

SUBJECT-MATHEMATICS

CLASS-9

CHAPTER-Mid Point Theorem

Assignment:-

Date-

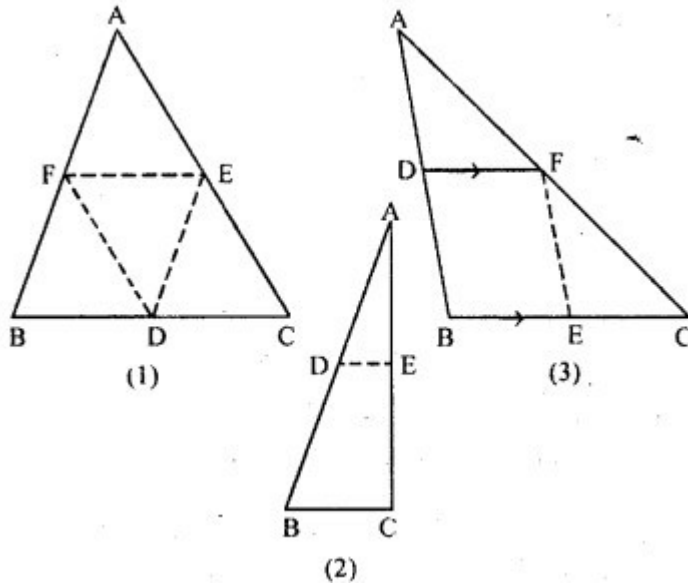
23.04.20

Question 1.

(a) In the figure (1) given below, D, E and F are mid-points of the sides BC, CA and AB respectively of  $\triangle ABC$ . If  $AB = 6$  cm,  $BC = 4.8$  cm and  $CA = 5.6$  cm, find the perimeter of (i) the trapezium FBCE (ii) the triangle DEF.

(b) In the figure (2) given below, D and E are mid-points of the sides AB and AC respectively. If  $BC = 5.6$  cm and  $\angle B = 72^\circ$ , compute (i) DE (ii)  $\angle ADE$ .

(c) In the figure (3) given below, D and E are mid-points of AB, BC respectively and  $DF \parallel BC$ . Prove that DBEF is a parallelogram. Calculate AC if  $AF = 2.6$  cm.



**Solution:**

(a) (i) **Given :**  $AB = 6$  cm,  $BC = 4.8$  cm, and  $CA = 5.6$  cm **Required :**  
The perimeter of trapezium FBCE.

$\therefore$  F is the mid-point  
of AB (given)

$$\therefore BF = \frac{1}{2} AB = \frac{1}{2} \times 6 \text{ cm} \\ = 3 \text{ cm} \quad \dots(1)$$

$\therefore$  E is the mid-point of AC  
(given)

$$\therefore CE = \frac{1}{2} AC \\ = \frac{1}{2} \times 5.6 \text{ cm} = 2.8 \text{ cm} \quad \dots(2)$$

Now F and E are the mid-point of the AB and CA

$$\therefore FE \parallel BC \text{ and } FE = \frac{1}{2} \times BC$$

$$\Rightarrow FE = \frac{1}{2} \times 4.8 \text{ cm} = 2.4 \text{ cm} \quad \dots(3)$$

$\therefore$  Perimeter of trapezium FBCE

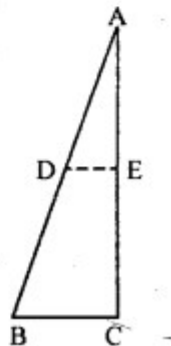
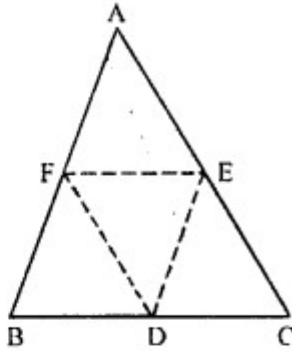
[substituting the value from (1), (2) and (3)]

$$= BF + BC + CE + EF \\ = 3 \text{ cm} + 4.8 \text{ cm} + 2.8 \text{ cm} + 2.4 \text{ cm} = 13 \text{ cm}$$

Hence, perimeter of trapezium FBCE = 13 cm **Ans.**

(ii)  $\therefore$  D, E and F are the mid-points of the sides BC, CA and AB of  $\Delta ABC$  respectively.

$$\therefore EF \parallel BC \text{ and } EF = \frac{1}{2} BC$$



$$\Rightarrow EF = \frac{1}{2} \times 4.8 = 2.4 \text{ cm}$$

Similarly,

$$DE = \frac{1}{2} AB = \frac{1}{2} \times 6 \text{ cm} = 3 \text{ cm}$$

$$\text{and } FD = \frac{1}{2} AC = \frac{1}{2} \times 5.6 \text{ cm} = 2.8 \text{ cm}$$

$\therefore$  Perimeter of  $\triangle DEF$

$$= DE + EF + FD$$

$$= 3 \text{ cm} + 2.4 \text{ cm} + 2.8 \text{ cm} = 8.2 \text{ cm Ans.}$$

(b) Given : D and E are mid-point of the sides AB and AC respectively.  $BC = 5.6 \text{ cm}$  and  $\angle B = 72^\circ$

Required : (i) DE (ii)  $\angle ADE$

Sol. In  $\triangle ABC$

$\because$  D and E are mid-point of the sides AB and AC respectively.

$\therefore$  By mid-point theorem

$$DE \parallel BC \text{ and } DE = \frac{1}{2} BC$$

$$(i) DE = \frac{1}{2} BC = \frac{1}{2} \times 5.6 \text{ cm} = 2.8 \text{ cm}$$

$$(ii) \angle ADE = \angle B$$

[(corresponding angles)]

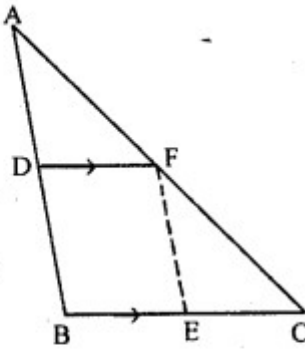
$$\therefore \angle ADE = 72^\circ$$

[ $\because BC \parallel DE$ ]

[ $\angle B = 72^\circ$ (given)]

(c) **Given :** D and E are mid-points of AB, BC respectively and  $DF \parallel BC$ ,  $AF = 2.6$  c.m.

**To prove :** (i) BEF is a parallelogram  
(ii) To calculate the value of AC



**Proof :** (i) In  $\triangle ABC$

$\therefore$  D is the mid-point of AB and  $DF \parallel BC$

$\therefore$  F is the mid-point of AC .....(1)

Now, F and E are mid-point of AC and BC respectively.

$\therefore$   $EF \parallel AB$  .....(2)

Now,  $DF \parallel BC$

$\Rightarrow DF \parallel BE$  .....(3)

$\therefore EF \parallel AB$  [From (2)]

$\Rightarrow EF \parallel DB$  .....(4)

From (3) and (4), DBEF is a parallelogram

(ii)  $\therefore$  F is mid-point of AC

$\therefore AC = 2 \times AF = 2 \times 2.6 \text{ cm} = 5.2 \text{ cm}.$

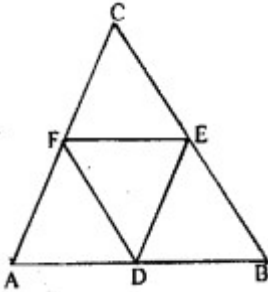
### Question 2.

Prove that the four triangles formed by joining in pairs the mid-points of the sides of a triangle are congruent to each other.

**Solution:**

**Given:** In  $\triangle ABC$ , D, E and F,

are mid-points of AB, BC and CA respectively. Join DE, EF and FD.



**To prove :**

$$\triangle ADF \cong \triangle DBE \cong \triangle ECF \cong \triangle DEF.$$

**Proof :** In  $\triangle ABC$ , D and E are mid-point of AB and BC respectively

$$\therefore DE \parallel AC \text{ or } FC$$

Similarly,  $DF \parallel EC$

$$\therefore DECF \text{ is a parallelogram.}$$

$\therefore$  Diagonal FE divides the parallelogram DECF in two congruent triangle DEF and CEF.

$$\therefore \triangle DEF \cong \triangle FCF \quad \dots(1)$$

Similarly we can prove that,

$$\triangle DBE \cong \triangle DEF \quad \dots(2)$$

$$\text{and } \triangle DEF \cong \triangle ADF \quad \dots(3)$$

From (1), (2) and (3),

$$\triangle ADF \cong \triangle DBE \cong \triangle ECF \cong \triangle DEF$$

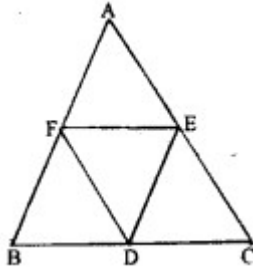
**(Q.E.D.)**

**Question 3.**

If D, E and F are mid-points of sides AB, BC and CA respectively of an isosceles triangle ABC, prove that  $\triangle DEF$  is also isosceles.

**Solution:**

**Given :** ABC is an isosceles triangle in which  $AB = AC$



D, E and F are mid point of the sides BC, CA and AB respectively D, E, F are joined

**To prove :**  $\triangle DEF$  is an isosceles triangle.

**Proof :** D and E are the mid points of BC and AC

$$\therefore DE \parallel AB \text{ and } DE = \frac{1}{2} AB \quad \dots(1)$$

Again, D and F are the mid-points of BC and AB respectively.

$$\therefore DF \parallel AC \text{ and } DF = \frac{1}{2} AC \quad \dots(2)$$

$$\because AB = BC \quad \text{(given)}$$

$$\therefore DE = DF$$

$\therefore \triangle DEF$  is an isosceles triangle

**(Q.E.D.)**

**HOME WORK:-**

**Q1.**The diagonals AC and BD of a parallelogram ABCD intersect at O. If P is the midpoint of AD, prove that(i)  $PQ \parallel AB$ (ii)  $PO = CD$ .

**Q2.** Show that the quadrilateral formed by joining the mid-points of the adjacent sides of a square, is also a square.

**Q3.**If D, E and F are mid-points of sides AB, BC and CA respectively of an isosceles triangle ABC, prove that  $\triangle DEF$  is also isosceles.

## **Commercial application for class 9**

### **Ch-Introduction to commercial organisations:**

Answer the following questions after after listening to the explanation given above:

Q1: What is the meaning of commerce?

Q2: What are the nature or characteristics of commerce?

Q3: What are the major function of commerce?

Q4: What are the different branches of consumers?

Q5: How does commerce remove the hindrance of person?

**(Thu) Class-IX,EVS**

**Ch-4 Topic (Freshwater and Marine ecosystem)**

Home Assignment....

- 1) What do you mean by freshwater ecosystem?
- 2) Why are freshwater ecosystem important?
- 3) Where is the freshwater ecosystem located?
- 4) What is the difference between a marine ecosystem and a freshwater ecosystem?
- 5) Where can marine ecosystem be found?

.....(To be continued next class.....)

## **Economics of Class 9**

### **Ch-1 introduction to economics.**

Answers the following question after listening to the explanation given above:

Q1: What is economics?

Q2: What is the wealth definition of economics?

Q3: What are the main features of economics?

Q4: What is the welfare definition of economics?

Q5: What are the features of welfare definition of economics?

## **Class 9 History**

### **(The Later Vedic Period) (Class-Thursday)**

The Early Vedic Period ended at about 1000 BC. The Later Vedic literature along with the Smritis & archaeological sources help us to understand this period. During this time they have already spread to other areas & they have gained the knowledge about the benefits of iron. During this period some changes in the society were witnessed like: Women was given a lower position, polygamy started, widow remarriage was not accepted, caste system became rigid & hereditary, fixation of occupations on the basis of caste etc. A man's life was divided into four periods each comprising of 25 years & Gurukul system of education gain importance. Besides vedic literature logic, maths, law, astronomy etc. were taught. No fees was charged & the pupils had to do various works while living in the Gurukul. In this period large kingdoms were formed & along with the king the Treasurer, Royal Chamberlain etc. posts were there to run the administration. Sacrifices like Rajasuya, Vajpeya started.

#### **Questions:**

- a) State any two archaeological sources for the Later Vedic Period.
- b) Name any two subjects taught in the Gurukul.
- c) Discuss the Ashramas in the life of a man during this period.

**STILL LIFE**

1. Object Study



Home Assignments:-

Observe the picture above and study the drawing carefully. Draw this objects on your copy by using pencil shading (which I have already shown in your previous assignments). Use three pencil shades light tone, medium tone and dark tone.

CLASS – IX

Subject – ART 4

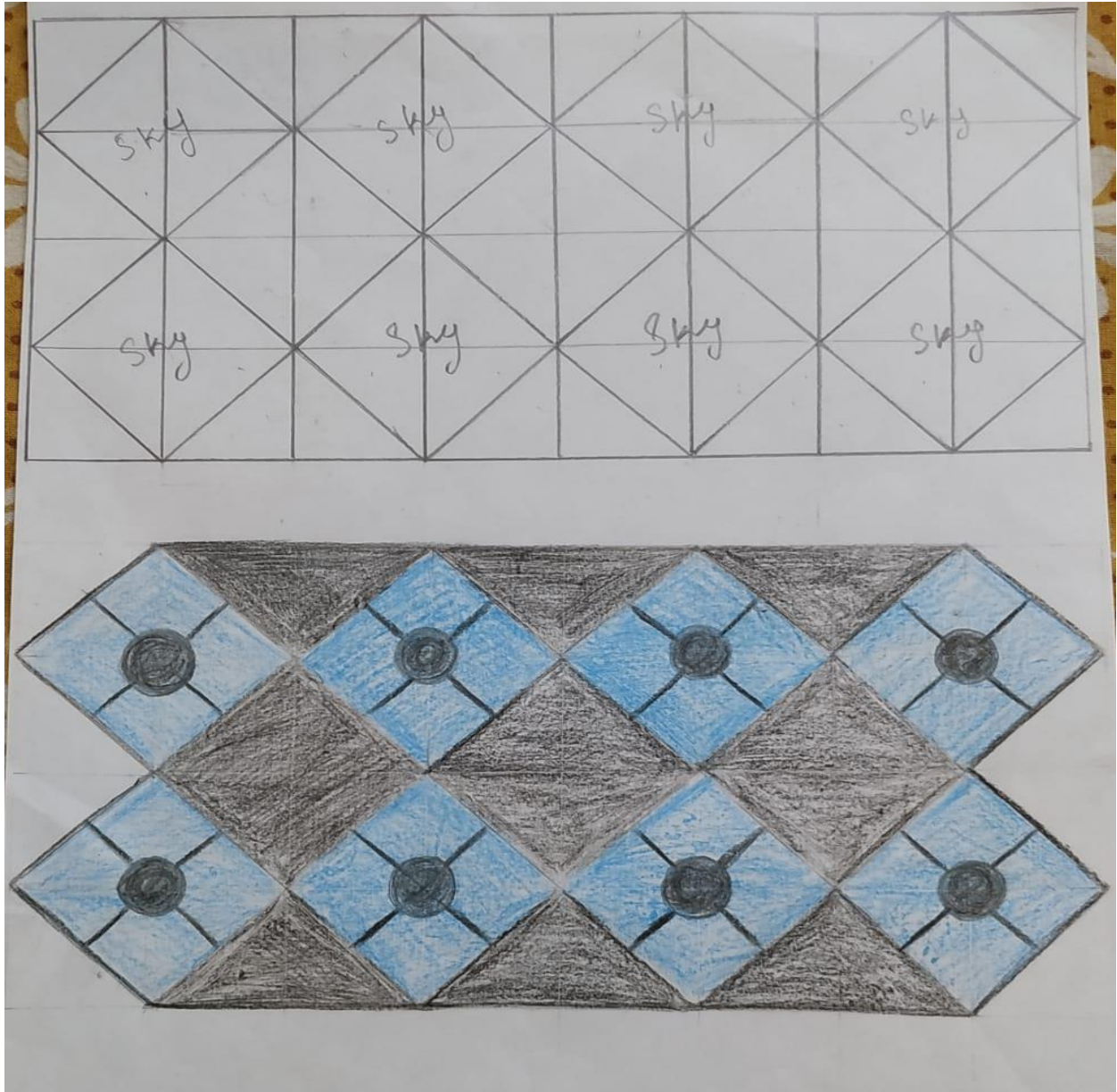
HOME ASSIGNMENT

Date – 23.04.2020

### DESIGN

These pattern designs are made by a geometrical shape named square. Any types of designs which are made by geometrical shapes are called geometrical designs. These geometrical designs can be used on a carpet, bedcover, table cloth etc.

Example of a geometrical design is shown below:-



Home Assignment-

Use this type of geometrical design to draw a carpet.



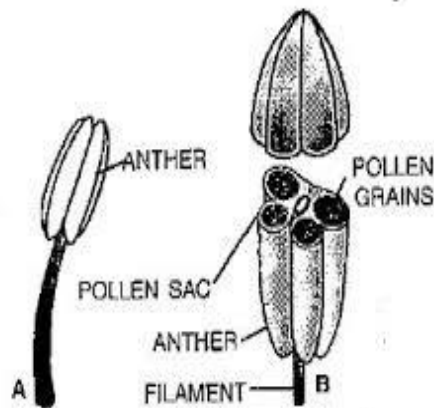
## Chapter 3:THE FLOWER

### Quick Review of the chapter

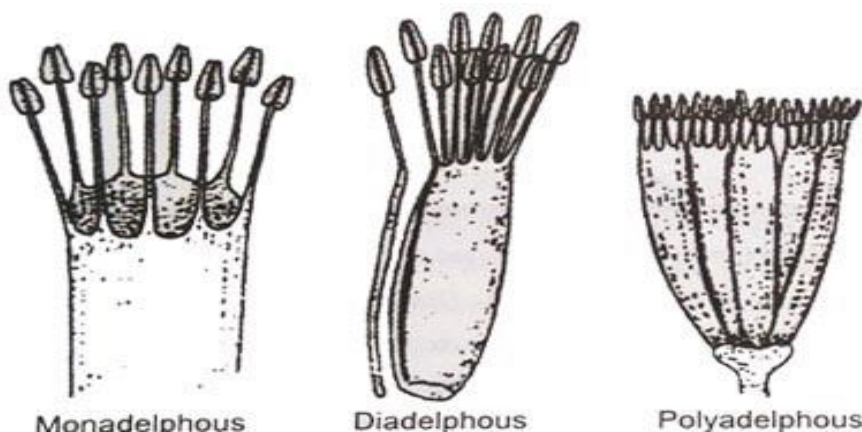
#### The reproductive structures/the Essential whorls of a flower:

- **Androecium:**

It consists of units called **stamen** which is male part of a flower. Stamens consist of two parts: a stalk called a *filament*, which supports *anther* where pollen is produced by meiosis and eventually dispersed. The filament positions the anther to maximise pollination. The entire male part of a flower is called the androecium. Based on the arrangement of the filaments, stamens may be classified into 4 types:



1. **Monadelphous:** The anthers are free but filaments are united to form one compound structure called a staminal tube. Example: China rose.
2. **Diadelphous:** The filaments are joined partially to form two bundles. In some cases, one stamen may be free while the rest are joined to form one bundle. Example: Pea.



3. **Polyadelphous:** The filaments are grouped into more than two bundles. Example: Bombax

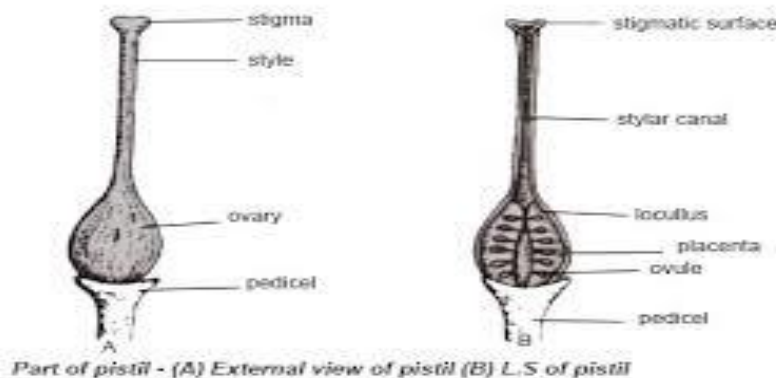
- **Gynoecium:**

The innermost whorl of a flower, consisting of one or more units called *Carpels*. Carpels are female part of a flower. Carpels are each composed of a **stigma, style, and an ovary** which contains ovules. An alternative terminology for innermost whorl is **pistil**.

A pistil may consist of a single carpel or a number of carpels fused together. The sticky tip of the pistil, the *stigma*, is the receptor of pollen.

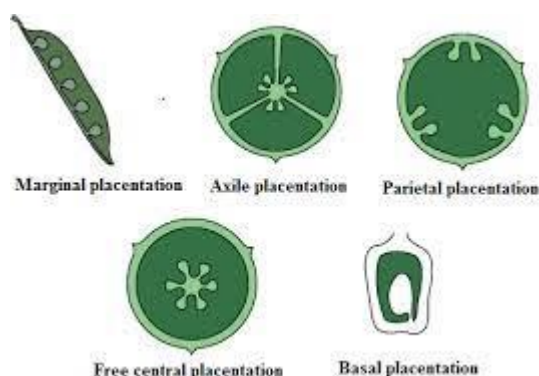
The supportive stalk, the style, becomes the pathway for pollen tubes to grow from pollen grains adhering to the stigma.

The ovary is the swollen basal part of the carpel. Ovules are arranged in specific ways on the wall of the ovary, this is called placentation. It may vary from flower to flower.



## Placentation

The arrangement of ovules inside the ovary is called Placentation. The different types of placentation are as follows:



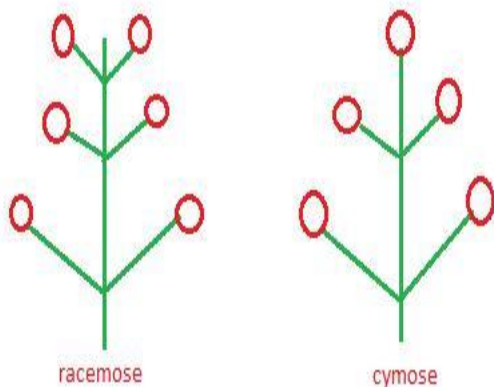
Different types of placentation are-

- Marginal Placentation
- Axile Placentation

- Parietal Placentation
- Free Central

## Inflorescence

It is the arrangement of flowers on the floral axis. The flowers are arranged with respect to a fixed floral axis. We will look at the various types and arrangements of flowers now.



	Racemose inflorescence	Cymose inflorescence
(i)	The main axis continues to grow.	The main axis terminates in a flower.
(ii)	Growth is unlimited.	Growth is limited.
(iii)	The flowers are borne in an acropetal succession.	Flowers are borne in a basipetal succession.
(iv)	The grouping of flowers is less common and arrangement of flowers in a group is centripetal.	The grouping of flower is more common and arrangement of flowers in a group is centrifugal.

## Assignment Questions-

### A. Give one word answers:-

1. Filaments are united to form a single stamina tube-
2. Undifferentiated sepal and petal-
3. Unisexual flower bearing only gynoecium-
4. A pistil consisting of two carpels-

### B. Define the following:-

1. Inflorescence,
2. Placentation,
3. Bract,
4. Incomplete flower.

### C. Differentiate between the following:-

1. Sepal and Petal (Origin),
2. Flower and Inflorescence (Definition)

3. Polypetalous and Gamopetalous corolla (Examples and Definition)
4. Monadelphous and Diadelphous (Definition with examples)
5. Monoecious plants and Dioecious plants (Floral parts)

**D. Draw and label the parts of pollen sac showing the chambers.**

**E. Write exact location of the following structures:-**

1. Thalamus,
2. Anther,
3. Style,
4. Placenta.

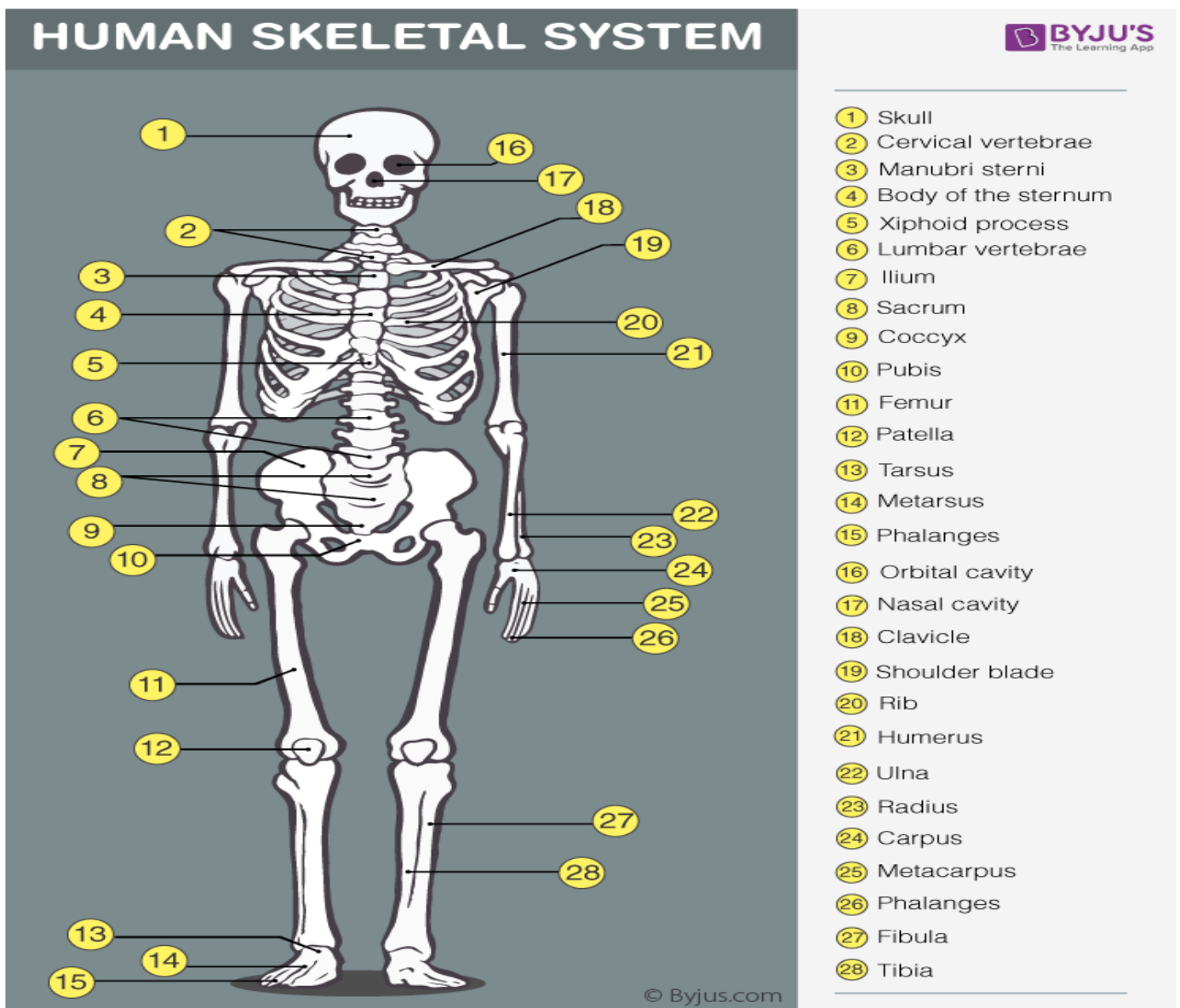
Madhubanti Banerjee

**DREAMLAND SCHOOL**  
**CLASS IX (session 2020-21)**  
**PHYSICAL EDUCATION(6<sup>th</sup> subject)**  
**HOME WORK 1**

**CHAPTER 1: Skeletal system: Bones**

**Quick Review of the chapter-**

The skeletal system functions as the basic framework of a body and the entire body are built around the hard framework of Skeleton. It is the combination of all the bones and tissues associated with cartilages and joints. Almost all the rigid or solid parts of the body are the main components of the skeletal system. Joints play an important role in the skeletal system as it helps in permitting the different types of movements at different locations. If the skeleton were without joints, then there would be no sign of the movements in the human body.



# Skeletal System-components

This skeletal system can be divided into the axial and appendicular systems. In an adult body, it is mainly composed of 206 individual bones which are organized into two main divisions:

- **Axial skeleton**
- **Appendicular skeleton.**

## Axial skeleton

The axial skeleton runs along the body's central axis, therefore it is called as the central core of the human body. The axial skeleton is composed of 80 bones and it consists of:

1. Skull Bone – It includes 8 cranial bones, 14 facial bones, 6 auditory ossicles, and the Hyoid Bone
2. The bone of the Thoracic Cage – It includes 25 bones of the thorax- a breastbone and 24 ribs.
3. The bone of the Vertebral column- It includes 24 vertebrae bones, the sacrum bone, and the coccyx bone.

## Appendicular skeleton

The appendicular skeleton is composed of 126 bones and it comprises of the-

1. Pelvic girdle
2. Upper Limbs
3. Lower Limbs
4. Shoulder Girdle or the Pectoral

## Role of Skeletal system-

The primary functions of the skeletal system include movement, support, protection production of blood cells, storage of minerals and endocrine regulation.

### Support

The primary function of the skeletal system is to provide the solid framework to support and safeguard the human body and its organs. This helps in maintaining the overall shape of the human body.

### Protection

The skeletal system also helps to protect our internal organs and other delicate body organs, including the brain, heart, lungs and spinal cord by acting as a buffer. Our cranium (skull) protects our brain and eyes, the ribs protect our heart and lungs and our vertebrae (spine, backbones) protect our spinal cord.

### Movement

Bones provide the basic structure for muscles to attach themselves onto so that our bodies are able to move. Tendons are tough inelastic bands that attach our muscle to that particular bone.

## **Storage**

The bone matrix of the skeletal system is mainly involved in storing or preserving different types of essential minerals which are required to facilitate growth and repair of the body cells and tissues. The cell matrix acts as our calcium bank by storing and releasing calcium ions into the blood cell when required.

## **Regulation of Endocrine glands**

The bone cells present within the skeletal system plays an important role in releasing the synthesized hormones from the respective endocrine glands for further requirement by the body for different metabolisms. Apart from these functions, the skeletal system also contributes to the regulation of blood sugar.

## **Assignment Questions-**

1. Name the different bones present in forelimb of human and their detail structure.
2. Explain the system of skeleton systems of our body. Write difference between external and internal skeleton.
3. Write the importance of skeleton system.

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