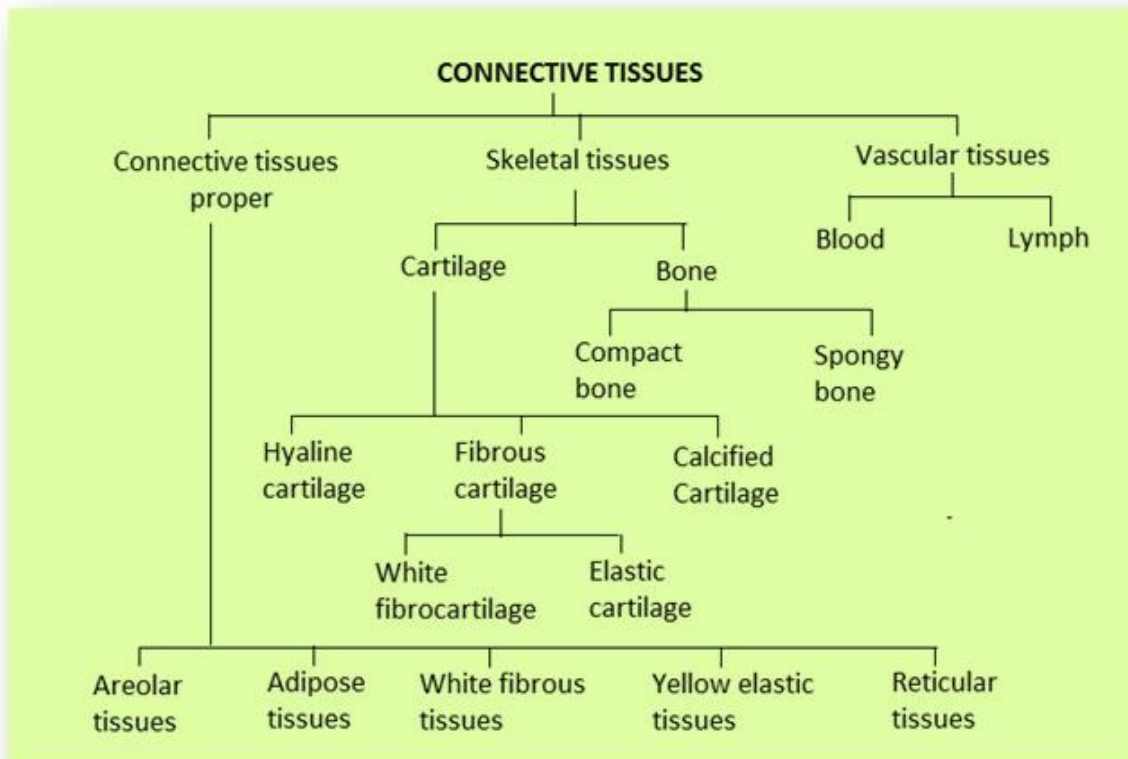


EAST POINT SCHOOL  
BIOLOGY-9TH  
Chp- Tissue  
CONNECTIVE TISSUE



### Connective tissue

1. The cells of a connective tissue are loosely scattered in a matrix.
2. The matrix can be a fluid, jelly like, dense or rigid.
3. The nature of matrix depends on the function a connective tissue serves
  - White and yellow fibres are present in the matrix.
  - Their basic function is to provide support to different organs & keeping them in place.
  - It is the most abundant type of connective tissue.
  - It is further divided into two types i.e Yellow fibrous connective tissue and White fibrous connective tissue.

#### • Yellow fibrous connective tissue

→ They are very elastic due to the presence of a network of yellow fibres in its matrix called as ligament which attaches bone to bone.

#### • White fibrous connective tissue

→ They are very little matrix containing abundant white fibres forming layers.

**Following are the various connective tissues:**

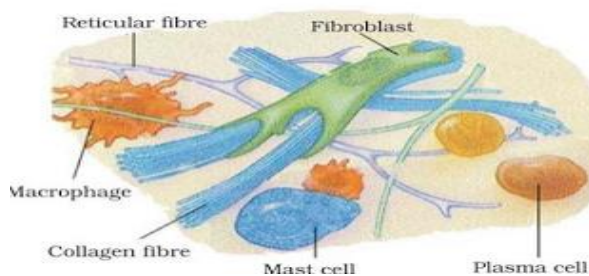
**CONNECTIVE TISSUE PROPER:- types are Areolar, Adipose , Tendons and Ligaments**

**1. Areolar Connective Tissue:** Areolar tissue is found between skin and muscles, around blood vessels and nerves and in bone marrow.

\* Areolar tissue fills the gap between tissues and provides support.

\*It also helps in repair of tissues.

\* This tissue is also called as packing tissue



## 2. Adipose Tissue:

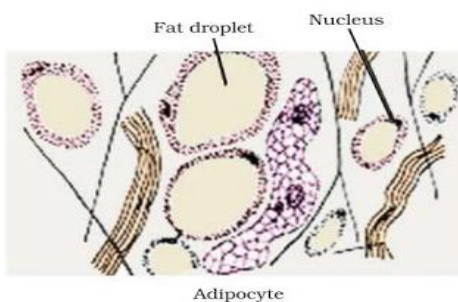
→ These are oval and round cells, filled with fat globules.

Adipose tissue is composed of fat globules.

This tissue is found below the skin and beneath the organs.

Adipose tissue provides insulation and works as a cushion.

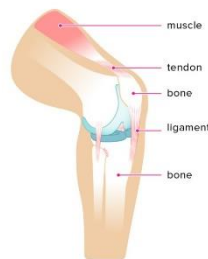
→ The cells are called as adipocytes.



### 3. TENDONS:-

A **tendon** is a fibrous connective tissue which attaches muscle to bone. **Tendons** may also attach muscles to structures such as the eyeball. A **tendon** serves to move the bone or structure.

Structure:-



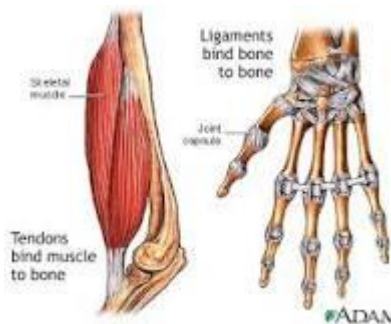
A tendon is composed of dense fibrous **connective tissue** made up primarily of collagenous fibres. Primary collagen fibres, which consist of bunches of collagen fibrils, are the basic units of a tendon.

**Tendons** are situated between bone and muscles and are bright white in **colour**, their fibro-elastic composition gives them the strength require to transmit large mechanical forces.

#### SOME EXAMPLE OF TENDONS:-

**Tendons** are the tough fibres that connect muscle to bone. For **example**, the Achilles **tendon** connects the calf muscle to the heel bone.

Most **tendon** injuries occur near joints, such as the shoulder, elbow, knee, and ankle.



#### LOCATION:-

Where are tendons located?

Tendons, located at each end of a **muscle**, attach **muscle** to bone.

Tendons are found throughout the **body**, from the head and neck all the way down to the feet.

The **Achilles** tendon is the largest tendon in the **body**. It attaches the calf **muscle** to the heel Bone

### 4. LIGAMENTS :-

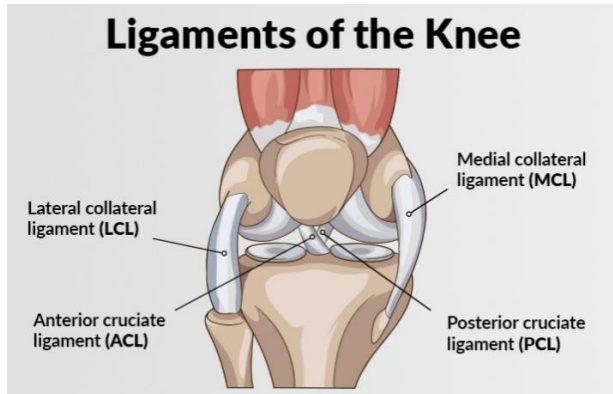
A short band of tough, flexible fibrous connective tissue which connects two bones or cartilages or holds together a joint.

a membranous fold that supports an organ and keeps it in position.

- What is the importance of ligaments?  
The strong connective tissue in the **ligaments** protects these structures and prevents them from bending, twisting or tearing. Regardless of whether they connect bones or organs to each other, **ligaments** help to maintain stability in the body.

- How do ligaments work?

The elastic fibers allow the **ligaments** to stretch to some extent. **Ligaments** surround joints and bind them together. They help strengthen and stabilize joints, permitting movement only in certain directions. **Ligaments** also connect one bone to another (such as inside the knee).



### Difference Between Tendon and Ligament

Tendons and Ligaments are an integral part of locomotion in all higher organisms. The important differences between ligaments and tendons are summarized in the table below:

<b>Tendons</b>	<b>Ligaments</b>
Connects skeletal muscles to bones.	Connects bones to bones.
Tough and elastic.	Elastic.
Connects the end of the muscles to bones.	Connects the end of the bones at joints.
Each muscle contains only one tendon.	Each joint contains many ligaments.
Proteoglycan content is less.	Proteoglycan content is more.
White in colour.	Yellow in colour.
Blood supply is good.	Blood supply is poor.
Fibroblasts lie in a continuous row.	Fibroblasts are scattered.
The fibres are compact and present in parallel bundles.	They are not arranged in parallel bundles but are compactly packed.
No such classification.	They are classified into 3 types, namely: Articular ligaments, Remnant ligaments and Peritoneal Ligaments

## Skeletal Tissue :- Bone And Cartilage

**1. Bone:** Bone is mainly composed of osteoblasts is embedded in hard matrix.

Bone makes the skeletal system.

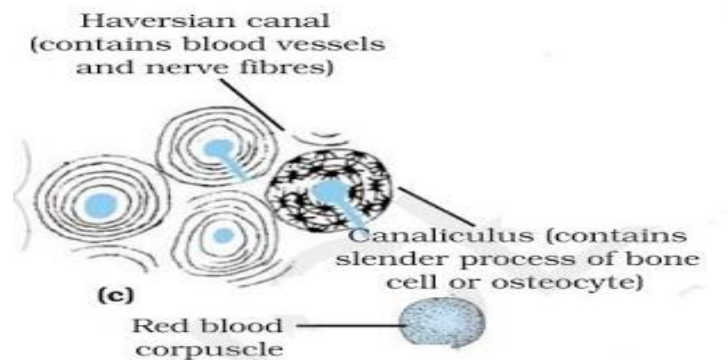
Skeletal system is responsible for providing structural framework to the body.

It provides protection to important organs and facilitates movements.

→ Matrix of bone is very hard because of salts such as calcium phosphate,  $\text{CaCO}_3$  (60-70%) etc. and a protein ossein.

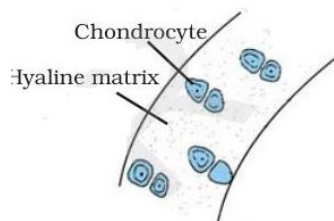
→ Matrix is deposited in the form of concentric layers of lamellae formed round a central canal, the bone cells occupy small spaces between the concentric layers of matrix.

→ The long bones are usually hollow containing cavity called as marrow cavity. It is full of bone marrow.



**2. Cartilage:** Cartilage is mainly composed of chondroblast's.

• Cartilage



Cartilage is present at the ends of articulatory bones.

Cartilage is also present in external ear, bronchi, etc.

Cartilage is elastic tissue , less harder as compared to bones.

Elasticity is due to presence of chondrin (protein) .Cells are called as Chondroblast, which are widely spaced and matrix is reinforced by fibres.

Occurrence :- It occurs at joint of bones, in the nose , ear Trachea and larynx.

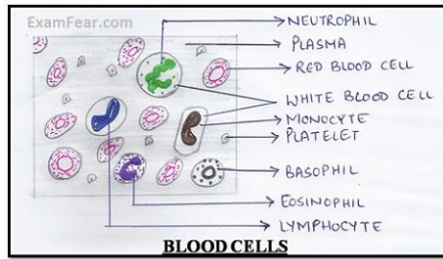
Function :- It provides Flexibility and great tensile strength.

## FLUID CONNECTIVE TISSUE :-

**1. Blood:** Blood is composed of blood cells, platelets and plasma.

Blood plays an important role in transportation of various substances in the body.

It also helps in osmoregulation and temperature control.



Blood:-

Blood is a fluid connective tissue. It consists of a liquid matrix called the plasma, in which blood cells are present. So it can be said blood is an important lifeline. It travels all around the body in specialized blood vessels. Blood has many functions to play in the body. Primarily, it helps in the transport of gases, nutrients, hormones as well as the elimination of the waste materials.

There are three types of blood cells that are found in the plasma.

They are the Red blood cells (RBC) or Erythrocytes; White blood cells Leucocytes ;(WBC) and Thrombocytes or Blood Platelets.

The RBCs and the WBC's are the living components of the blood. The RBCs have a pigment called hemoglobin, due to which blood appears red in colour. The WBCs help in protecting the body by attacking any foreign body that enters into the body, while the blood platelets are responsible for clotting of blood.

**2. Lymph:-** is another type of fluid connective tissue. This clear fluid originates from blood plasma that exits blood vessels at capillary beds. A component of the lymphatic system, lymph contains immune system cells that protect the body against pathogens. Lymph is delivered back to blood circulation via lymphatic vessels.

**Assignment :-**

what will happen if bone is dipped in hydrochloric acid(HCl) ?

---

Why is blood is called as fluid connetive tissue?

---

Discuss the advantages of blood being a liquid tissue.

---

Name the connective tissue performing the following functions : (a) Connects bone to bone. (b) Protects vital organs of the body. (c) Helps in repair of tissues.

---

How does blood and areolar tissue differ in terms of the cells present in them?

---

Differentiate between bone and blood.

**YOUtube link :- <https://youtu.be/Deblq3fEBVo>**





## IS MATTER AROUND US PURE?

Chemistry

Class 9

July

Assignment 2

### MCQ

- Air shows the property of  
(a)  $N_2$ (b)  $O_2$ (c) Both (a) and (b)(d) None of these.
- The components of water can be separated by  
(a) Physical methods(b) Chemical methods (c) Both  
(d) They can't be separated
- Mixture can be  
(a) homogeneous(b) heterogeneous(c) Both (a) and (b)  
(d) pure substance
- Brass is a  
(a) Compound(b) Element (c) Homogeneous mixture  
(d) Heterogeneous mixture
- In sugar solution,  
(a) Sugar is solute, water is solvent(b) Sugar is solvent, water is solute  
(c) Both are solutes(d) Both are solvents.
- Brass is a solution of molten copper in  
(a) solid zinc(b) molten zinc  
(c) gaseous zinc(d) molten tin
- 24 carat of diamond is equal to  
(a) 200 mg(b) 200 g (c) 95% mg(d) 91% gold
- 1 carat of diamond is equal to  
(a) 200 mg(b) 200 g (c) 100 mg(d) 100 g
- Diamond is lustrous because  
(a) it is colourless(b) it is hard (c) it is pure  
(d) its refractive index is high
- If we burn graphite,  
(a) residue will be left(b) no residue will be left  
(c) it will not burn(d) it will change into diamond.
- Nanometer is an  
(a) Instrument used for measuring micro-distance  
(b) Instrument used for measuring macro-distance  
(c) Unit for measuring micro-distance  
(d) Unit for measuring macro-distance.
- Barometer measures  
(a) Pressure(b) Atmospheric pressure  
(c) Wind velocity(d) Gaseous pressure.
- Thermometer is an instrument that measures  
(a) Temperature of substance(b) Heat of substance  
(c) Radiation of substance(d) Flow energy in a substance.

video link

[Distinguish between Mixture and Compound - MeitY OLabs](#)

**Unemployment: “Wastage of manpower resource”**

People who are an asset for the economy turn into a liability.

There is a feeling of hopelessness and despair among the youth.

People do not have enough money to support their family. Inability of educated people who are willing to work to find gainful employment implies a great social waste.

Unemployment tends to increase economic overload. The dependence of the unemployed on the working population increases.

The quality of life of an individual as well as of society is adversely affected.

When a family has to live on a bare subsistence level there is a general decline in its health status and rising withdrawal from the school system.

Increase in unemployment is an indicator of a depressed economy.

If people cannot be used as a resource they naturally appear as a liability to the economy.

Hence, **unemployment has detrimental impact on the overall growth of an economy**. It also wastes the resource, which could have been gainfully employed.

In case of India, statistically, the unemployment rate is low. A large number of people represented with low income and productivity are counted as employed.

They appear to work throughout the year but in terms of their potential and income, it is not adequate for them. The work that they are pursuing seems forced upon them.

They may therefore want other work of their choice.

Poor people cannot afford to sit idle. They tend to engage in any activity irrespective of its earning potential. Their earning keeps them on a bare subsistence level.

Moreover, the employment structure is characterised by self-employment in the primary sector. The whole family contributes in the field even though not everybody is really needed. So there is disguised unemployment in the agriculture sector. But the entire family shares what has been produced. This concept of sharing of work in the field and the produce raised reduces the hardship of unemployment in the rural sector.

But this does not reduce the poverty of the family; gradually surplus labour from every household tends to migrate from the village in search of jobs.

**Employment scenario in the three sectors**

Let us discuss about the employment scenario in the three sectors mentioned earlier.

Agriculture, is the most labour absorbing sector of the economy. In recent years, there has been a decline in the dependence of population on agriculture partly because of disguised unemployment discussed earlier.

Some of the surplus labour in agriculture has moved to either the secondary or the tertiary sector.

In the secondary sector, small scale manufacturing is the most labour absorbing.

In case of the tertiary sector, various new services are now appearing like biotechnology, information technology and so on.

**Subject:-Social Science (Economics)**

**Class:- IX**

**Chapter 2:- People as Resource**

**Assignment**

- 1) **Why is educated unemployed a peculiar problem of India?** (3)
- 2) **State the main causes of unemployment in India.** (5)
- 3) **How does unemployment affect the youth? Or What is the impact of unemployment?** (5)
- 4) **Can you suggest some measures in the education system to mitigate the problem of the educated unemployed?** (5)
- 5) **Match the following and choose the most appropriate answer** (5)

<b>Column I</b>	<b>Column II</b>
<b>P.</b> Infant mortality rate.	<b>1.</b> Number of live births for every thousand people in a year
<b>Q.</b> Birth rate.	<b>2.</b> Number of deaths of infants per thousand of births in a year
<b>R.</b> Sex Ratio.	<b>3.</b> Average length of life that a new born baby is expected to live
<b>S.</b> Life Expectancy.	<b>4.</b> Number of females per thousand males
<b>T.</b> Seasonal unemployment.	<b>5.</b> More people are engaged in work than required
<b>U.</b> Disguised unemployment.	<b>6.</b> People are employed in gainful employment during some part of the year

## **Video Link**

[https://www.youtube.com/watch?v=uPJV\\_HiY0TM](https://www.youtube.com/watch?v=uPJV_HiY0TM)

<https://www.youtube.com/watch?v=N8A-ipunSP4>

<https://youtu.be/uCisz4yL9Ms>

[https://youtu.be/MgJ0O\\_maiMU](https://youtu.be/MgJ0O_maiMU)

[https://www.youtube.com/watch?v=P9CGuzZ8\\_ek](https://www.youtube.com/watch?v=P9CGuzZ8_ek)

[https://www.youtube.com/watch?v=\\_rcEI6bc38I](https://www.youtube.com/watch?v=_rcEI6bc38I)

[https://www.youtube.com/watch?v=P9CGuzZ8\\_ek](https://www.youtube.com/watch?v=P9CGuzZ8_ek)

[https://www.youtube.com/watch?v=\\_rcEI6bc38I](https://www.youtube.com/watch?v=_rcEI6bc38I)

<https://www.youtube.com/watch?v=rpm7vSTFdkc>

<https://www.youtube.com/watch?v=GrcRY1GzFDI>

# ENGLISH

## MY CHILDHOOD

### Summary

“My Childhood” is an extract taken from the autobiographical book, ‘Wings of Fire’ by A.P.J. Abdul Kalam. Here Dr. Kalam who is one of the greatest scientists of India and also the 14th President of India gives an account of his childhood days. His journey from a middle-class family in Rameswaram to the President’s house has not been a smooth ride. He worked hard and faced all the challenges of life. This great scientist and the missile man of India was born in a middle class muslim family in 1931 in the island town of Rameswaram, Tamil Nadu. In his childhood he was greatly influenced by his parents, his teachers and his friends. His father, Jainulabdeen, was not much educated but he was very generous and kind person. He was not rich but provided a secure childhood to Abdul and his brothers and sisters. Abdul inherited honesty and self-discipline from his father and faith in goodness and deep kindness from his mother.

Kalam earned his first wages by working as a helping hand to his cousin, Samsuddin, who distributed newspapers in Rameswaram.

In his childhood he had three close friends- Ramanadha Sastry, Aravindam and Sivaprakashan. Once when he was in fifth standard, a new teacher asked him not to sit in the front row along with the high caste Brahmin boys. Abdul found Ramanadha Sastry weeping as he went to the last row. This made a lasting impression on Abdul.

Abdul was also greatly influenced by his science teacher, Sivasubramania Iyer. He learnt the lesson of breaking social barriers from him. Iyer invited him to his home for a meal. His wife was an orthodox Brahmin who refused to serve food to a muslim boy in her so called ritually pure kitchen. Iyer served him with his own hand and sat down beside him to eat his meal. He convinced his wife to serve meal with her own hands and thus was successful in changing the conservative attitude of his wife.

For higher education he sought permission from his father to leave Rameswaram and study at the district headquarters in Ramanathapuram. He said, “Abdul! I know you have to go away to grow. Does the seagull not fly across the sun, alone and without a nest?” To his hesitant mother, quoting Khalil Gibran, he said, “Your children are not your children. They are the sons and daughters of Life’s longing for itself. They come through you but not from you. You may give them your love but not your thoughts. For they have their own thoughts.”

### Theme

The theme of “My Childhood” is that our life is shaped by our experiences and the people around us. Kalam’s secure childhood, inspiring parents, supportive friends and honest teachers instilled great values in him that gave him ‘wings of fire’.

### Title

Abdul Kalam talks about his childhood days in this autobiographical account. In particular, he talks about some incidents that left an indelible impression on his young mind. He describes his

family, his house, his childhood experiences and his childhood friends. Therefore, the title “My Childhood” is very apt.

**Video links**

<https://youtu.be/-belHnGgk9E>

<https://youtu.be/4BgWg2EAmww>

<https://youtu.be/3eeLGdXR0Pk>

**A. Read the extracts given below and answer the questions that follow:**

1. *During the annual Shri Sita Rama Kalyanam Ceremony, our family used to arrange boats with a special platform for carrying idols of the Lord from the temple to the marriage sitesituated in the middle of the pond called Rama Tirtha which was near our house.*

- a) What was the annual event held in Rameshwaram?
- b) Where did the boats carry the idols of the Lord?
- c) Where was the marriage site situated?

2. *After school, we went home and told our respective parents about the incident. Lakshmana Sastry summoned the teacher, and in our presence, told the teacher that he should not spread the poison of social inequality and communal intolerance in the minds of innocent children. He bluntly asked the teacher to either apologize or quit the school and the island.*

- a) What did children tell their parents?
- b) What did Lakshmana ask the teacher?
- c) What kind of society did the speaker live in?

3. *His wife watched us from behind the kitchen door. I wondered whether she had observed any difference in the way I ate rice, drank water or cleaned the floor after the meal. When I was leaving his house, Sivasubramaniam invited me to join him for dinner the next weekend. Observing my habitation, he told me not to get upset, saying “Once you decide to change the system, such problems have to be confronted.” When I visited his house next week, SivasubramaniamIyer’s wife took me inside her kitchen and served me food with her own hands.*

- a) Why did the teacher’s wife watched them from behind the kitchen door ?
- b) Why was the narrator hesitant to eat food, with a Hindu family?
- c) How did Sivasubramaniam treat Kalam?

**B. Answer the following questions in 30 – 40 words.**

1. Why did A.P.J. Abdul Kalam call his childhood a secure childhood?
2. What was the situation in India after the Second World War?
3. What characteristics did Abdul Kalam inherited from his parents?

4. What was the difference in the attitudes of the science teacher and his wife towards A.P.J. Abdul Kalam?
5. What did Kalam's father say when he asked for his permission to leave Rameswaram and study at Ramanathapuram?

### **ENGLISH ASSIGNMENT**

#### **Q1. Read the following passage carefully and answer the questions given below.**

- I. Everybody wants to succeed in life. For some, success means achieving whatever they desire or dream. For many it is the name, fame and social position. Whatever be the meaning of success, it is success which makes a man popular.
- II. All great men have been successful. They are remembered for their great achievements. But it is certain that success comes to those who are sincere, hardworking, loyal and committed to their goals. Success has been man's greatest motivation. It is very important for all. Success has a great effect on life. It brings pleasure and pride. It gives a sense of fulfilment. It means all-around development. Everybody hopes to be successful in life. But success smiles on those who have a proper approach, planning, vision and stamina. A proper and timely application of all these things is bound to bear fruit. One cannot be successful without cultivating these certain basic things in life. It is very difficult to set out on a journey without knowing one's goals and purposes. Clarity of the objective is a must to succeed in life. A focused approach with proper planning is certain to bring success. Indecision and insincerity are big obstacles on the path to success.
- III. One should have the capability, capacity and resources to turn one's dreams into reality. Mere desire cannot bring you success. The desire should be weighed against factors like capability and resources. This is the basic requirement of success. The next important thing is the eagerness, seriousness and the urge to be successful. It is the driving force which decides the success. It is the first step on the ladder of success.
- IV. One needs to pursue one's goals with all one's sincerity and passion. One should always be in high spirit. Lack of such spirit leads to an inferiority complex which is a big obstruction on the path to success. Time is also a deciding factor. Only the punctual and committed have succeeded in life. Lives of great men are examples of this. They had all these qualities in plenty which helped them rise to the peak of success.
- V. Hard labour is one of the basic requirements of success. There is no substitute for hard labour. It alone can take one to the peak of success. Every success has a ratio of five percent inspiration and ninety-five percent perspiration. It is the patience, persistence and perseverance which play a decisive role in achieving success. Failures are the pillars of success as they are our stepping-stones and we must get up and start again and be motivated.

#### **1.1. On the basis of your reading of the passage, answer the following questions:**

1. To whom does success come certainly?

2. What are the basic things in life we need to achieve success?
3. What did great men have in plenty to rise to the peak of success? Give any two examples.
4. What is the one basic requirement of success?
5. Explain: "Failures are pillars of success."

**1.2 On the basis of your reading of the passage, fill in any two of the following blanks with appropriate words/phrase:**

1. \_\_\_\_\_ plays a decisive role in achieving success.
2. Goals have to be pursued with \_\_\_\_\_ and \_\_\_\_\_.
3. Ratio of success is \_\_\_\_\_ inspiration.

**1.3 Find out the words from the passage that mean the same as the following:**

1. endurance (para II)
2. obstruction (para IV)
3. motivation (para V)

**Q2. Rearrange the following words and phrases to form meaningful sentences.**

1. is / the / it / cause / root / many / of / problems / health.
2. helps / meditation / release / stress.
3. or word / is in / as a / one of / the best / you can make / letter-writer / processor / a typewriter / investments
4. has / advantages / handwriting / great / over / typing / two

**Q3. During the Book Week celebrations in your school you were asked to speak on the importance of books. You made the following notes. Complete the paragraph that follows:**

Notes

- Increases knowledge
- Widens outlook
- Relax mind when under stress
- Make us cultured and refined

By reading books our knowledge (a) ..... Reading also helps us in (b) ..... our outlook on life. Reading books also provides us with (c) ..... especially when we are under stress. Books are also instrumental in (d) ..... us cultured and refined.

**Q4. Read the conversation given below and complete the paragraph that follows.**

*Master : Out of two thousand I owe you, I deduct 500 for not being on duty for a week and another 500 for not doing your duty well.*

*Servant : Give me my one thousand then?*

*Master : I deduct 800 more for breaking my crockery and after that you are left with just two hundred.*

*Servant: Accept that as a small tip from me.*

The master told the servant that out of two thousand he owed him, he (a)..... The servant asked the master (b)..... The master continued that (c)..... The servant asked the master to accept that amount as a small tip from him and find out a new servant just then.

**Q5. The following passage has not been edited. There is one error in each line against which a blank is given. Write the incorrect word and the correction in your answer sheet against the correct blank.**

Walt Disney was our hero. He  
left me a legacy that can  
be enjoy time and again. He  
knew who to entertain us so well.  
He developed a process in  
creating animated films.

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_
- (4) \_\_\_\_\_
- (5) \_\_\_\_\_



## East point school

### Class IX-Geography

#### Assignment (Revision)

##### Very Short Questions :-

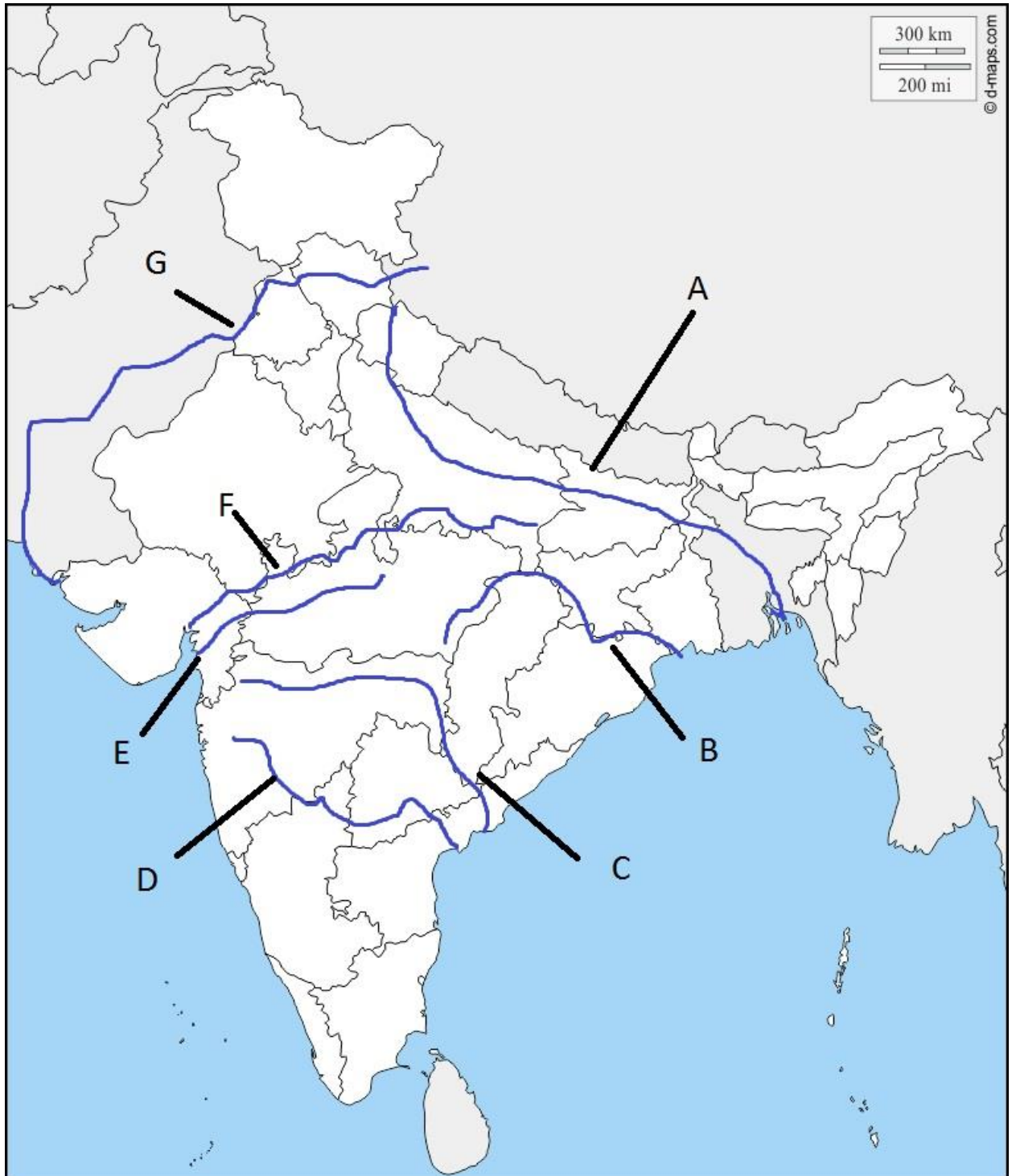
1. Classify the Himalayas on the basis of regions from the west to east.
2. The western coastal strip, south of goa is referred to as
3. The highest peak in the Eastern ghats is.
4. Which physiographic divisions of India was formed out of accumulations in the Tethys geo syncline ?
5. Geologically, which physiographic divisions of india is supposed to be one of the most stable land blocks
6. Name the island group of india having coral origin .

##### Long Questions:-

1. Write short note on The Indian Desert.
2. Name the major Physiographic divisions of India and describe any two points of significance of the Himalayas And the northern plains each.
3. Distinguish between Eastern ghats & Western ghats.
4. Write a short note on the central highland.

## Activity:-

- On an outline political map of India Identify the following rivers.





# HISTORY

## SOCIALISM IN EUROPE AND THE RUSSIAN REVOLUTION

**METHODOLOGY:-** You tube link:-<https://www.youtube.com/watch?v=pYHp3xBGdNA>

:- PPT

**SUB TOPIC:-**Industrial Society and Social Change. The Coming of Socialism to Europe

**BLACK BOARD SUMMARY:-**

### ❖ Industrial Society and Social Change

- Industrialisation brought men, women and children to factories.
- Working hours increased and the wages decreased.
- Unemployment was rampant.
- No proper housing or sanitation existed.
- The liberals and the radicals encouraged trade and believed in individual effort and labour enterprise.
- Some nationalist, liberals and radicals wanted revolutions for removing the governments established in Europe in 1815.

### ❖ The Coming of Socialism to Europe

#### ❖ Socialism was well known by the mid 19<sup>th</sup> century in Europe.

- Socialists opposed private property.
- Believed that if a society as a whole controlled property, more attention would be paid to collective social interests.
- Some socialists like Robert Owen believed in the idea of cooperatives.
- Others like Louis Blanc felt that cooperatives could be built only if the governments encouraged them.
- Cooperatives were associations of people who produced goods together and divided the profit equally.
- **Karl Marx theory:-**
- **Karl Marx** argued that an industrial society was capitalist which exploited the workers and kept the profits for themselves. He believed that the workers had to construct a radically socialist society where all property was socially controlled.

#### • **Assignment:-**

1. Who were socialists ?
2. What was the basic principle of the Marxist theory ?

3. What were the demands workers' associations formed in England and Germany?

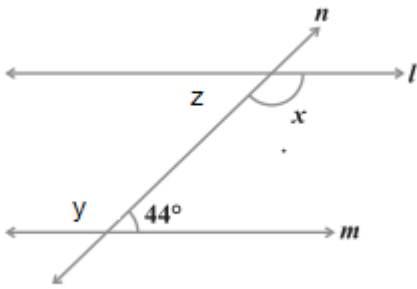


# EAST POINT SCHOOL

## MATHEMATICS

### Quiz Time

**Question 1** Find the value of  $x$  for which line  $l$  and  $m$  are parallel ?



- A. 13601360
- B. 440440
- C. 460460
- D. none of the above

**Question 2** Find the value of  $z$  in the above questions

- A. 13601360
- B. 440440
- C. 460460
- D. none of the above

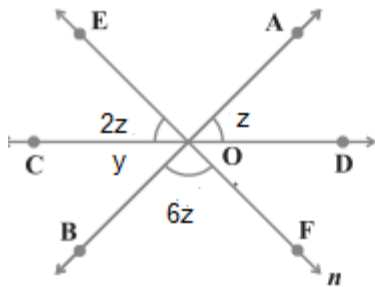
**Question 3** Find the value of  $y$

- A. 13601360
- B. 440440
- C. 460460
- D. none of the above

**Question 4** The angles of a triangle are in the ratio 2 : 3 : 4. Find the angles of the triangle

- A. 80,120,1600800,1200,1600
- B. 20,30,400200,300,400
- C. 40,60,800400,600,800
- D. None of the above

**Question 5** The lines AB, CD and EF are three lines concurrent at O as shown below in figure



Find the value of  $\angle EOC$   A. 120

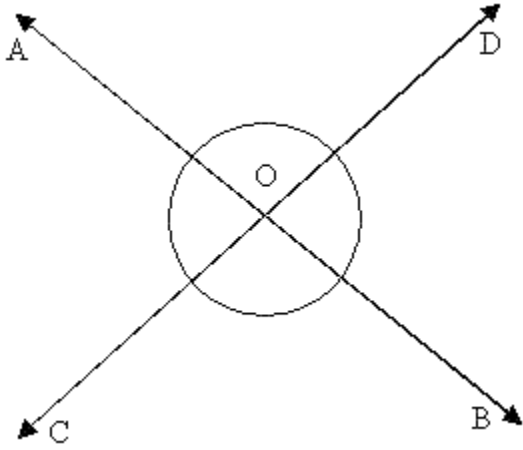
- B. 300
- C. 800
- D. 400

**Question 6** In the above question, find the angle  $\angle COB$  ?

- A. 120
- B. 300
- C. 200
- D. 400

**(f) Theorem 1.** *If two lines intersect each other, then the vertically opposite angles are equal.*

**Solution:** Given: Two lines AB and CD intersect each other at O.



**To Prove:**



Ray OA stands on line CD.

$$\therefore \angle AOC + \angle AOD = 180^\circ \text{ .....equation (i) \{Linear Pair Axiom\}}$$

Again ray OD stands on line AB.

$$\therefore \angle AOD + \angle BOD = 180^\circ \text{ .....equation (ii)}$$

From equation (i) and (ii),

$$\angle AOC + \angle AOD = \angle AOD + \angle BOD$$

$$\Rightarrow \angle AOC + \angle AOD - \angle AOD = \angle BOD$$

$$\Rightarrow \angle AOC = \angle BOD$$

Now, Again

Ray OB stands on line CD.

$$\therefore \angle BOC + \angle BOD = 180^\circ \text{ .....equation (iii) \{Linear Pair Axiom\}}$$

Again ray OD stands on line AB.

$$\therefore \angle AOD + \angle BOD = 180^\circ \text{ .....equation (iv)}$$

From equation (iii) and (iv),

$$\Rightarrow \angle BOC + \angle BOD = \angle AOD + \angle BOD$$

$$\Rightarrow \angle BOC + \angle BOD - \angle BOD = \angle AOD$$

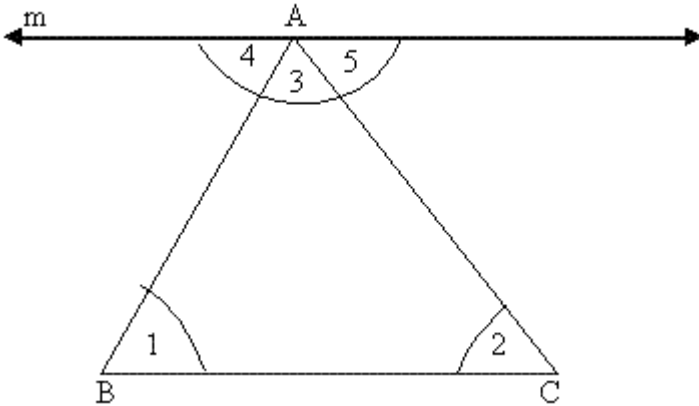
$$\Rightarrow \angle BOC = \angle AOD$$

Hence Proved.

Angle Sum Property of Triangle: -

**Theorem 2. The sum of the angles of a triangle is  $180^\circ$ .**

**Solution:**



Given: -  $\Delta ABC$ .

**To Prove:** -  $\angle 1 + \angle 2 + \angle 3 = 180^\circ$ .

Construction: - Let us draw a line  $m$  through  $A$ , parallel to  $BC$ .

Proof: -  $\because BC \parallel m$  and  $AB$  and  $AC$  are its transversal.

$\therefore \angle 1 = \angle 4$  .....equation (i) {alternate interior angles}

$\angle 2 = \angle 5$  .....equation (ii) {alternate interior angles}

By adding equation (i) & (ii),

$\angle 1 + \angle 2 = \angle 4 + \angle 5$  .....equation (iii)

Now by adding  $\angle 3$  to both sides of equation (iii), we get

$\angle 1 + \angle 2 + \angle 3 = \angle 4 + \angle 5 + \angle 3$

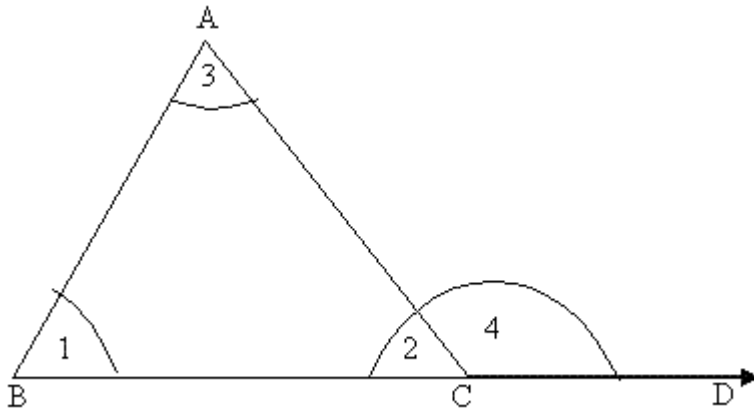
$\because \angle 4 + \angle 5 + \angle 3 = 180^\circ$  {Linear Pair}

$\therefore \angle 1 + \angle 2 + \angle 3 = 180^\circ$

Hence Proved.

**Theorem 8. If a side of a triangle is produced, then the exterior angle so formed is equal to the sum of the two interior opposite angles.**

**Solution:**



**Given:** - A  $\triangle ABC$  in which side BC is produced to D forming exterior angle  $\angle ACD$  of  $\triangle ABC$ .

**To Prove:** -  $\angle 4 = \angle 1 + \angle 2$ .

**Proof:** -  $\because \angle 1 + \angle 2 + \angle 3 = 180^\circ$  .....equation (i)  
{Angle Sum Property of a  $\triangle$ }

$\angle 3 + \angle 4 = 180^\circ$  .....equation (ii) {Linear Pair}

From equations (i) & (ii),

$$\angle 1 + \angle 2 + \angle 3 = \angle 3 + \angle 4$$

$$\Rightarrow \angle 1 + \angle 2 + \angle 3 - \angle 3 = \angle 4$$

$$\Rightarrow \angle 1 + \angle 2 = \angle 4$$

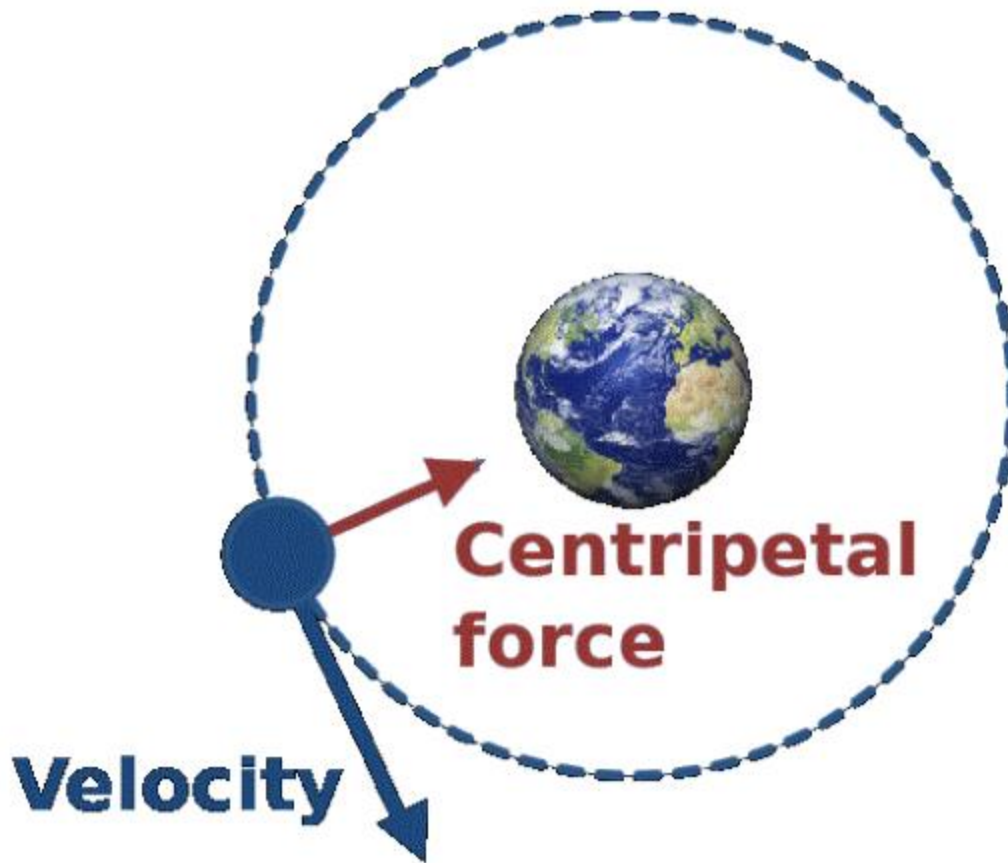
Hence,  $\angle 4 = \angle 1 + \angle 2$  Proved.

VIDEO LINK: <https://youtu.be/qBrzc49ZfSs>

**CLASS- IX SUBJECT –PHYSICS**  
**CHAPTER –GRAVITATION**

**What is the Centripetal Force?**

- We know that an object in circular motion keeps on changing its direction.
- Due to this, the velocity of the object also changes.
- A force called **Centripetal Force** acts upon the object that keeps it moving in a circular path.
- The centripetal force is exerted from the centre of the path.
- Without the Centripetal Force objects cannot move in circular paths, they would always travel straight.
- **For Example**, The rotation of Moon around the Earth is possible because of the centripetal force exerted by Earth.

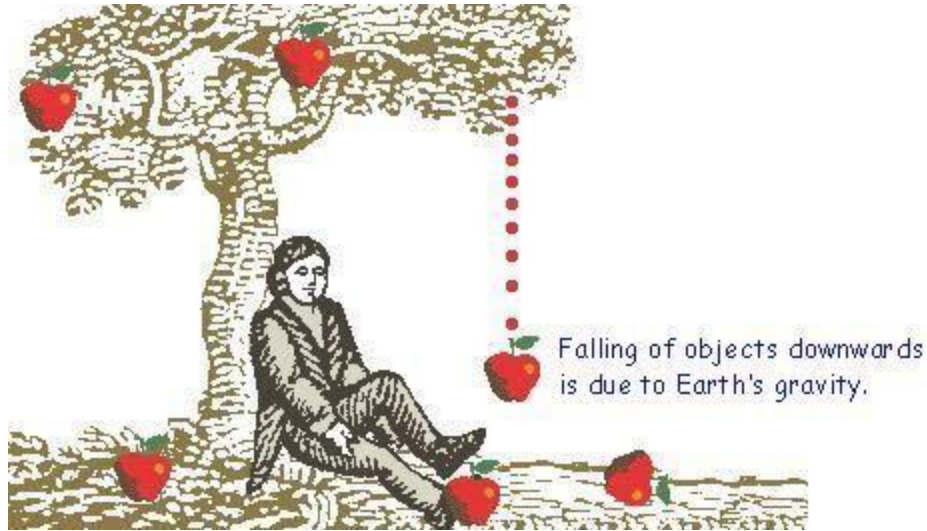


**Figure 1 Centripetal Force of Earth on Moon**

**Newton's Observations**

- Why does Apple fall on Earth from a tree? – Because the earth attracts it towards itself.

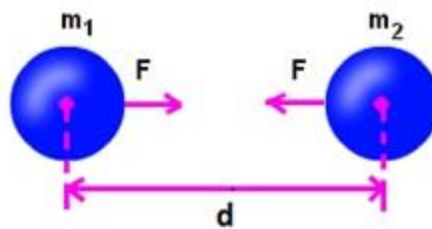
- Can Apple attract the earth? - Yes. It also attracts the earth as per Newton's third law (every action has an equal and opposite reaction). But the mass of the earth is much larger than Apple's mass thus the force applied by Apple appears negligible and Earth never moves towards it.
- Newton thus suggested that all objects in this universe attract each other. This force of attraction is called **Gravitational Force**.



**Figure 2 Gravitational Force of Earth**

### Universal Law of Gravitation by Newton

- According to the universal law of gravitation, every object attracts every other object with a force.
- This force is directly proportional to the product of their masses.
- This force is inversely proportional to the square of distances between them.
- Consider the figure given below. It depicts the force of attraction between two objects with masses  $m_1$  and  $m_2$  respectively that are 'd' distance apart.



- The figure below describes how the universal law of gravitation is derived mathematically.

$$F \propto m_1 \text{ --- --- --- --- ---(i)}$$

$$F \propto m_2 \text{ --- --- --- --- ---(ii)}$$

$$F \propto \frac{1}{r^2} \text{ --- --- --- --- ---(iii)}$$

From the above equation we can rewrite them as the following:

$$F \propto \frac{m_1 m_2}{r^2} \text{ --- --- --- --- ---(iv)}$$

If we remove the proportionality we get proportionality constant G as the following:

$$F = G \frac{m_1 m_2}{r^2}$$

The above equation is the mathematical representation of Newton's universal Law of gravitation

**Hence,  $G = Fr^2 / m_1 m_2$**

**SI Unit:  $\text{Nm}^2 \text{kg}^{-2}$**

Value of  $G = 6.673 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$  (was found out by Henry Cavendish (1731- 1810))

- The proportionality constant G is also known as the **Universal Gravitational Constant**

### **Why we study the universal law of gravitation?**

It explains many important phenomena of the universe –

- Earth's gravitational force
- Why the moon always moves in a circular motion around the earth and the sun
- Why all planets revolve around the sun
- How the sun and moon can cause tides

### **Free Fall**

- **Acceleration due to gravity** – Whenever an object falls towards the Earth there is an acceleration associated with the movement of the object. This acceleration is called acceleration due to gravity.
- Denoted by: g
- SI Unit:  $\text{m s}^{-2}$
- We know that,  $F = ma$
- Therefore,  $F = mg$
- The following figure demonstrates the mathematical derivation of 'g'

The force (F) of gravitational attraction on a body of mass m due to earth of mass M and radius R is given by

$$F = G \frac{mM}{R^2} \quad \dots (1)$$

We know from Newton's second law of motion that the force is the product of mass and acceleration.

$$\therefore F = ma$$

But the acceleration due to gravity is represented by the symbol g. Therefore, we can write

$$F = mg \quad \dots (2)$$

From the equation (1) and (2), we get

$$mg = G \frac{mM}{R^2} \quad \text{or} \quad g = \frac{GM}{R^2} \quad \dots (3)$$

When body is at a distance 'r' from the centre of the earth then

$$g = \frac{GM}{r^2}$$

**Value of 'g' may vary at different parts of the earth –**

- From the equation  $g = GM/r^2$  it is clear that the value of 'g' depends upon the distance of the object from the earth's centre.
- This is because the shape of the earth is not a perfect sphere. It is rather flattened at poles and bulged out at the equator.
- Hence, the value of 'g' is greater at the poles and lesser at the equator. However, for our convenience, we take a constant value of 'g' throughout.

**We can find the value of acceleration due to gravity by the following –**

# Calculation of g

- $F = GMm/r^2$
- $g = F/m = GM/r^2$
- Mass of Earth =  $6 \times 10^{24} \text{kg}$
- Radius of Earth =  $6.4 \times 10^6 \text{m}$
- Calculate g on Earth
- $g = GM/r^2$
- $= 6.67 \times 10^{-11} \times 6 \times 10^{24} / (6.4 \times 10^6)^2$
- $= 9.8 \text{ Nkg}^{-1}$

## What is Free Fall?

When an object falls towards the earth due to earth's gravity and no other force is acting upon it, the object is said to be in **free fall state**. Free falling objects are not even resisted by the air.

$g = 9.8 \text{ m/s}^2$  is also called the **Free-fall Acceleration**.

Value of 'g' is same on the earth, so the equations of motion for an object with uniform motion are valid where acceleration 'a' is replaced by 'g', as given under:

$$v = u + gt$$

$$s = ut + (1/2) gt^2$$

$$2 g s = v^2 - u^2$$

## Consider the equations of motion given in different scenarios:

When an object at rest falls towards earth – its initial velocity is zero

$$v = gt$$

$$s = t + (1/2) gt^2$$

$$2 g s = v^2$$

When an object with some initial velocity (u) falls towards earth –

$$v = u + gt$$

$$s = ut + (1/2) gt^2$$

$$2 g s = v^2 - u^2$$



When an object is thrown upwards from earth – the gravitational force acts in opposite direction, hence g is negative

$$v = u - gt$$

$$s = ut - (1/2) gt^2$$

$$-2 g s = v^2 - u^2$$

### Difference between Universal gravitational Constant and Acceleration due to Gravity

Mass	Weight
Mass is defined as the quantity of matter in an object.	The weight of an object is the force by which the gravitational pull of earth attracts the object.
Mass is a scalar quantity	Weight is a vector quantity
The mass of an object is always constant as it depends upon the inertia of the object	The weight of an object can vary at different locations because of change in gravitational force of the earth
Mass can never be zero	Weight can be zero at places there is no gravitational force
Denoted as: m	Denoted as W
	$F = mg$
	where m = mass of object
	a = acceleration due to gravity
	Similarly, W is force, so
	$W = mg$
SI Unit: kg	SI unit: N

### Weight of an object on the Moon

Just like the Earth, the Moon also exerts a force upon objects. Hence, objects on moon also have some weight. The weight will not be same as than on the earth. So, weight on the Moon can be calculated as -

$$W_M = \frac{GM_M m}{R_M^2}$$

Now,

$$\Rightarrow \frac{W_M}{W_E} = \frac{M_M R_E^2}{M_E R_M^2}$$

Where,

$$M_E = 5.98 \times 10^{24} \text{ kg}$$

$$M_M = 7.36 \times 10^{22} \text{ kg}$$

$$R_E = 6.4 \times 10^6 \text{ m}$$

$$R_M = 1.74 \times 10^6 \text{ m}$$

$$\Rightarrow \frac{W_M}{W_E} = \frac{7.36 \times 10^{22} \times (6.4 \times 10^6)^2}{5.98 \times 10^{24} \times (1.74 \times 10^6)^2} = 0.165 \approx \frac{1}{6}$$

Therefore, weight of an object on the moon is  $\frac{1}{6}$  of its weight on the Earth.

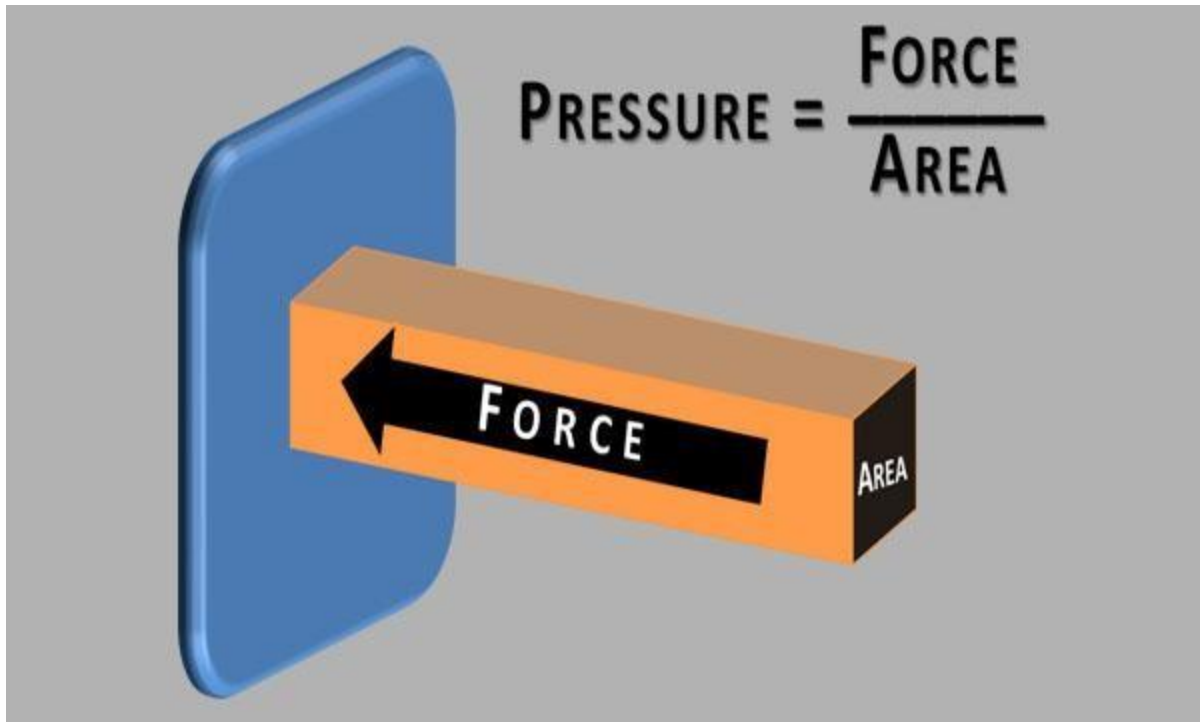
## **Thrust and Pressure**

### **Thrust**

- The force that acts in the perpendicular direction is called thrust.
- It is similar to force applied to an object
- It is a vector quantity.

### **Pressure**

- The force that acts per unit area of the object is pressure.
- It is the thrust per unit area.
- Pressure is denoted by 'P'
- $P = \text{thrust} / \text{area} = \text{force} / \text{area} = F/A$
- SI unit:  $\text{N/m}^2$  or Pa (Pascal)



**Figure 4 Pressure**

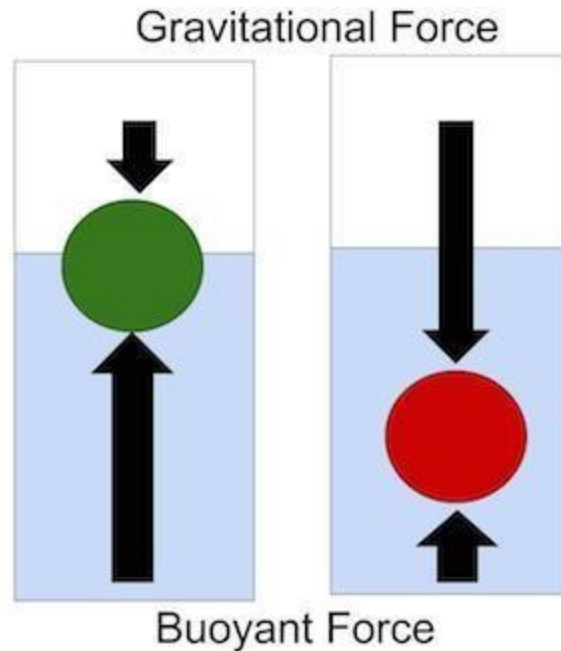
### **Why do nails have sharp edges?**

We know that pressure is inversely proportional to area. As area increases, pressure decreases and vice versa. So, nails' sharp edges make it easier for them to get into the wall because more pressure is exerted on the wall from a single point.

- **Solids** - They exert pressure on the surface because of their weight.
- **Fluids (gases and liquids)** - They also have weight, therefore, they exert pressure on the surface and the walls of the container in which they are put in.

### **Buoyancy**

- Whenever an object is immersed in a liquid, the liquid exerts a buoyant force or upthrust in the opposite direction of the gravitational force. This is also called the **Force of Buoyancy**.
- It depends upon the density of the fluid.
- Therefore an object is able to float in water when the gravitational force is less than the buoyant force.
- Similarly, an object sinks into the water when the gravitational force is larger than the buoyant force.



**Figure 5 Buoyancy**

#### **Why does an object sink or float on water?**

- An object can sink or float on water based on its density with respect to water. The density is defined as mass per unit volume.
- Objects having a density less than water float in it. **For Example**, Cork floats in water because its density is lower than that of water.
- Objects that have a density higher than water sink in it. **For Example**, Iron nail sinks in water because the density of iron is more than water's density.
- Thus, we can conclude that buoyancy depends upon:
  - The density of the liquid
  - The volume of the object (as the volume of object increases, its density decreases and vice-versa)

#### **Archimedes Principle**

According to the Archimedes principle, whenever an object is immersed in a liquid (fully or partially), the liquid exerts an upward force upon the object. The amount of that force is equivalent to the weight of the liquid displaced by the object.

This means that if the weight of an object is greater than the amount of liquid it displaces, the object will sink into the liquid. However, if the weight of an object is less than the amount of water it displaces, the object will float.

- Submarines have a tank called **Buoyancy Tank**. Whenever the submarine needs to be taken inside water the tank is filled which thus increases the weight of the submarine. Similarly, when the submarine is to appear above water the tank is emptied and the weight of the submarine becomes lighter and it rises above the water.
- Ships are heavier than water but their unique shape gives them a large volume. Their volume is larger than their weight and hence the water displaced by a ship provides it with the right upthrust so that it can float on water.

### Applications of Archimedes Principle

- In evaluating relative density
- In designing ships and submarines
- In making lactometers and hydrometers

### What is relative density?

When density can be expressed in comparison with water's density it is called **Relative Density**. It has no unit because it is a ratio of two similar quantities.

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Relative Density} = \frac{\text{Density of Substance}}{\text{Density of Water}}$$

### Why water is chosen as a reference?

Water is present everywhere on earth so it becomes easier to evaluate the density of a substance in relation to water.

How relative density can be used as a measure to determine in an object will sink or float in water?

Relative Density of an object	Float / Sink
Greater than 1	Sink in water
Less than 1	Float in water

## Assignment

### Political Science

#### Class -IX

1. What do you understand by the term election?
  2. Discuss the role of independent an Election Commission
  3. Define the following terms:
    - a) by election
    - b) constituency
  4. What kind of election is called a democratic election?
  5. Discuss the merits and demerits of having a Political competition.
  6. “Regular electoral competition provides incentives to political parties and leaders.’ Justify.
  7. Define voter’s list.
  8. List the legal declaration given by the candidates before standing in elections.
  9. Why is there a need of reserved constituencies ?
  10. What do you understand by election campaign?
  11. List the slogans given by political parties
  12. Explain the model code of conduct.
- [https://youtu.be/3a4akfp\\_5rw](https://youtu.be/3a4akfp_5rw)

# SANSKRIT

खण्ड: 'क'—अपठितंश-अवबोधनम् 10 अङ्काः

1. अधोलिखितम् अनुच्छेदं पठित्वा प्रदत्तप्रश्नानाम् उत्तराणि लिखत—

अनुच्छेदः  
सन्तोः जनने धरणे पोषणे तालने च मातुः गौरवं स्वयं मिदं भवति। मातृमर्त्यं स्वसन्ततिं प्रति यादुरं नैसर्गिकम् असाधारणं काव्यस्यं भवति न तादृसमन्यत्र कुत्रापि दृष्टिपथमायाति। स्वसन्ततिपालने तस्य सुखाय माता न केवलं स्वमुखम् अपितु पित्रसर्वस्वमपि त्यक्तुं शक्नोति। जननीव जनमभूमिपि जनान् धारयति शस्यदिभिः पोषयति पालयति च। स्व सन्ततिं प्रति न कदापि जनन्यादिचर्त्तिकृतिं याति। माता कदापि कुमाता न भवति। 10

प्रश्नाः— 1/2 × 4 = 2

I. एकपदेन उत्तरत—

1. माता किं न भवति ?
2. माता किं त्यक्तुं शक्नोति ?
3. कः प्रति जनन्यादिचर्त्तिकृतं न याति ?
4. मातुः मर्त्यं स्वसन्ततिं प्रति किं भवति ?

II. पूर्णवाक्येन उत्तरत— 2 × 1 = 2

जननीव का जनन् पालयति पोषयति च ?

III. अस्य गद्यांशस्य समुचितं शीर्षकं लिखत। 2 × 1 = 2

IV. भविकक्यायम्— 1 × 4 = 4

1. 'जनन्याः' अत्र का विधक्तिः प्रयुक्ता ?  
(i) प्रथमा (ii) तृतीया (iii) पञ्चमी (iv) षष्ठी
2. 'नैसर्गिकम् असाधारणं काव्यस्यम्' अत्र विशेषण पदं किम् ?  
(i) नैसर्गिकम् (ii) असाधारणम् (iii) काव्यस्यम् (iv) नैसर्गिकं असाधारणं
3. 'धारयति' इति पदस्य कर्तृपदं किम् ?  
(i) जननी (ii) जनमभूमिः (iii) जनान् (iv) शस्यः
4. 'मातुः' पदे का विधक्तिः प्रयुक्ता ?  
(i) प्रथमा (ii) पञ्चमी (iii) षष्ठी (iv) तृतीया

VIDEO LINK: <https://youtu.be/1cjMQjA3pk8>