

CHAPTER-3 (SQUARES AND SQUARE ROOTS)

Square Roots: The square root of a number 'n' is that number which when multiplied by itself gives 'n' as a product.

Finding the square root is the inverse operation of finding the square.

A square number can always be expressed as the product of pairs of equal prime factors.

But, we must remember that finding the square roots by prime factorization is useful for small numbers only.

Example 1. Find the square root of 64 by successive subtraction.

Solution. Given number is 64.

Now subtracting 1, 3, 5, 7, successively from 64, till we get zero.

- (i) $64 - 1 = 63$ (ii) $63 - 3 = 60$ (iii) $60 - 5 = 55$ (iv) $55 - 7 = 48$
(v) $48 - 9 = 39$ (vi) $39 - 11 = 28$ (vii) $28 - 13 = 15$ (viii) $15 - 15 = 0$

Since, we have done the subtraction 8 times

Hence, square root of 64 is 8 i.e. $\sqrt{64} = 8$.

Example 2. Find the square root of 324 by prime factorisation.

Solution. Given number is 324.

Expressing 324 into prime factors, we have

$$324 = \underline{2 \times 2} \times \underline{3 \times 3} \times \underline{3 \times 3}$$

$$\Rightarrow \sqrt{324} = 2 \times 3 \times 3 = 18 \text{ (Taking one prime number from each pair)}$$

$$\Rightarrow \sqrt{324} = 18$$

Hence, the square root of 324 is 18.

Prime factorisation

2	324
2	162
3	81
3	27
3	9
3	3
	1

Example 3. Find the square root of 6400 by prime factorisation.

Solution. Given number is 6400.

Expressing 6400 into the prime factors, we have

$$6400 = \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{5 \times 5}$$

$$\sqrt{6400} = 2 \times 2 \times 2 \times 2 \times 5 = 80$$

Hence, the square root of 6400 is 80.

Prime factorisation

2	6400
2	3200
2	1600
2	800
2	400
2	200
2	100
2	50
5	25
5	5
	1

Example 4. Find the square root of the following numbers by prime factorisation method:

(i) 7056

(ii) $10\frac{86}{121}$

(iii) 42.25

Solution. (i) $7056 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 \times 7$
 $= 2^2 \times 2^2 \times 3^2 \times 7^2$

$$\therefore \sqrt{7056} = 2 \times 2 \times 3 \times 7 = 84.$$

$$(ii) 10\frac{86}{121} = \frac{1296}{121} = \frac{2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3}{11 \times 11}$$

$$= \frac{2^2 \times 2^2 \times 3^2 \times 3^2}{(11)^2}$$

$$\therefore \sqrt{10\frac{86}{121}} = \frac{2 \times 2 \times 3 \times 3}{11} = \frac{36}{11} = 3\frac{3}{11}$$

2	7056
2	3528
2	1764
2	882
3	441
3	147
7	49
	7

Converting mixed fraction to improper fraction

$$(iii) 42.25 = \frac{4225}{100} = \frac{169}{4}$$

$$= \frac{13 \times 13}{2 \times 2} = \frac{13^2}{2^2}$$

$$\therefore \sqrt{42.25} = \frac{13}{2} = \frac{13 \times 5}{2 \times 5} = \frac{65}{10} = 6.5$$

Converting decimal to fraction

Expressing in lowest terms

Example 5. The students of class VIII of a school donated ₹ 2401 in all, for Prime Minister's National Relief Fund. Each student donated as many rupees as the number of students in the class. Find the number of students in the class.

Solution. Given that amount donated by the students of class VIII = ₹ 2401.

Let the number of students in class VIII = x

then, the amount donated by each student = ₹ x

∴ Total amount donated for Prime Minister's Relief Fund = $x \times x$

According to given $x \times x = 2401$

$$\Rightarrow x^2 = 2401$$

$$\Rightarrow x^2 = 7 \times 7 \times 7 \times 7 = 7^4$$

$$\Rightarrow x = 7^2 = 7 \times 7 = 49.$$

Hence, the number of students in the class is 49.

Prime factorisation

7	2401
7	343
7	49
7	7
	1

Example 6. Find the smallest natural number by which 980 should be multiplied to make it a perfect square.

Solution. $980 = \underline{2 \times 2} \times 5 \times \underline{7 \times 7}$

Since the factor 5 does not have its pair, therefore, the smallest number by which the given number must be multiplied so that the product is a perfect square is 5.

Prime factorisation

2	980
2	490
5	245
7	49
	7

Example 7. Is 2352 a perfect square? If not, find the smallest multiple of 2352 which is a perfect square. Find the square root of the new number.

Solution. Given number is 2352.

Expressing it into prime factors, we have

$$2352 = \underline{2 \times 2} \times \underline{2 \times 2} \times 3 \times \underline{7 \times 7}$$

We can see that 3 is left unpaired.

So 2352 cannot be expressed as the product of pairs of equal prime factors.

Hence, 2352 is not a perfect square.

In order to make 2352 a perfect square, 3 should be paired.

So, the smallest number which is multiplied by 2352 to make it a perfect square is 3.

$$\therefore 2352 \times 3 = \underline{2 \times 2} \times \underline{2 \times 2} \times \underline{7 \times 7} \times \underline{3 \times 3}$$

Therefore $2352 \times 3 = 7056$ is a perfect square.

Hence, the smallest multiple of 2352 which is a perfect square is 7056

$$\text{and } \sqrt{7056} = \sqrt{\underline{2 \times 2} \times \underline{2 \times 2} \times \underline{7 \times 7} \times \underline{3 \times 3}} \\ = 2 \times 2 \times 7 \times 3 = 84$$

Hence, the square root of new number is 84.

Prime factorisation

2	2352
2	1176
2	588
2	294
3	147
7	49
7	7
	1

Example 8. Find the smallest natural number by which 9408 must be divided so that the quotient is a perfect square. Find the square root of the quotient.

Solution. Given number is 9408.

Expressing it into prime factors, we have

$$9408 = \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times 3 \times \underbrace{7 \times 7}$$

Since 3 is left unpaired, so to make 9408 a perfect square, it should be divided by 3.

$$\text{Now } 9408 \div 3 = 3136 = \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{7 \times 7}$$

We can see that quotient 3136 can be expressed as the product of pairs of equal prime factors, so 3136 is a perfect square. Hence, the smallest number by which 9408 must be divided so that the quotient is a perfect square is 3.

$$\begin{aligned} 3136 &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 7 \\ &= 2^6 \times 7^2 \end{aligned}$$

$$\Rightarrow \sqrt{3136} = 2^3 \times 7^1 = 8 \times 7 = 56.$$

Hence, the square root of the quotient is 56.

Prime factorisation

2	9408
2	4704
2	2352
2	1176
2	588
2	294
3	147
7	49
7	7
	1

Example 9. Find the smallest square number which is divisible by each of the numbers 6, 9 and 15.

Solution. Given numbers are 6, 9 and 15.

$$\text{LCM of } 6, 9 \text{ and } 15 = 3 \times 2 \times 3 \times 5 = 90$$

\therefore Smallest number which is divisible by each one of 6, 9 and 15 = 90

$$\text{Prime factorisation of } 90 = 2 \times \underbrace{3 \times 3} \times 5.$$

We can see that 90 cannot be expressed as the product of pairs of equal prime factors, so 90 is not a square number.

In order to make 90 a square number, we need to multiply it by 2×5 i.e. by 10.

$$\therefore \text{The required square number} = 90 \times 10 = 900$$

Hence, the smallest square number which is divisible by 6, 9, 15 is 900.

Prime factorisation

3	6, 9, 15
	2, 3, 5

SOLVE YOURSELVES

EX.-3.3

2) Find the square roots of the following numbers by prime factorization method:

i) 784

viii) 9025

3) Find the square roots of the following numbers by prime factorization method:

i) $9 \frac{67}{121}$

iii) 1.96

4) Find the smallest natural number by which 720 should be multiplied to get a perfect square. Also find the square root of the square number so obtained.

5) Find the smallest natural number by which 2592 should be divided so that the quotient is a perfect square. Also find the square root of the square number so obtained.

6) Find the smallest square number that is divisible by 3, 6, 10 and 15.

- 7) 4225 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row.
- 8) The area of a rectangle is 1936 sq. m. If the length of the rectangle is 4 times its breadth, find the dimensions of the rectangle.
- 9) In a school a P.T. teacher wants to arrange 2000 students in the form of rows and columns for P.T. display. If the number of rows is equal to number of columns and 64 students could not be accommodated in this arrangement. Find the number of rows.
- 11) The product of two numbers is 7260. If one number is 15 times the other number, find the numbers.
- 12) Find three positive numbers in the ratio 2:3:5, the sum of whose squares is 950.
- 13) The perimeters of two squares are 60 metres and 144 metres respectively. Find the perimeter of another Square equal in area to the sum of the first two squares.

4TH HOME ASSIGNMENT – 2020-2021

CLASS –VIII SUBJECT – ENGLISH LANGUAGE

DATE – 24.04.20

(SOLUTIONS TO THE EXERCISES OF CHAPTER- 3 ADJECTIVES DATE- 22.04.20 .)

EXERCISE 1. Fill in the blanks with Proper Adjectives :-

1. Priya is an Indian citizen .
2. The Australian batsman played well .
3. My friend introduced me to Italian cuisine .
4. The church is an excellent example of Victorian architecture .
5. I enjoyed the French food .

EXERCISE 2. Correct the errors in the following sentences :-

1. She had only few rupees left .
Ans:- She had only a few rupees left .
2. This is the last edition of the book .
Ans:- This is the latest edition of the book .
3. The boy has not any book .
Ans:- The boy has no book .
4. I like to eat France fries .
Ans:- I like to eat French fries .
5. The four first boys were selected .
Ans:- The first four boys were selected .
6. I ate whole apple .
Ans:- I ate the whole of the apple .

CHAPTER – 3 THE ADJECTIVES (CONTINUED)

COMPARISON OF ADJECTIVES

The different forms of Adjectives that are used to show comparison are called DEGREES OF COMPARISON. THERE ARE THREE DEGREES OF COMPARISON IN ADJECTIVES .

1. POSITIVE DEGREE

The simple form of the Adjective is known as **the positive degree**.

e.g. The kites in this shop are **bright** .

In the above example , the adjective is in its **base form** and is modifying the noun . **No comparison is made** .

2. COMPARATIVE DEGREE

The Adjectives that help to **compare two persons or things** are said to be in **the comparative**

degree . e.g.The kites in this shop are **brighter than** the ones we had seen there .

In the above example ,the **-er form** of the adjective helps to compare two things.

NOTE:- When we use comparatives in a sentence, they are often followed by the word **than** and a noun or a pronoun to show who or what it is being compared to .

3. SUPERLATIVE DEGREE

The **Adjectives** that help to compare three or more persons or things are said to be in the **superlative degree . e.g.** The kites in this shop are **the brightest** of all .

In the above example , the **-est form** of the adjective helps to compare three or more things .

NOTE : When we use a **SUPERLATIVE**, we use **the** before it because there is only one **SUPERLATIVE .**

INTERCHANGE OF DEGREES OF COMPARISON

EXAMPLES

1.December is the **coldest** month . (**Superlative**)

December is **colder than any other** month . (**Comparative**)

No other month is **as cold as** December . (**Positive**)

2.Kavita is **one of the most industrious girls** in the colony . (**Superlative**)

Kavita is **more industrious than most other girls** in the colony .(**Comparative**)

Very few girls in the colony are **as industrious as** Kavita .(**Positive**)

3.Iron is **the most useful** metal .(**Superlative**)

Iron is **more useful than any other** metal . (**Comparative**)

No other metal is **as useful as** iron .(**Positive**)

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HOME ASSIGNMENTS

EXERCISE 1. Change the following sentences into the other two forms of degree wherever possible :-

1.Our house in the village is the oldest of all.

2. She is more talkative than Kim .

3. Sheen is not as diligent as Shiny .

4. Hard work is the best bet .

5. Jason plays chess better than any other boy .

EXERCISE 2. Rewrite the following according to the instructions given after each :-

1. A rainbow is one of the most beautiful sights . (Begin : Very few sights.....)

2. He is not the best boy in the class . (Begin: He is not better.....)

3. The aeroplane flies faster than birds .(End :.....as the aeroplanes .)

4. Rose is the loveliest of all flowers . (Use : **lovelier instead of the loveliest**)

5. The pen is mightier than the sword . Begin : The sword.....)

6. Ali is not so strong as Ahmad . (Begin : Ahmad is)

7. Very few boys are as hardworking as Kalam . (Begin : Kalam is)

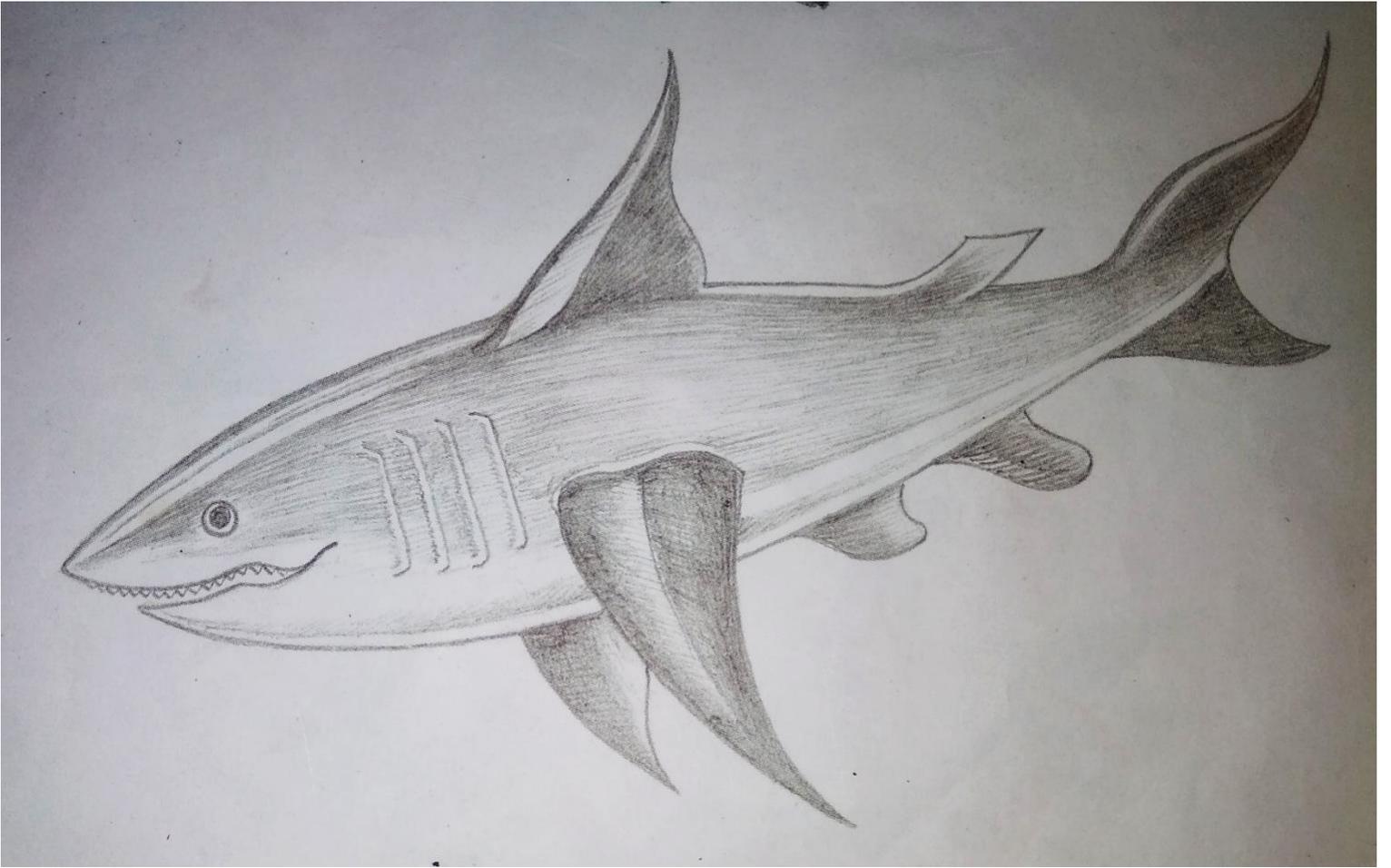
CLASS – VIII

SUBJECT – ART EDUCATION

DATE – 24.04.2020

Do the Pencil Sketch of this two pictures :-





Date: 24.04.2020

**COMPUTER (HOME ASSIGNMENT – 2)
CLASS – 8**

**CHAPTER: 1 (OPERATING SYSTEM & GUI)
STUDY MATERIAL NO. – 1.2**

Why is an Operating System needed?

An Operating System is needed to boot up the computer, to control hardware, because without O/S a computer is useless, it can do nothing on its own. An Operating System is software and software is needed to tell hardware what to do. It also acts as the radiator between the application software, hardware and the user. It is needed for the user so it can run different programs. Without O/S you couldn't interact with any applications or hardware.

A computer works with an interaction of hardware and software, and O/S is system software that manages computer's hardware and software. It is settled between the BIOS and the application software so it can control what hardware resources are being used such as:

- ☞ Memory
- ☞ CPU time
- ☞ Disk space
- ☞ Peripheral devices

What are the major functions of an operating system?

- ❖ Managing Resources: Programs that manage the resources of a computer such as the printer, mouse, keyboard, memory and monitor.
- ❖ Providing User Interface: Graphical user interface (GUI) is something developers create to allow users to easily click something without having to understand how or why they clicked an icon. Each icon on a desktop represents code linking to the spot in which the icon represents. It makes very easy for uneducated users as GUI is graphics based and attractive.

- ❖ Running Applications: is the ability to run an application such as Word processor by locating it and loading it into the primary memory. Most operating systems can multitask by running many applications at once.
- ❖ Support for built-in Utility Programs: This is the program that find and fixes errors in the operating system.
- ❖ Control Computer Hardware: All programs that need computer hardware must go through the operating system which can be accessed through the BIOS (basic input output system) or the device drivers.

As we discuss earlier, an operating system acts as an interface between the user and hardware. An interface is a point where two systems meet and interact with each other.

User Interface: - Definition

A user interface, also called an "interface," is the means in which a person controls a software application or hardware device. A good user interface provides a "user-friendly" environment, allowing the user to interact with the software or hardware in a natural and spontaneous way.

Two common user interfaces are:

-  Character User Interface (CUI)
-  Graphical User Interface (GUI)

Home Work:-

1. Define Operating system with example.
2. What is the purpose of an operating system?
3. What is User interface?
4. Write the full form of – CUI and GUI

CLASS – VIII
STUDY MATERIAL & HOME ASSIGNMENT [II]
SUBJECT-BIOLOGY CHAPTER-1(TRANSPORT OF FOOD & MINERALS IN PLANTS) DT–24/04/20

I hope you have gone through the PDF uploaded earlier and you have practised the questions given there. Now we are going to discuss the solution of the previous assignment[I] (chapter 1 & chapter 2) and the rest part of the chapter 1.

➤ **ANSWERS OF PREVIOUS HW QUESTIONS : CHAPTER 1**

i. What are the three means of transport in plants?

There are three means of transport as follows:

- **Diffusion** : Movement by this process is passive and may be from cell to cell or from one part of the plant to the cell. Diffusion process does not result in the expenditure of energy. The particles move from higher concentration region to lower concentration region. It is a slow process and occurs most likely in liquid and gases.
- **Osmosis** : Osmosis is the spontaneous movement of a solvent (water) through a Cellular Membrane (semi permeable membrane). This is a special kind of diffusion that moves water molecules from a place of higher concentration to a place of lower concentration to create a stable and equal cellular environment.
- **Active transport** : When the transport of materials are not spontaneous but involves an expenditure of energy, the type of transport is called active transport. This transport generally takes place against the concentration gradient.

ii. Write difference between osmosis and diffusion.

Osmosis	Diffusion
<ol style="list-style-type: none">1. Osmosis is a kind of process by which solvent molecule moves from higher concentration to lower concentration.2. It requires semi permeable membrane.	<ol style="list-style-type: none">1. By this process particles move from higher concentration to lower concentration.2. It does not require semi permeable membrane.

iii. Write function of the following :

- a) Xylem – Conducts water and dissolved minerals from the roots to rest of the plant body
- b) Phloem – phloem transports the food manufactured in the leaves to all parts of the plant.

iv. Write difference between diffusion and active transport by means of energy requirement. Diffusion does not require energy while active transport involves expenditure of energy.

v. How does the root pressure help in transportation of water in plants?

Root pressure, in plants, force that helps to drive fluids upward into the water-conducting vessels (xylem). It is primarily generated by osmotic pressure in the cells of the roots. **Root pressure** helps in re-establishing the continuous chains of **water** molecules in the xylem. Transpirational pull maintains the flow of **water** molecules from the **roots** to shoot . When the nutrients are absorbed by **root** hairs, **water** along with minerals, increases the **pressure** in the xylem.

vi. Name the part of the leaves from where transpiration takes place.

Transpiration is the process of water movement through a plant and its evaporation from aerial parts, such as leaves, stems and flowers.

➤ **ANSWERS OF PREVIOUS HW QUESTIONS : CHAPTER 2**

i. Differentiate between sexual and asexual reproduction.

Sexual Reproduction	Asexual Reproduction
1. Two parents are involved.	1. One parent is involved.
2. New generation is not identical to its parents.	2. New generation is identical or true copy of the parent.
3. Original parent does not disappear after reproduction.	3. Original parent disappears after reproduction.
4. Fertilization of gametes gives rise to zygote formation.	4. No gamete is formed and fertilization is absent.
5. Characteristics of both parents are inherited.	5. Characteristics of only parent is inherited.
6. Special organs for reproduction are required.	6. Special organs for reproduction are not required.

ii. What is vegetative propagation? What are the processes of vegetative propagation.
 This form of asexual reproduction occurs in plants only. In vegetative propagation, parts of old plant like stems, roots and leaves are used to grow a new plant. The buds which are present in dormant state in old plant are provided with suitable conditions like moisture and warmth so that they grow and develop to form a new plant.
 The most common forms of **vegetative propagation** are grafting, cutting, layering, tuber, bulb or stolon formation, and tissue culture.

iii. Explain the process of sporulation with diagram.
 The method of spore formation occurs in both unicellular and multi-cellular organisms. This process takes place in plants. In spore formation, the parent plant produces hundreds of reproductive units called spores in its spore case. When this spore case of the plant bursts, these spores travel in air and land on food or soil. Here they germinate and produce new plants. E.G: Rhizopus.

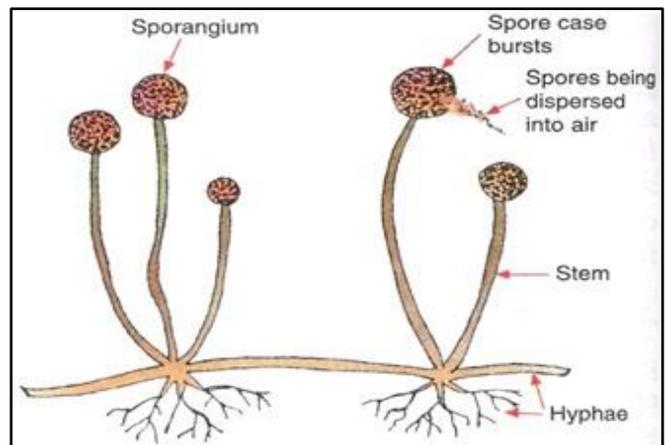
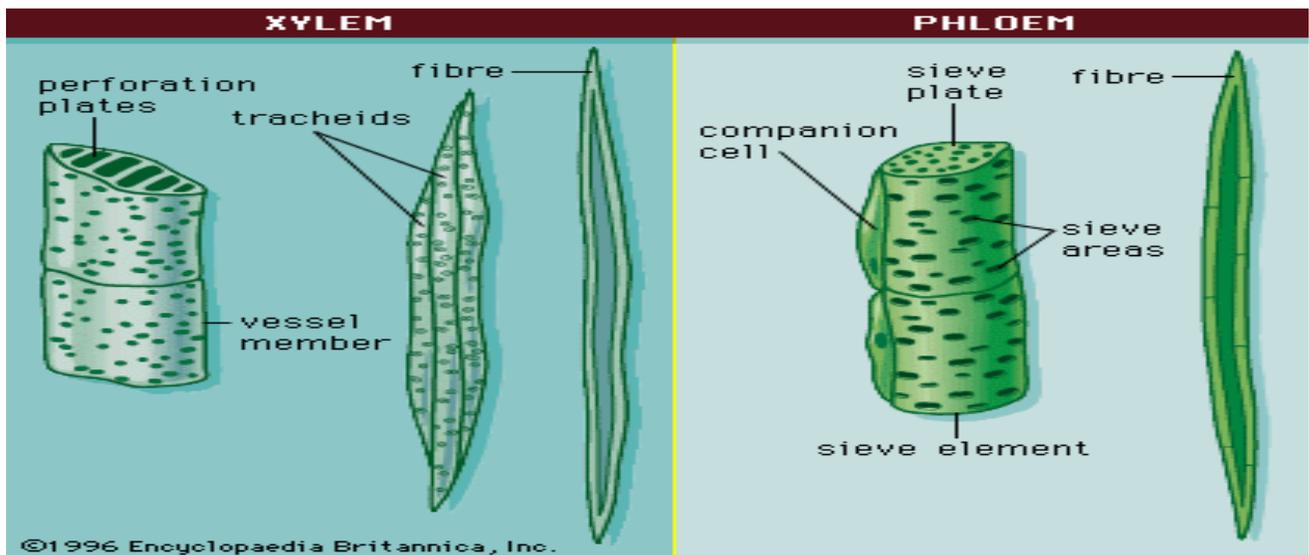


FIG : SPORE FORMATION

iv. Name the process by which yeast reproduces.
 Budding.

EXPLANATION OF THE REST PART OF CHAPTER 1

- **The transport system** in plants distributes water, food, and minerals to various parts of the plant. The transport system in flowering plants that have a very well developed system for transportation is known as vascular system. There are two vascular tissues namely, the xylem and the phloem, which help in the conduction of water, nutrients, and minerals throughout a plant's body.
- **COMPONENTS OF XYLEM** : Xylem is a water conducting tissue, made up of **tracheids, trachea, xylem fibers and xylem parenchyma** of which the first three are dead cells and the last one is living.
 - **Tracheid** is the elongated cells with tapering end in the xylem of vascular plants and serve in transportation of water and minerals.
 - **Trachea** also called vessel element, which has perforation plates to facilitate the movement of water through vessel.
 - **Xylem parenchyma** surrounds conducting element and assist in short distance transportation of water and storage of food.
 - **Xylem fibres** are dead cells with lignified walls and involved in providing mechanical support.
- **COMPONENTS OF PHLOEM** : Phloem is a complex tissue, composed of FOUR types of cells. The components of phloem are: **Sieve elements, Companion cells, Phloem parenchyma, Phloem fibres and Sclereids**. All are living except phloem fibres.
 - **Sieve elements** made up of sieve tube and sieve plate. The end wall of this exhibit sieve like pores which conducts the food.
 - **Companion cells** is closely associated with sieve elements. It keeps the sieve tube alive by providing nutrients and energy for translocation of food.
 - **Phloem parenchyma** also called transfer cells and border parenchyma cells, are located near the finest branches and terminations of sieve tubes in **leaf** veinlets, where they also function in the **transport** of foods.
 - **Phloem fibres** both the phloem fibers and the sclereids are dead cells at maturity and are responsible for providing tension strength without limiting flexibility.



- **ASCENT OF SAP:**
 Water enters a root hair → the cell content becomes dilute → cell next to the root hair cell will be more concentrated → Water enters by osmosis into this cell → Water, along with dissolved nutrients moves along from cell to cell and goes into the xylem.
 Thus root pressure is the force which pushes water into the xylem. This is also called ascent of sap.

➤ **CAPILLARY ACTION:**

Capillary action is the movement of liquid through a narrow space like oil rising through the wick of a lamp. Since xylem cells are long and thin, water moves up by capillary action.

➤ **FACTORS AFFECTING THE RATE OF TRANSPIRATION :**

Sunlight, temperature, wind action increase transpiration; increased humidity decreases it. Transpiration cools a plant and maintains cell sap concentration.

➤ **TRANSLOCATION :**

Translocation in plants occurs by means of the vascular tissue known as phloem. **Translocation** is necessary because without it, the food prepared by the leaves cannot reach other parts of the **plant**.

In **plants**, the synthesis of sugars takes place in the leaves by the process of photosynthesis.

➤ **LIST OF MACRO AND MICRONUTRIENTS :**

Macronutrients are required in large quantities. **Micronutrients** are present in minute concentration inside the **plant** body.

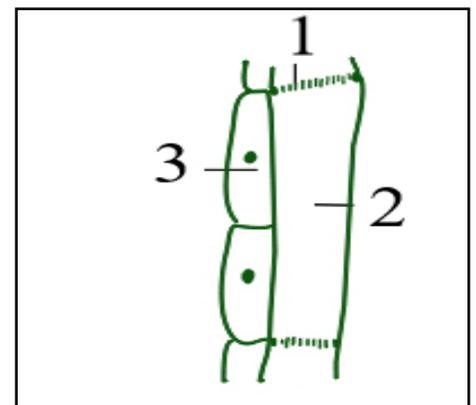
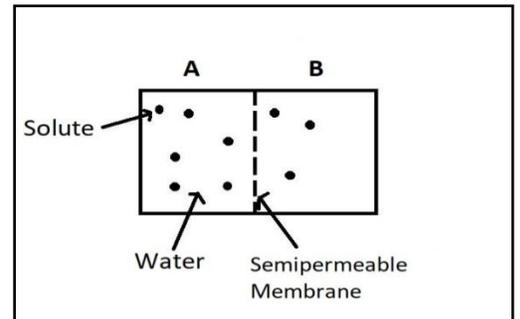
Macronutrients include carbon, *hydrogen, nitrogen, oxygen, phosphorous, potassium, calcium, sulfur, and magnesium*. Micronutrients are *boron, chlorine, manganese, iron, zinc, copper, and molybdenum*.

A plant uses these nutrients to support its growth, life cycle, and biological functions.

HOMEWORK QUESTIONS :

1. Mention the odd term and give reason.
 - a) Boron, Molybdenum, Nitrogen, Zinc.
 - b) Sieve plate, Companion cell, Sieve element, Tracheid.
 - c) Tracheids, Xylem fibers, xylem parenchyma, Vessel
2. Differentiate between:
 - a) Xylem and Phloem.
 - b) Macro and Micro nutrients
3. What do you mean by ascent of sap?
4. What are the factors affecting the rate of transpiration?
5. Study the diagram and answer the following.

The two chambers, A and B, containing solution are separated by a semipermeable membrane.
In which direction will osmosis occur?
6. A diagram is given alongside.
 - a) Identify it.
 - b) Mention the parts 1-3.
 - c) What is the function of the part marked 1.
7. What is translocation?



N.B : For further information and better understanding , click on the following links.

<https://www.youtube.com/watch?v=bvPM6sfidY4>

<https://www.youtube.com/watch?v=QXdL2H11up4>

CLASS-VIII
PHYSICAL EDUCATION

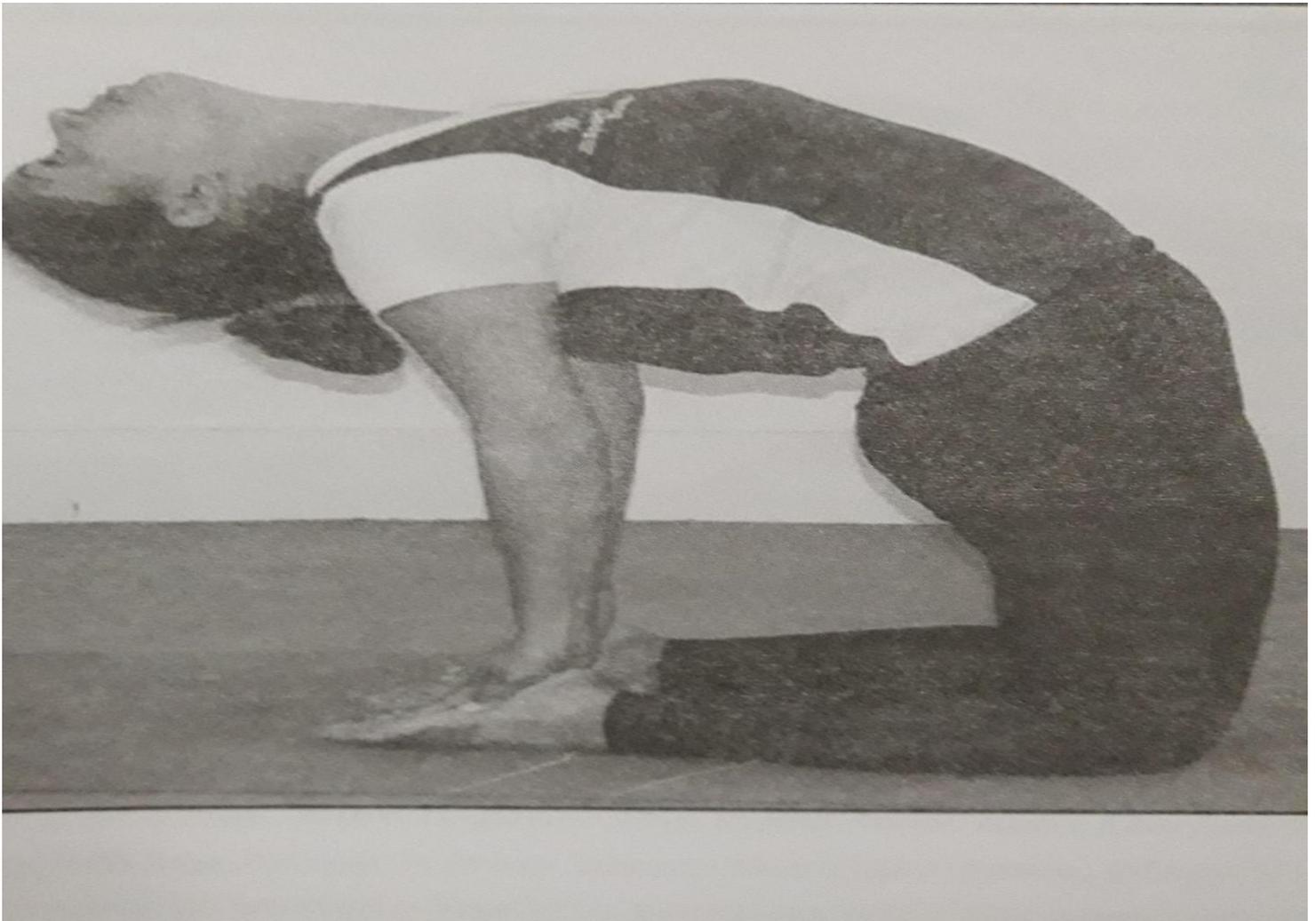
YOGA

Yoga is a good practice if one does in daily life. It helps to live healthy life style and better life forever. Yoga is the most favourable method to connect to the nature by balancing the mind-body connection.

USHTRASANA

Ushtra is a Sanskrit word which means 'Camel'. In this asana the final posture of the body resembles the shape of a camel.

Position: Knees down on the floor. Toes pointing back and resting on the floor.



Technique:

1. Place the legs about one foot distance; while exhaling bend backward and place the palms on their respective heels or support the back with palms.
2. Push the back in front direction and leave the neck in relaxed position.
3. Maintain the final position with normal breathing for some time
4. Inhale and come up and then release the posture and relax.

Go to the below link for exercise video:

<https://youtu.be/hauHNny-WQs>