਰਦੀ ਅਤੇ ਅਭੱਕਾਨ ਬਣਾਉਣ ਪੈਂਦਾ ਹੈ।

1.ਦੋਂਦੀ ਹਨੀ ਦੇ ਲੇਖ ਦੇ ਸਾਰ ਅਧਿਕਾਰੀ ਦੇ ਅਲੰਘ ਲਹਿੱਸਾ ਦੇ ਨਾ ਸੌਧ ਪੈਂਦੇ ਹਨ।

2-ਦੇਣ ਦੀ ਪਹਿਲੀ ਸਾਰਾ ਸੂਰਜ ਨਾਲ ਅਧਿਕਾਰੀ ਦੀ ਪਹਿਲੀ ਸਾਰਾ ਦੋਂਦਣ ਲਹਿੱਸਾ ਦੇ ਸਾਰਾ ਹੱਤਾ
ਹੈ।

3-ਦੇਣ ਦੋਂਦੀ ਦੂਜੇ ਸਾਰਾ ਦੋਂਦਣ ਹੱਤਾ ਚਾਰਚ ਪੂਰਨ ਸਾਰਾ ਦੇ ਸਾਰਾ ਹੱਤਾ ਕਾਲੀ ਉਚਾ ਪੂਜਾਲਾ ਵਹਨਾ

4-ਦੋਂਦੀ ਦੀ ਵਾਲੀ ਹੱਤਾ ਯੁਨੀਟ ਹੱਤਾ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਹਨਾ ਵੇ ਤੁਤੁ ਦੇ ਕਾਲੀ ਉਚਾ ਪੂਜਾਲਾ ਵਹਨਾ

5-ਦੋਂਦੀ ਹਨੀ ਦੇ ਲੇਖ ਦੀ ਸਾਰਾ ਦੋਂਦਣ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ
ਦੋਂਦਣ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ

6-ਦੋਂਦੀ ਹਨੀ ਦੇ ਲੇਖ ਦੀ ਸਾਰਾ ਦੋਂਦਣ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਹਨਾ ਵੇ ਤੁਤੁ ਦੇ ਕਾਲੀ ਉਚਾ ਪੂਜਾਲਾ ਵਹਨਾ

7-ਦੇਣ ਦੀ ਸਾਰਾ ਦੋਂਦਣ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ

8-ਦੋਂਦੀ ਹਨੀ ਦੇ ਲੇਖ ਦੀ ਸਾਰਾ ਦੋਂਦਣ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ

9-ਦੋਂਦੀ ਹਨੀ ਦੇ ਲੇਖ ਦੀ ਸਾਰਾ ਦੋਂਦਣ ਦੀ ਵਾਲੀ ਹੱਤਾ ਵਰਤਨ ਦੀ ਵਾਲੀ ਹੱਤਾ
(1) चिठ्ठी लिखते उठे चिठ्ठी देने के आरजें में आंक दे एवं यह अंक शीर्षक लिखकर। चिठ्ठी लिखने का उत्तर "Worksheet उर्ध्व Format चौमित्र निर्देश में, छुट्टी पोइश दिनें दें।

(2) चिठ्ठी दिने वक्त जंक्शन, भूमिका अधिकारी के साथ स्थिर-पुरत्त जंक्शन जांचीयाँ करनीएं। उस । चिठ्ठी कविता, मात्र, गर्मियों, सूर्योदय तथा नाची।

(3) चिठ्ठी लिखते उठे एक संिधार सब वि वेदी बाँध डुंट तं जांची ऊर्ध्वे, पिंड बाँध ठं बांध-बांध हुए।

(4) चिठ्ठी लिखते चिठ्ठी के कारण उपस्थित बनकर नवृत्ति वृथा है। चिठ्ठी दे लिख दें, चिठ्ठी, जिसे अवसर में प्रस्तुत प्रस्तुत दे अंक शीर्षक लिखकर।
ELECTIONS

MEANING

Election is the process through which people choose their representatives who then form the government. It is a contest between or amongst candidates in an electoral constituency to win the majority vote in order to be elected.

THE ELECTION COMMISSION

To ensure free, fair and impartial elections, the Constitution established the Election Commission by Part XV (Article 324). It is a body which is free from political or executive influences. It is a body which helps in the smooth conduct of elections across the country.
COMPOSITION OF ELECTION COMMISSION

1. The Election Commission comprises of the Chief Election Commissioner and other Election Commissioners, as appointed by the President.
2. At the state level, there is a Chief Electoral Officer of the State, appointed by the Election Commission.
3. At the District level, there are – district election officers, electoral registration officers and returning officers.

KINDS OF ELECTIONS

Elections are broadly classified into – DIRECT & INDIRECT ELECTIONS.

DIRECT ELECTIONS

In Direct Elections, voters directly choose their representatives for the union and state governments. All the eligible citizens vote for their representatives to the Lok Sabha, Vidhan Sabha, municipal corporations, etc.

INDIRECT ELECTION

In Indirect Elections, voters do not directly choose their representatives. They vote and elect an intermediate body of representatives who then play the role of direct voters. In this way, the intermediate voters elect members of the Rajya Sabha, Vidhan Parishad, the President and the Vice-President of India.

TYPES OF ELECTIONS

There are three types of Elections:

1. General Election
2. By-election
3. Mid-term Election

GENERAL ELECTION

General elections are elections which are held generally after a period of five years for electing the members of primary Legislative bodies like the Lok Sabha and the Legislative Assembly.

BY-ELECTION

Such an election is held to fill a vacant seat in Lok Sabha or Vidhan Sabha. It takes place when an elected representative resigns, dies or becomes disqualified under parliamentary law. The newly elected representative holds office for the remaining term.
MID-TERM ELECTION
Sometimes, the Lok Sabha or the Vidhan Sabha may be dissolved before the normal term of five years is over. A mid-term election is then held to form a new House.

ANSWER THE FOLLOWING QUESTIONS:

Q.1 Define the term ‘Elections’.
Q.2 What is an ‘Election Commission’?
Q.3 Mention the composition of election commission.
Q.4 State the differences between direct and indirect election.
Q.5 Write a short note on types of elections.

ANSWER KEY OF WORKSHEET 6 (fundamental rights & duties part II)

Ans.1 Under Article 32, a citizen is entitled to approach the Supreme Court or High Court, if any of his fundamental right has been encroached upon.

Ans.2 In order to preserve the cultural and educational diversity of India, the Constitution grants the following provisions to minorities under this right:

1. **Right to conserve the language & script (Article 29):** Under this right, the minorities have the right to conserve their distinct language, culture and to join state-owned institutions without discrimination.

2. **Right to establish educational institutions (Article 30):** Under this provision, each minority has the right to administer educational institutions of its choice.

Ans.3 A **Writ** is a “legal instrument to enforce obedience to the orders of a Court.”

Ans.4 (a) **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.
(b) **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.

**Ans.5** The Fundamental Duties are defined as the moral obligations of all citizens to help promote a spirit of patriotism and to uphold the unity of India. These duties set out in Part IV–A Article 51-A of the Constitution, concern individuals and the nation.

**Ans.6** Students you can choose any 3 from the following

![FUNDAMENTAL DUTIES The Constitution of India Article 51A](image-url)
Q.1 What do you understand by Directive Principles of State Policy?

Ans.1 Directive Principles are the objectives & ideals which the framers of the constitution wished to be implemented by the future union & state governments of the country while formulating policies & framing laws. These are included in Part IV, Article 36 to 51, of the Constitution.

Q.2 Highlight the features or characteristics of directive principles of state policy.

Ans.2 1. The Fundamental Rights, Directive Principles of State Policy and Fundamental Duties are sections of the Constitution of India that prescribe the fundamental obligations of the states to its citizens and the duties and the rights of the citizens to the State.

2. The Directive Principles are non-justiciable in nature.

3. They are general directions or instructions to the State.

Q.3 Mention and explain any 5 directive principles.

Ans.3 Article 40: Organisation of village panchayats

The State shall take steps to organise village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government.

Article 42: Provision for just and humane conditions of work and maternity relief

The State shall make provision for securing just and humane conditions of work and for maternity relief.

Article 44: Uniform civil code for the citizen

The State shall endeavour to secure for the citizens a uniform civil code throughout the territory of India.
Article 45: Provision for free and compulsory education for children

The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years.

Article 48A: Protection and improvement of environment and safeguarding of forests and wildlife

The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.

Q.4 Explain the concept of a Welfare State.

Ans.4 A welfare state is a concept of the government in which the state plays a vital role in the protection and promotion of the mental, physical, social and economic well-being of its citizens.
Landforms of the Earth

The term “landform” is applied by physiographers to describe all the relief features or natural rocky features on the surface of the Earth. It includes all broad features such as:

1. Continents and Oceans (first order of relief).
2. Mountains, Plateaus and Plains (second order of relief).
3. All the minor features like hills, valleys, slopes, canyons, deltas, alluvial fans, etc (third order of relief).

The systematic study of Earth’s relief feature is known as Geomorphology. In fact, the Earth’s crust is highly restless or unstable. There are some forces or movements, which are always active in changing the face of the Earth. These forces are named as:

1. **Internal or Endogenic forces.** The internal forces that originate deep inside the Earth’s interior. They may be horizontal or vertical forces.
2. **External or Exogenic forces.** The external forces are the agents of gradation like running water or river, wind, glacier, etc.

The internal forces are continuously trying to raise the surface of the Earth by horizontal and vertical movements while the external forces are trying to level town the elevated surface. This action and reaction between these two forces give birth to different landforms. We shall learn the second order of relief in this chapter.

**MOUNTAIN**

- A natural elevation of the Earth’s surface rising more or less abruptly to a summit and attaining altitude greater than 900 m. above the sea level with slope making an angle of 25° to 35° with the horizontal plain, is known as mountain.
- Mountains generally have broad base, rugged surface and steep slopes with narrow elevated peaks. In geological past, at least nine orogenic or mountain building movements have taken place. The three most recent mountain building periods are the Caledonian (about 320 million years ago), Hercynian (about 240 million years ago) and Alpine (about 30 - 50 millions years ago).
- An orogeny is the period of mountain building where as Orogenesis is the process of mountain building.
TYPES OF MOUNTAINS

There are four main types of mountains on the basis of their origin or mode of formation. They are as follows:

1. Fold Mountains
   - These mountains are formed by horizontal compression which takes place inside the Earth called tectonic force, resulting in the formation of up folds called and anticlines and down folds called synclines.
   - It is believed that in geological history, there was a long narrow low-lying areas are shallow seas are lakes basins called Geosynclines. Over a period of time, they were filled with huge amount of sediments deposited by The rivers, winds (agents of gradation). For millions of years, the slow horizontal movements or compression caused inside the crust raised these mountains forming wrinkles or folds. Compression caused by tectonic forces, forced the sedimentary rocks strata to fold and to give birth to Fold Mountains.
There are two types of fold mountains

(a) Young fold mountains

(1) They have informed relatively recently in Alpine mountain building period.
(2) They have steep slopes and deep valleys.
(3) They have sharp pointed snow-covered peaks.
(4) They have complex folding and faulting of rock layers.
(5) Volcanic activities are common in these mountains.
(6) They are much higher than the old fold mountains.
(7) They have extremely rough topography.
(8) They have parallel ranges called cordillera.
(9) in some places, high plateaus lie between these parallel ranges known as intermontane plateau. For example- Anatolia plateau in Turkey.
(10) These mountains are still growing in height.
(11) The Himalayas, Andes, Alps and Rockies are example of young fold mountains.

(b) Old fold mountains

(1) They have been formed long ago in Caledonian and Hercynian mountain building periods.
(2) They have gentler slopes.
(3) They have rounded tops and sculptured domes.
(4) They are highly eroded by the agents of gradation.
(5) They are lower than the young fold mountains.
(6) There are many evidences of volcanic activity still available.
(7) The Appalachian, the Urals and the Aravallis in India are examples of old fold mountains.

According to the Plate Tectonic theory, the latest theory of mountain building, most of the mountain-building movements took place along plate boundaries where the plates collided. The action caused the crust to wrinkle and the Fold mountains are formed. For example, Rockies and Andes mountains.

2. Block Mountains

These mountains are formed as a result of faulting which is formed due to tensional and compression forces. Sometimes, when the tectonic plates move away from one another due to horizontal force of tension, causing surface of the Earth to crack a part, fault is formed by these cracks. Blocks of earth between the faults
may be raised or lowered. So, Block Mountains (Horst, in German language) are formed in two ways.

1. If there are two parallel cracks or faults formed, the land between the two faults is sometimes pushed up to form a block mountain or Horst having steep sides and flat top.
2. The sinking of crust is relation to the surrounding parts on either side of two parallel faults may also form a block mountain. So, much mountains may be formed between two rift valleys.

https://youtu.be/kw9mMKUgwBk

**Rift Valley:** When the crust between two roughly parallel faults sinks down or subsides, a narrow steep sided valley is formed. It is known as Rift Valley (Graben in German language).

**Examples:**

1. The Vosges Mountain in France and the Black Forest in Germany are typical examples of Block mountains. River Rhine flows between them in a rift Valley.
2. The most well known rift valleys is the Great Rift Valley of Africa, which stretches from Mozambique in the south to Syria in the north. The total length of this rift Valley is about 6440 km.
3. River Narmada in India also flows in a rift valley between the Vidyanchal and Satpura mountains as Block Mountains.

3. **Residual Mountains**

   When an area of highland remains standing after getting badly eroded by the agents of gradation or denudation such as winds, rivers, glaciers, etc. The harder rocks, which could not eroded, are left behind forming Residual Mountain. For example, Sierras of central Spain and the Mesas and Buttes of the western plateau land of U.S.A. In India, the hills of Parasnath, Rajmahal are typical examples of such mountains, which have been worn down and turned into hills.

**SIGNIFICANCE OF MOUNTAINS**

Although, the cold climate of mountains, scarcity of good and fertile soil, steep slopes, snow covered regions are great obstacles to farming. The rugged terrain further adds to the difficulties but man has utilized the mountains.

1. Terraced farming is practised in the hill slopes. Rice, tea, coffee, fruits, etc. are cultivated in these regions.
2. Herding is much more common in mountainous regions than farming.
3. Lumbering or forest activity is another important occupation in the mountains of middle and higher latitudes.
4. Some mountains have mineral deposits. For example, tin, copper, gold, platinum, etc. are found in different parts of Andes.
5. Scenic beauty and cool climate attract tourists and health-seekers.
6. Swift flowing rivers are the source of hydroelectric power.

**Answers of Geography Worksheet-7**

1. The rocks are classified into three groups on the basis of their mode of formation. They are as follows:
   - Igneous rocks
   - Sedimentary rocks
   - Metamorphic rocks

2. Rocks having the nature of fire or high temperature are called the igneous rocks. There is actually no fire involved but it should be integrated to mean high temperatures. They are of thermal origin. In fact the word igneous is derived from the Latin word ignis meaning fire. In Sanskrit Agni. These rocks were formed by solidification of hot fluid Rock material that is magma.

3. All the minerals crystallize or solidify at different temperature. Some of the heavier minerals which crystallizes or solidify at lower temperatures are found near The crust.

4. All igneous rocks are crystalline in nature as these are composed of closely fitting mineral crystals that have formed in the rock substance.

5. The combined process of compaction and cementation by which unconsolidated rock forming materials are converted into a consolidated are coherent sedimentary rock layers is known as lithification.

6. The different agents of gradation are running water, river, winds etc.

7. Causes of metamorphism
   - It may be caused as a result of volcanic activity
   - It may be caused due to movements in the earth CRUST
   - Metamorphism takes place over long periods of time and makes the rocks harder and more resistant than the original rocks

8. The sedimentary rocks are also called stratified rocks as they are formed in layers or strata.

9. Metamorphism takes place over a long period of time specially during mountain building process which makes the rocks more resistant and original rocks.
Laws of motion

1. Newton’s First Law of Motion:

If a body is in a state of rest, then it will remain in that state, and if the body is in a state of motion, then it will continue moving with the same velocity in the same direction unless an external force is applied to it.

a. Inertia:

An object does not change its state of rest or uniform motion by its own. The inability of any object to change its state is called inertia. Newton’s first law of motion gives the concept of inertia and force.

Inertia:

*The property of an object by virtue of which it neither changes its state nor tends to change the state is called inertia. In other words, inertia is that property of a body due to which it resists a change in its state of rest or of uniform motion.*

b. Force:

Force is that external cause which tends to change the state of rest or the state of motion of an object.

**Galileo’s law of inertia:**

*A body continues to be in the state of rest or in the state of uniform motion unless an external force is applied to it. This law leads to the following observations.*

I) If a body is at rest, it remains at rest unless a force is applied to it.

2) If a body is moving, it will continue to move with the same velocity in the same direction unless a force is applied to it.
2. The qualitative discussion of Newton’s first law:

<table>
<thead>
<tr>
<th>Force</th>
<th>Mass and Inertia:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force is a vector quantity.</td>
<td>The property of inertia is because of the mass of the body.</td>
</tr>
<tr>
<td>Sum of two equal and opposite forces is zero.</td>
<td>The greater the mass, the greater is the inertia of the body.</td>
</tr>
<tr>
<td>A body acted upon by several forces can also have the resultant net force on it equal to zero.</td>
<td>Inertia is directly proportional to mass. Mass is a measure of inertia.</td>
</tr>
</tbody>
</table>

# Kinds of Inertia:

**Inertia of Rest**

*If a body is at rest, it will continue to remain at rest unless a force from outside is applied to change its state of rest.*

**Inertia of Motion**

*A body in a state of motion continues to be in the state of motion with the same speed in the same direction in a straight line unless an external force is applied on it to change its state.*

#solve the following given questions:

1. The S.I. unit of force is
   I. Kg/m/s
   II. Kg/m/s²
   III. Newton
   IV. Newton-meter
2. A coin placed on a card (rested at the edges of the glass) remains at rest because of
   I. Inertia of rest
   II. Two forces act on the coin which balance each other
   III. No unbalanced force acts on it
IV. All of the above

3. A force of 50N moves a body,
   I. Friction force exerted on the body is less than 50N
   II. Friction force exerted on the body is more than 50N
   III. None of these
   IV. Both of I and II

4. Give three examples exhibiting inertia in our daily life
   10. What change will a force bring in a body

5. Why does an athlete take a longer jump if he comes running from a distance than when he jumps suddenly from the take-off line?

6. A football and a stone has same mass
   I. Both have same inertia
   II. Both have same momentum
   III. Both have different inertia
   IV. Both have different momentum

7. State Galileo’s law of inertia.

8. What is inertia?

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**Answer Key of Physics Worksheet-8**

**Solution:**

1. Please refer above worksheet for the difference.
2. Please refer above worksheet for the difference.
3. The effect of a force applied on I) configuration or shape of the body will change
   ii) a rigid body- configuration or shape will not change.
5. (a) Stopped moving a body- moving ball
   (b) To kick a stationary ball
   (c) The force acting on a spring or a rubber band when we stretch it..
   (d) Changes the shape of a body-The force acting on the dough when we roll a
      chapati/roti

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HYDROGEN CHAPTER CONTINUED

LABORATORY PREPARATION OF HYDROGEN

Hydrogen is prepared in the laboratory by the action of dilute hydrochloric acid or dilute sulphuric acid on granulated zinc.

POINTS TO REMEMBER:

✓ Granulated zinc is used.
✓ Dil.nitric acid is not used.
✓ The gas is collected by downward displacement of water.
✓ The following precautions should be taken while preparing hydrogen gas:
  i) No flame should be near the apparatus
  ii) The gas is collected when all the air has escaped from the apparatus.

$\text{Metal + Dilute acid } \rightarrow \text{ Salt + Hydrogen}$

\[
\begin{align*}
\text{Zn} + 2\text{HCl} & \rightarrow \text{ZnCl}_2 + \text{H}_2 \uparrow \\
\text{Zn} + \text{H}_2\text{SO}_4 & \rightarrow \text{ZnSO}_4 + \text{H}_2 \uparrow
\end{align*}
\]
iii) The end of the thistle funnel should dip below the level of dil.acid in the round bottom flask.

NOTE:

- Granulated zinc is used because it contains impurities which act as a catalyst.
- Dilute nitric acid is not used because it is a strong oxidizing agent and oxidises H₂ into H₂O.
- The gas is collected over water because it is insoluble in water.
- Even though hydrogen is lighter than air, it is not collected by downward displacement of air because it forms an explosive mixture with air.
- No flame should be near the apparatus because it forms an explosive mixture with air.
- The gas is purified using the following solutions:
  i) Arsine and Phosphine are removed using AgNO₃ solution
  ii) H₂S is removed using Pb(NO₃)₂ solution
  iii) NO₂, CO₂, SO₂ is removed using KOH solution
  iv) Moisture is removed using fused CaCl₂

ANSWER THE FOLLOWING:

1. Why granulated zinc is used?
2. Why dil. Nitric acid is not used?
3. Why hydrogen is collected by downward displacement of water and not air even though it is lighter than air?

ANSWERKEY OF CHEMISTRY WORKSHEET-8

1. Hydrogen
2. Given in worksheet -8
3. Strong oxidizing agent
4. Forms insoluble salts
ANIMAL TISSUES - The main types of animal tissues are:

1) **Epithelial Tissue.**
2) **Connective Tissue.**
3) **Muscle Tissue.**
4) **Neural Tissue.**

1) **EPITHELIAL TISSUE** - It is a thin, protective sheet of cells. Shape - May be flat, cuboidal or cuboidal in shape. But in all cases, the cells are tightly together without any intercellular spaces.

LOCATION - It covers the surface of the body and lines the various body cavities and internal organs. Examples: The outermost layer of skin and the lining surfaces of the mouth, nose and stomach etc.

FUNCTION - Protection (as on skin), absorption, secretion (as in intestine) etc.

Different kinds of epithelial tissues in the animal body on the basis of its shape are:

a) **Squamous epithelium** - It is composed of thin, flat, irregular closely packed cells. Location - found in the lining surfaces of mouth and nasal cavities, blood vessels.

b) **Stratified epithelium** - It is composed of several layers of the same or different kinds of epithelial cells. Location - Found in skin and cornea.

c) **Cuboidal epithelium** - Location - Found in some parts of kidney tubules.

d) **Columnar epithelium** - It is composed of vertically arranged cylindrical or brick-like cells. Location - Found in the inner lining of stomach and intestine.

- Ciliated columnar epithelium - Location - In the lining of trachea (windpipe)

Function - The cells of ciliated epithelium have thread like projections called cilia which constantly keep lashing and move the materials which enter these regions.

- Glandular columnar epithelium - It contains large cells which secrete chemical substances.

Location - Found in the lining of stomach and intestine.
2) CONNECTIVE TISSUE—It binds one tissue with another and also connects various organs.
   Its classification is as follows:
   • Connective tissue proper—which serves for packing and binding the organs.
   • Supportive connective tissue—which gives support to the body.
   • Fluid connective tissue—including blood and lymph.

A) CONNECTIVE TISSUE PROPER—It includes three subcategories:

   a) Areolar tissue-
      Location - occurs beneath the epidermis.
      Function-It makes the skin elastic and helps it to withstand pulling strain.
   b) Adipose tissue-
      Location-It forms padding under the skin and around kidneys, eyeball etc.
      Function-It stores fat and padding under the skin acts as an insulation for retaining body heat.
   c) Fibrous connective tissue-It is made up of elongated cells called fibres which are strong and bundled together by areolar tissue. They form tendon connects which connects muscle to bone and ligaments which connects bone to bone.
B) **SUPPORTIVE CONNECTIVE TISSUE**-It includes bone and cartilage.
   a) Bone-It is hard porous tissue. It has a good supply of blood vessels and nerves. It is composed of living cells called osteoblasts.
   b) Cartilage-It is soft non porous tissue. It is semi-transparent and elastic .It has no blood vessels or nerves.
       Location - Found in the tip of the nose, external ears, trachea etc.

C) **FLUID CONNECTIVE TISSUE**-It includes blood and lymph.
   Function-Both are concerned with transportation and also with immunity.
   a) Blood-It is composed of liquid part plasma and cellular part red blood cells, white blood cells and platelets.
   b) Lymph-It is the fluid surrounding the body cells. It is composed of blood plasma and white blood cells .It does not contain red blood cells.

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**ASSIGNMENT:**
Q) 1 Give location of each of the following:
   a) Squamous epithelium.
   b) Stratified epithelium.
   c) Cuboidal epithelium.
   d) Ciliated columnar epithelium.

Q) 2 Give one function of each of the following:
   a) Ciliated columnar epithelium.
   b) Adipose tissue.

Q) 3 Give one difference between each of the following:
   a) Tendons and ligaments.
   b) Bone and cartilage.
   c) Blood and lymph.

---

**ANSWER KEY BIOLOGY WORKSHEET 8**

Q) 1
   (a) Location-These are found on the surface of roots, stems and leaves.
       Function-Protection from outside environment prevents excess loss of water etc.

   (b) Location - Found in soft parts of plants such as cortex and pith.
       Function - Provide temporary support to the plants. Stores food in the case of potatoes.

   (c) Location- Found in the leaf stalks and below the epidermis of stems.
Function - Provides support to the parts of plant.

(d) Location - Found in stems and veins of leaves.
Function - Provides strength to the parts of plant.

Q) 2

a. Parenchyma-These consist of large thin walled cells which can be oval, circular or polygonal in shape and Collenchyma- These consist of cells which are elongated and the cell wall is thickened at the corners.

b. Collenchyma- These consist of cells which are elongated and the cell wall is thickened at the corners and Sclerenchyma-These consist of long, narrow, highly thick walled cells due to deposition of lignin. They become dead.

c. Simple tissues which mean these are made up of one type of cell and complex tissues which means made up of more than one type of cells.

d. Xylem: Its function is to provide upward conduction of water and dissolved materials from roots to other parts of plant and Phloem: Its function is to provide a passage for downward movement of food from the leaves to various parts of plant.
The partnership form of business is an extension of sole proprietorship. When one person is unable to meet the financial and managerial requirements of a growing business, he takes a partner.

MEANING OF PARTNERSHIP:

A partnership is a voluntary association of two or more persons who agree to carry on some business jointly and share its profits and losses. The persons who enter into partnership are individually called ‘partners’ and collectively a ‘firm’. The name under which they carry on business is called ‘firm name’.

In other words, a partnership is a formal arrangement by two or more parties to manage and operate a business and share its profits.
A partnership is an arrangement between two or more people to oversee business operations and share its profits and liabilities. In a general partnership company, all members share both profits and liabilities.

**FEATURES OF PARTNERSHIP:**

The essential features of partnership are as follows:

1. **Two or more persons**: There must be at least two persons to form a partnership. A person cannot enter into partnership with himself. The maximum number of persons is 50 as per Rule 10 of the Companies (Miscellaneous) Rule 2014. If the number of partners exceeds the prescribed maximum, it would become an illegal association of persons. A firm cannot become a partner of another firm though its partners can join any other firm as partners.

2. **Agreement**: Partnership is the outcome of an agreement between persons. The relation of partnership arises from the formation of a contract and not from status or birth. If a proprietor gives a share in profits to his employee, it will not be called a partnership unless there is an agreement of partnership between the two. The agreement may be oral or in writing but it must satisfy all the essentials of a valid contract.

3. **Lawful business**: A partnership can be formed only for the purpose of carrying on a business. An association of persons who jointly own a house without carrying on a business is not partnership. Moreover, the business carried on by the partners must be lawful. Cooperation in illegal acts such as theft, dacoity, smuggling, etc., cannot be called partnership.
4. **Sharing of profit**: The agreement between the partners must be to share the profits of a business. There can be no partnership without the intention of mutual gain. The profits must be distributed among the partners in an agreed ratio. Similarly, losses should be shared among the partners.

5. **Mutual agency**: Partnership business can be carried on by all the partners or by any of them acting on behalf of the others. In other words, every partner is an implied agent of the other partners and of the firm. Each partner is liable for acts performed by other partners on behalf of the firm.

6. **Utmost good faith**: The relations between partners are based upon mutual trust and confidence. Every partner is expected to act in the best interests of other partners and of the firm as a whole. He must observe utmost good faith in all the dealings with his co-partners. He must render true accounts and make no secret profits from the business.

7. **Unlimited liability**: In a partnership, every partner is liable to an unlimited extent for the debts of the firm. In case the assets of the firm are insufficient to pay the creditors in full the personal assets of partners can be utilised for the purpose.

8. **Restriction on transfer of interest**: A partner can transfer his share in the firm only with the consent of other partners.

| **DISTINCTION BETWEEN SOLE PROPRIETORSHIP AND PARTNERSHIP** |
|-----------------|-----------------|-----------------|-----------------|
| **S.No.** | **Basis of Distinction** | **Sole Proprietorship** | **Partnership** |
| 1. | Number of owners | One person | Minimum – 2, Maximum – 50 |
| 2. | Agreement | No agreement is required | Agreement is essential. |
| 3. | Division of profits/loss | No division of profit and no sharing of risk | Division among the partners in agreed ratio. |
| 4. | Implied agency | No implied agency | Generally every partner is an implied agent of the firm. |
| 5. | Ownership and control | Not shared | Shared by partners. |
6. Secrecy
   Complete secrecy
   Secrets known to partners.

7. Continuity of business
   Life of business depends on proprietor.
   Greater continuity due to two or more partners.

8. Coordination
   No problem of coordination due to single owner.
   Coordination between partners required.

**LIMITED LIABILITY PARTNERSHIP (LLP)**

Limited partnership is now allowed in India under the Limited Liability Partnership Act, 2008. The chief characteristics at a limited liability partnership are as follows:

(i) A limited liability partnership must be registered under the Act with a minimum of two partners. There is no limit on the maximum number of partners.
(ii) An LLP is a body corporate having a separate legal entity and perpetual succession.
(iii) In an LLP the liability of partners is limited to their agreed contributions to the LLP. No partner would be liable on account of any unauthorised or independent actions of other partners.
(iv) An LLP must maintain annual accounts reflecting the true and fair view of its state of affairs.
(v) The liability of partners and the firm would become unlimited in case the firm or its partners carry out any act with the intention to defraud the creditors or any other person or for any fraudulent purpose.
(vi) Thus, **LLP is a hybrid form of business organisation combining features of both partnership firm and joint stock company.**
Q1. Define Partnership.
Q2. Discuss any three features of Partnership.
Q3. Differentiate between Sole proprietorship and Partnership.
Q4. What do you understand by LLP?

**ANSWER KEY OF PREVIOUS WORKSHEET(SOLE PROPRIETORSHIP)**

Ans:1 Sole proprietorship means a business owned, financed and controlled by a single person. The owner, called the proprietor, alone is responsible for the profits and loss of the business. It is a one man business.

Ans:2 One man control is the best because there is a freedom of action, decisions an be taken quickly and there is a complete secrecy of affairs. But one man cannot be an expert in all matters and his resources are limited. Beyond a certain size one man cannot manage and control effectively the activities of the enterprise.

Ans:3 1. **Single ownership:** A sole proprietorship is wholly owned by one individual. The individual supplies the total capital from his own wealth or from borrowed funds.

2. **Unlimited liability:** The proprietor is personally liable for all the debts of the business. In case the assets are insufficient to meets its debts, the personal property of the proprietor can be attached.

3. **No profit-sharing:** The sole proprietor alone is entitled to all the profits and losses of business. He bears the complete risk and there is nobody to share the profits or losses.

4. **Small size:** The scale of operations carried on by a sole proprietorship is generally small. A sole trader can arrange limited funds and managerial ability. Therefore, the area of operations is limited.
RATIONAL AND IRRATIONAL NUMBERS

In worksheet 8 as well as in pp3, we have learnt about terminating and recurring decimals. We shall now study the concept of rational and irrational numbers.

**Rational Numbers**: The numbers which can be expressed in the form \( \frac{p}{q} \), where \( p \) and \( q \) are integers and \( q \neq 0 \) are called rational numbers.

For Example: \( \frac{4}{7}, \frac{-8}{3}, -7, 2, 0, \sqrt{4}, \sqrt{27} \) etc. [\( \sqrt{4} \) can be written as \( \frac{7}{1} \), \( \sqrt{27} \) can be written as \( \sqrt{3} \) \( \sqrt{3} \), it shows that square root of every perfect square is a rational number. Similarly, \( \sqrt{27} \) = 3 = \( \frac{3}{1} \) so cube root of every perfect cube is a rational number.]

**REMARKS**:

- Every integer \( p \) can be written as \( \frac{p}{1} \), so every integer is a rational number.
- Every fraction is a rational no.
- Every terminating decimal is a rational number. For example: \( 0.8 = \frac{4}{5}, 0.375 = \frac{3}{8} \) etc.
- Every recurring decimal is a rational number because it can be written in the form \( \frac{p}{q} \).

For example: \( 0.\overline{43} = \frac{43}{99}, 0.\overline{12} = \frac{11}{90} \) etc. [In worksheet 8 and ppt3, we have learnt how to convert a recurring decimal into a vulgar fraction.]

**Example 1**: Insert three rational numbers between:

(i) \( \frac{3}{5} \) and \( \frac{7}{9} \)  
(ii) \( \frac{1}{3} \) and \( \frac{2}{5} \)

Solution: (i) \( \frac{3}{5} \) and \( \frac{7}{9} \)

Between two rational numbers, we can insert as many rational numbers as we want. In fact between two rational numbers there lie an infinitely many rational numbers.

LCM of 5 and 9 is 45

\[
\frac{3 \times 9}{5 \times 9} \quad \text{and} \quad \frac{7 \times 5}{9 \times 5}
\]

\( \frac{27}{45} \) and \( \frac{35}{45} \) [insert three rational numbers between 27 and 35]
\[
\begin{align*}
\therefore \frac{27}{45}, \frac{28}{45} & < \frac{29}{45}, \frac{31}{45}, \frac{35}{45} \\
\therefore 28 < 29 < 30 < 31 < 32 < 33 < 34
\end{align*}
\]

Now, insert any three rational nos. and simplify if possible.

Thus, three rational numbers between \(\frac{3}{5}\) and \(\frac{7}{9}\) are:

\[
\frac{28}{45}, \frac{29}{45}, \frac{31}{45}
\]

(ii) \(\frac{1}{3}\) and \(\frac{2}{5}\)

LCM of 3 and 5 is 15

\[
\begin{align*}
\frac{1\times5}{3\times5} & \quad \text{and} \quad \frac{2\times3}{5\times3} \\
\frac{5}{15} & \quad \text{and} \quad \frac{6}{15}
\end{align*}
\]

Further, multiply numerator and denominator by 5

\[
\begin{align*}
\frac{5\times5}{15\times5} & \quad \text{and} \quad \frac{6\times5}{15\times5} \\
\therefore \frac{25}{75} & \quad \text{and} \quad \frac{30}{75}
\end{align*}
\]

\[\text{[now insert three rational nos. between 25 and 30]}\]

\[
\begin{align*}
\therefore \frac{25}{75}, \frac{26}{75}, \frac{27}{75}, \frac{29}{75}, \frac{30}{75} & \quad \text{[} \frac{27}{9}, \frac{28}{9}, \frac{29}{9} \text{]} \\
\end{align*}
\]

(iii) Thus, the three rational numbers between \(\frac{1}{3}\) and \(\frac{2}{5}\) are:

\[
\frac{26}{75}, \frac{9}{25}, \frac{29}{75}
\]

Non terminating decimals:

1. Recurring (Repeating) Decimals: Done in ppt 3 as well as in worksheet 8.

2. Non Recurring (Non Repeating) Non Terminating Decimals: The numbers which when expressed in decimals, continue indefinitely without repeating are called non recurring decimals.

For Example: \(\sqrt{2}, \sqrt{5}, \sqrt[3]{12}, \sqrt[3]{9}\) etc.

[2 and 5 are not the perfect squares, 12 and 9 are not the perfect cubes]

Non recurring (non repeating) non terminating decimals are known as **Irrational Nos**.

The numbers given above are the examples of **Irrational Nos**. Thus, the square root of every non perfect square and the cube root of every non perfect cube are non terminating and non repeating decimals.
Some Results On Irrational Numbers:

1. The negative of an irrational number is irrational. For example: \( \sqrt{3} \) is an irrational no. and negative of \( \sqrt{3} \) is \(-\sqrt{3}\), which is irrational.

2. The sum of a rational and an irrational number is irrational. For example: \(5 + \sqrt{7}\)

   In this example, \(5\) is a rational number and \(\sqrt{7}\) is an irrational number. \(5 + \sqrt{7}\) is irrational.

3. The sum of two irrational numbers need not be an irrational number. For Example: \((2 + \sqrt{3})\) and \((2 - \sqrt{3})\) both are irrational numbers. \((2 + \sqrt{3}) + (2 - \sqrt{3}) = 4\) which is rational. \[\therefore \sqrt{3} - \sqrt{3}\]

4. The difference two irrational numbers need not be an irrational number.

   For Example: \((4 + \sqrt{7})\) and \((5 + \sqrt{7})\) are two irrational number, then their difference is:

   \[4 + \sqrt{7} - 5 - \sqrt{7} = 4 - 5 = -1, \text{ which is a rational number.}\]

5. The product of two irrational numbers need not be an irrational number.

   For Example: \(\sqrt{2}\) and \(\sqrt{8}\) are irrational numbers, their product is:

   \[\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4, \text{ which is rational.}\]

Example 2: State giving reason, whether the given number is rational or irrational:

(i) \(\frac{\sqrt{6}}{4}\) (ii) \(\frac{3}{\sqrt{2}}\) (iii) \((3 + \sqrt{3}) \times (3 - \sqrt{3})\)

Solution: (i) We can write, \(\frac{\sqrt{6}}{4} = \sqrt{6} \times \frac{1}{4}\), here \(\sqrt{6}\) is irrational and \(\frac{1}{4}\) is rational, then \(\frac{\sqrt{6}}{4}\) is irrational because the product of rational and irrational is irrational.

(ii) \(\frac{3}{\sqrt{2}}\), In this given number, denominator is an irrational number i.e. \(\sqrt{2}\)

First of all, we will convert the denominator into a rational number by multiplying numerator and denominator by \(\sqrt{2}\), we get,

\[
\frac{3 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{3\sqrt{2}}{2} \quad \quad [\sqrt{2} \times \sqrt{2} = \sqrt{4} = 2]
\]
Now, \( \frac{3\sqrt{2}}{2} \) can be written as \( 3 \sqrt{2} \times \frac{1}{2} \), we know that the product of rational and irrational number is irrational, thus \( \frac{3}{\sqrt{2}} \) is an irrational number.

(iii) \((3 + \sqrt{3}) (3 - \sqrt{3})\)

\[
= 3^2 - (\sqrt{3})^2
\]

using \((a+b) (a-b) = a^2 - b^2\)

\[
= 9 - 3 = 6, \text{ which is rational, we know that the product of two irrational numbers need not be an irrational number.}
\]

**Example 3**: Write down the values of:

(i) \( \left( \frac{3}{2} \sqrt{2} \right)^2 \)

(ii) \( (3 + 2 \sqrt{5})^2 \)

(iii) \( (\sqrt{5} + \sqrt{6})^2 \)

(iv) \( \left( \frac{3}{2\sqrt{2}} \right)^2 \)

**Solution**: (i) \( \left( \frac{3}{2} \sqrt{2} \right)^2 = \left( \frac{3}{2} \right)^2 (\sqrt{2})^2 \)

\[
= \frac{9}{4} \times 2 \times \sqrt{2} \times \frac{1}{2} = \frac{9}{2} = 4 \frac{1}{2}
\]

(ii) \( (3 + 2 \sqrt{5})^2 = 3^2 + (2 \sqrt{5})^2 + 2 (3) (2 \sqrt{5}) \)

using \((a + b)^2 = a^2 + b^2 + 2ab\)

\[
= 9 + 4 \times 5 + 12 \sqrt{5}
\]

\[
= 9 + 20 + 12 \sqrt{5}
\]

\[
= 29 + 12 \sqrt{5}
\]

(iii) \( (\sqrt{5} + \sqrt{6})^2 = (\sqrt{5})^2 + (\sqrt{6})^2 + 2 (\sqrt{5}) (\sqrt{6}) \)

\[
= 5 + 6 + 2 \sqrt{30}
\]

\[
= 11 + 2 \sqrt{30}
\]

(iv) \( \left( \frac{3}{2\sqrt{2}} \right)^2 = \frac{9}{4 \times 2} = \frac{9}{8} \)
Example 4: Show that each of the following numbers is irrational:

(i) \((3 - \sqrt{3})^2\)  
(ii) \(\frac{6}{\sqrt{3}}\)

Solution (i) \((3 - \sqrt{3})^2\)

\[
= (3)^2 + (\sqrt{3})^2 - 2(3)(\sqrt{3}) \quad \text{using} \quad (a - b)^2 = a^2 + b^2 - 2ab
\]

\[
= 9 + 3 - 6\sqrt{3}
\]

\[
= 12 - 6\sqrt{3} = 12 + (-6\sqrt{3}) \quad \text{which is irrational because the sum of a rational and an irrational number is irrational.}
\]

(ii) \(\frac{6}{\sqrt{3}} = \frac{6}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}\)

\[
to make the denominator rational, multiply numerator and denominator by \sqrt{3}
\]

\[
= \frac{6\sqrt{3}}{3} = \frac{2}{3} = 2\sqrt{3} \quad which is irrational because the product of a rational and an irrational number is irrational.
\]

Questions for practice:

1. Insert two rational numbers between \(\frac{3}{4}\) and \(1\frac{1}{5}\)

2. Insert three rational numbers between (i) \(\frac{1}{2}\) and \(\frac{3}{5}\)  (ii) \(-\frac{1}{2}\) and \(\frac{1}{3}\)  (iii) \(-\frac{1}{3}\) and \(\frac{1}{4}\)

3. Classify the rational and irrational numbers from the following:

   (i) 5  
   (ii) \(\frac{9}{14}\)  
   (iii) \(\sqrt{2}\)  
   (iv) \(\pi\)  
   (v) 3.1416

   (vi) \(\sqrt{4}\)  
   (vii) \(-\sqrt{5}\)  
   (viii) \(\sqrt[3]{8}\)  
   (ix) \(\sqrt[3]{3}\)  
   (x) \(2\sqrt{6}\)
(xi) 0.36  (xii) $\frac{3}{2\sqrt{3}}$  (xiii) $\frac{22}{7}$  
[Hint: $\pi$ is irrational whereas $\frac{22}{7}$ is rational because $\frac{22}{7}$ is in the form $\frac{p}{q}$]

4. If $U = \{-8, \sqrt{25}, -\frac{3}{5}, \sqrt{8}, 0, \pi, \frac{3}{\sqrt{5}}, 2.\overline{4}, -\sqrt{3}\}$, then describe the set of
   (i) rationals in $U$  (ii) irrationals in $U$.

5. State giving reason, whether the given number is rational or irrational:
   (i) $(3 + \sqrt{5})$  (ii) $(-1 + \sqrt{3})$  (iii) $5\sqrt{6}$  (iv) $-\sqrt{7}$  
   [HINT: Read the rules carefully
   (v) $(2 + \sqrt{2})$  $(2 - \sqrt{2})$  
   to answer these questions, same as example 2]

6. Write down the values of:
   (i) $(2\sqrt{3})^2$  (ii) $(5 + \sqrt{3})^2$  (iii) $(\sqrt{6} - 3)^2$  
   [HINT: Same as example 3]

7. Show that each of the following numbers is irrational:
   (i) $(2 + \sqrt{5})^2$  (ii) $(\sqrt{5} + \sqrt{3})^2$  
   [HINT: Same as example 4]

---

**Answer key of Maths worksheet 8**

1) (i) no  (ii) yes  (iii) no  (iv) yes  (v) no

2) (i) $\frac{13}{20}$  (ii) $\frac{3}{40}$  (iii) $\frac{252}{125}$  (iv) $\frac{433}{250}$

3) (i) 0.09375  (ii) 4.8  (iii) 0.4583  (iv) 1.5636  (v) 2.416

4) 0.2679  5) 0.382

6) (i) $\frac{2}{3}$  (ii) $\frac{4}{3}$  (iii) $\frac{11}{90}$  (iv) $\frac{3}{22}$  (v) $\frac{3143}{999}$
WEALTH

Meaning: In common use, the term 'wealth' mean money, property, gold, etc. But in economics, it is used to describe all things that have value.

‘Wealth refers to all the goods which can satisfy human wants and for which payments are made’. In other words all economic goods are wealth. OR Wealth has been defined as ‘Stock of goods existing at a given time that have money value’.

For a commodity to be called wealth, it must possess the following four characteristics

1. Utility - Wealth must have power to satisfy human wants. Any commodity which has no utility cannot be termed as wealth. It must possess utility: That is, it must have the power to satisfy a want. As Marshall says, ‘they must be desirable’.

2. Scarcity - Scarcity is another essential characteristic of wealth. To be wealth a commodity must have scarcity in supply in relation to its demand. It must be limited in supply. For example, air, sunshine are all essential for life. In fact, man cannot live without them. They possess great utility but they are not considered wealth because they are available in large quantities. Their supply is not limited. In other words, there is no scarcity of those goods. Such goods are known as free goods.

3. Transferability - Wealth must possess the characteristic of transferability i.e. changing of ownership from one man to another man. If a thing lacks even one characteristic, it cannot be called wealth. For example, sunshine has great utility but no scarcity and thus no price. Likewise, the commodity to be treated as wealth should also possess the characteristic of transferability. It should be transferable. That is it must be possible for us to transfer the ownership of such economic goods, which form wealth, from one person to another. For example, take a house. House is wealth. For it has money value. If I pay some money to you and buy it, I can transfer the ownership rights of house in my name.

4. Externality - To be wealth a commodity must have externality, i.e., it must have its external shape and structure. Those things which are external to man can only be transferred. Thus, only external possession of a man can be termed as wealth. But an internal quality like intelligence or patriotism does not have externality and thus cannot be termed as wealth. Thus both material and non-material things can be termed as wealth in economics if they possess all the four characteristics of wealth mentioned above- utility, scarcity, transferability and externality.

Thus utility, scarcity and transferability are the important characteristics of wealth. Because an economic good possesses utility and is scarce in relation to demand and is
capable of being transferred from one person to another, it has money value and so it is considered as wealth.

**Forms of Wealth or Classification of Wealth**

Wealth may be of the following types:

Wealth can be classified as Individual Wealth or Personal wealth, social wealth or collective wealth, national wealth, and International wealth or cosmopolitan wealth.

**Personal Wealth (Individual Wealth)**

Wealth owned by an individual is called private or individual wealth. The wealth of a person consists of both material and non-material goods. Thus the wealth of the person includes such material things as land, houses, furniture, machinery and so on. Not only that, if a person has some shares in companies or bonds which require others to pay money to him, they should be included in his personal wealth. On the other hand, if he owes some debt to others, it should be regarded as negative wealth and so subtracted from his gross wealth. Then we get the net wealth of a person. An individual may hold wealth in the following forms - Cash in hand or at banks, Financial- assets such as bonds, shares of companies, Real assets such as houses, farms, cars etc.

Thus a person’s wealth is defined as the stock of all transferable goods owned by any person.

**Social Wealth (Collective Wealth)**

Social wealth consists of all these goods that can be enjoyed by all members of a society. Social wealth includes public roads, public parks, public schools, government hospitals, public libraries, museums and so on. In short, it includes all kinds of public property and ownership. Most of these things are called collective goods, i.e., goods that are not in private ownership.

**National Wealth**

National wealth is the stock of all tangible (real) assets that contributes to the production of goods and services. Tangible wealth consists of two categories

(a) **Reproducible Assets** - assets are man-made and therefore can be reproduced. These assets consist of fixed assets such as machinery and equipments, residential and non-residential buildings and stock of non-durable goods, both consumer goods and capital goods.

(b) **Non-reproducible Assets** - Non-reproducible assets include natural resources, such as land, mineral wealth, forests, etc. They are regarded as gifts of nature. Thus
the national wealth of a country is the sum of all public properties in the country. This also takes into account that part of the total personal wealth in the country which is not a liability for the government. For example, if a citizen of the country holds a Government bond, it is personal wealth. But from the point of the government, it is a liability and hence, it should not be considered a part of national wealth. On the other hand, a car owned by a person is considered as a part of national wealth.

Thus National wealth includes individual wealth as well as the collective wealth of its members. That is, it includes besides individual wealth all kinds of public property, such as roads and canals, buildings and parks and water works.

**International wealth or Cosmopolitan Wealth**

Cosmopolitan wealth is the wealth of the world. It belongs to no one nation in particular. Wealth owned by several countries example United Nations and its various agencies are an example of international wealth. A common example of cosmopolitan wealth is the ocean. As Prof. Marshall said “Just as rivers are important elements of national wealth, the ocean is one of the most valuable properties of the world.” Again, scientific knowledge and mechanical inventions may also be considered as International or Cosmopolitan wealth.

Answer the following Questions:

Q1. Define the term Wealth?

Q2. Describe any two basic characteristics of wealth?

Q3. Explain (Any) two forms of wealth?

Answer key of Economics Worksheet-6

**ANSWER THE FOLLOWING QUESTIONS:**

Q1. Explain the term Utility?

**Ans:** Utility refers to want satisfying power of a commodity. When a commodity is capable of satisfying human wants, we say that the commodity has utility.

Q2. Point out the characteristics of utility with examples?

**Ans:** Characteristics can be explained as follows-
Utility is Subjective: Utility is Subjective. It means utility of a commodity differs from person to person. Tea is of great utility for a man who is accustomed to it, but it has no utility for a man who is not used to it.

Utility is Relative: Utility is a relative concept. A commodity may possess different utility at different times or at different places. For example, a raincoat has greater utility in rainy season than in other seasons.

Utility has got no real existence: Whether any person would get more or less utility from the consumption of any commodity, is completely a psychological factor. Hence, utility has got no real existence. For example, utility of wine is created to any drunkard. But when that person gives up the habit of drinking then wine will no longer create any utility.

Utility is abstract: Utility is the capacity of a commodity to satisfy want. Utility is abstract in the sense that it cannot be seen or touched. For example, knowledge of a teacher cannot be seen or touched.

Utility is not Pleasure: It is not necessary that a commodity possessing utility also gives pleasure when we consume it. For example, Medicine hydroxychloroquine is bitter in taste but it has the utility to treat the patient from malaria. Hence, there is no relationship between utility and pleasure.

Q3. What are ‘UTILS’?
Ans: Utils are imaginary and psychological units which are used to measure utility obtained from consumption of a certain quantity of a commodity.

Q4. Explain any two types of utility with examples?
Ans: Form Utility is that which is created by changing the shapes of goods. Value is added when the shape of a commodity is changed as desired. For example, a carpenter creates utility when he makes a table out of wood for the consumer. Similarly, form utility is created when a tailor stitches clothes for consumers.

Service Utility: Utility may also be created by performing services. Service utility is the utility created by providing service to someone. Such services are generally provided by professionals in the society to other people in the society. For example: The services of a doctor, a teacher, a lawyer, a trader or a middleman are obviously very useful to the society.
The Human Anatomy and Physiology

Skeletal System: Bones

The skeletal system is a combination of various bones, cartilages, tendons and ligaments. A newborn baby has approximately 300 bones but after the age of adolescence, the number of bones is reduced to 206. As a matter of fact, some of the bones unite with each other completely.

![Diagram of the Skeletal System](image-url)
- Protects the delicate organs.
- Provide a place for muscles and supporting structures (ligaments, tendons, etc.) to attach.
- Form a system of levers upon which muscles can act to produce body movements.

Femur in the upper leg is the longest bone and stapes in the middle ear is the smallest bone present in the human body.

**Identification of Various Bones**

**A. Neck- Cranium and Vertebrae**

**Cranium:** The Cranium is the part of the top portion of the brain. It consists of eight bones.

i. Frontal
ii. Parietal
iii. Occipital
iv. Temporal
v. Sphenoid
vi. Ethmoid

**Vertebrae:** Vertebrae are the bones of vertebrae or spinal column. Vertebrae take their names from the region of vertebral column that they occupy. Between each two bones or vertebrae there are pads of fibro-cartilage.
There are thirty three vertebral column. These are:
1. Seven Cervical Vertebrae i.e. C1-C7.
2. Twelve Thoracic Vertebrae i.e. T1-T12.
3. Five Lumbar Vertebrae i.e. L1-L5.
5. Four coccygeal (coccyx) Vertebrae.

B. Shoulder- Scapula and Clavicle

**Scapula:** The scapula is also called as the shoulder blade. It is a triangular as well as flat bone which provides as a site for attachment for various bones. It articulates with the humerus bone and with the clavicle bone.
- The anterior surface of the scapula is termed as ‘costal’ because this side faces the rib cage.
- The lateral surface of the scapula faces the humerus.
- The posterior surface of scapula faces outward.

**Clavicle:** The clavicle bone is also called collar bone. It is a long curved bone that forms the anterior part of the shoulder girdle. It extends between the sternum and the acromion of the scapula.
- It has a shaft and two extremities.
- It attaches upper limb to the trunk.
- It transmits force from the upper limb to the axial skeleton.
- Its sternal extremity articulates with the sternum and acromial extremity articulates with the acromion process of scapula.
- The clavicle bone is the most fractured bone in the body.
C. Thorax- Ribs and Sternum

**Ribs:** There are 12 pairs or 24 ribs. The ribs are flat and thin bones. They are attached behind to the thoracic vertebrae.

- They provide protection to vital organs in the upper body including heart and lungs
- They give shape and support to chest.
- They protect stomach, spleen and kidneys.
- They also help in breathing process.

The ribs are divided into the following three categories.

i. **True ribs:** The first seven pairs of rib bones are called true ribs. They are attached to spine by ligaments at the back and connected to sternum in the front.

ii. **False ribs:** The next three pairs of the ribs are known as false ribs. They are also attached to the spine at the back. They are not connected to the sternum in the front but they are connected to the lowest true rib.

iii. **Floating Ribs:** The last two pairs of the are the smallest of all the rib bones. They are called floating ribs. They are so called because they are connected to spine at the back but are not connected to anything at the front.
**Sternum:** The sternum is also called breast bone. It is a long, flat and narrow bone. Its shape is just like a necktie located in the centre of the chest. It is connected to the ribs.
- It forms the rib cage.
- It helps to protect lungs, heart and major blood vessels from injury.

The sternum is one of the largest and longest flat bones of our body. The sternum can be sub-divided into three regions; **the manubrium, the body and the xiphoid process.**

i. **Manubrium:** Manubrium is the upper part of the sternum. It is narrow from the top and has a quadrangular shape. It joins with the body of the sternum, the clavicles and the cartilages of the first pair of ribs.

ii. **Body:** The body is the longest part of sternum. It is a flat on the front. Its upper border is oval and articulates with the manubrium and the lowest border is narrow and articulates with the xiphoid process.

iii. **Xiphoid Process:** It is located at the inferior end of the sternum. It is cartilaginous in youth but ossifies later on.

**Questions**

1. What do you mean by skeletal system?
2. What is cranium?
3. What do mean by vertebrae?
4. Briefly discuss about scapula.
5. What is clavicle bone?
6. Describe about ribs and sternum in brief. Differentiate between true ribs and false ribs.
7. Give a brief description about sternum.
8. What do you mean by manubrium?
INTRODUCTION TO JAVA

We generally write a computer program using a high-level language. A high-level language is one that is understandable by us, humans. This is called **source code**.

However, a computer does not understand high-level language. It only understands the program written in 0's and 1's in binary, called the **machine code**.

To convert source code into machine code, we use either a **compiler** or an **interpreter**.

Both compilers and interpreters are used to convert a program written in a high-level language into machine code understood by computers. However, there are differences between how an interpreter and a compiler works.

**Interpreter Vs Compiler**

<table>
<thead>
<tr>
<th>Interpreter</th>
<th>Compiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translates program one statement at a time.</td>
<td>Scans the entire program and translates it as a whole into machine code.</td>
</tr>
<tr>
<td>It takes less amount of time to analyze the source code but the overall execution time is slower.</td>
<td>It takes a large amount of time to analyze the source code but the overall execution time is comparatively faster.</td>
</tr>
<tr>
<td>No intermediate object code is generated, hence are memory efficient.</td>
<td>Generates intermediate object code which further requires linking, hence requires more memory.</td>
</tr>
<tr>
<td>Continues translating the program until the first error is met, in which case it stops. Hence debugging is easy.</td>
<td>It generates the error message only after scanning the whole program. Hence debugging is comparatively hard.</td>
</tr>
</tbody>
</table>
Difference between ordinary compilation and Java Compilation

Source Program

Compiler for Macintosh → Machine Code for Macintosh
Compiler for Windows XP → Machine Code for Win XP
Compiler for UNIX → Machine Code for UNIX

Java Program

```
class HelloworldApp {
    public static void main(String arg[]) {
        System.out.println("Hello Word");
    }
}
```

HelloworldApp.java

Compiler

JVM

Win32

JVM

UNIX

JVM

MacOS
Features of Java

Simple: Java has made life easier by removing all the complexities such as pointers, operator overloading as you see in C++ or any other programming language.

Portable: Java is platform independent which means that any application written on one platform can be easily ported to another platform.

Object-oriented: Everything is considered to be an “object” which possess some state, behavior and all the operations are performed using these objects.

Secured: All the code is converted in bytecode after compilation, which is not readable by a human. and java does not use an explicit pointer and run the programs inside the sandbox to prevent any activities from untrusted sources. It enables to develop virus-free, tamper-free systems/applications.

Dynamic: It has the ability to adapt to an evolving environment which supports dynamic memory allocation due to which memory wastage is reduced and performance of the application is increased.

Distributed: Java provides a feature which helps to create distributed applications. Using Remote Method Invocation (RMI), a program can invoke a method of another program across a network and get the output. You can access files by calling the methods from any machine on the internet.

Robust: Java has a strong memory management system. It helps in eliminating error as it checks the code during compile and runtime.

High Performance: Java achieves high performance through the use of bytecode which can be easily translated into native machine code. With the use of JIT (Just-In-Time) compilers, Java enables high performance.

Interpreted: Java is compiled to bytecodes, which are interpreted by a Java run-time environment.

Multithreaded: Java supports multiple threads of execution (a.k.a., lightweight processes), including a set of synchronization primitives. This makes programming with threads much easier.