



HOME MANAGEMENT

STANDARD XII



The Constitution of India

Chapter IV A

Fundamental Duties

ARTICLE 51A

Fundamental Duties- It shall be the duty of every citizen of India—

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities, to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;
- (k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.

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HOME MANAGEMENT

STANDARD - XII

**Maharashtra State Bureau of Textbook Production and
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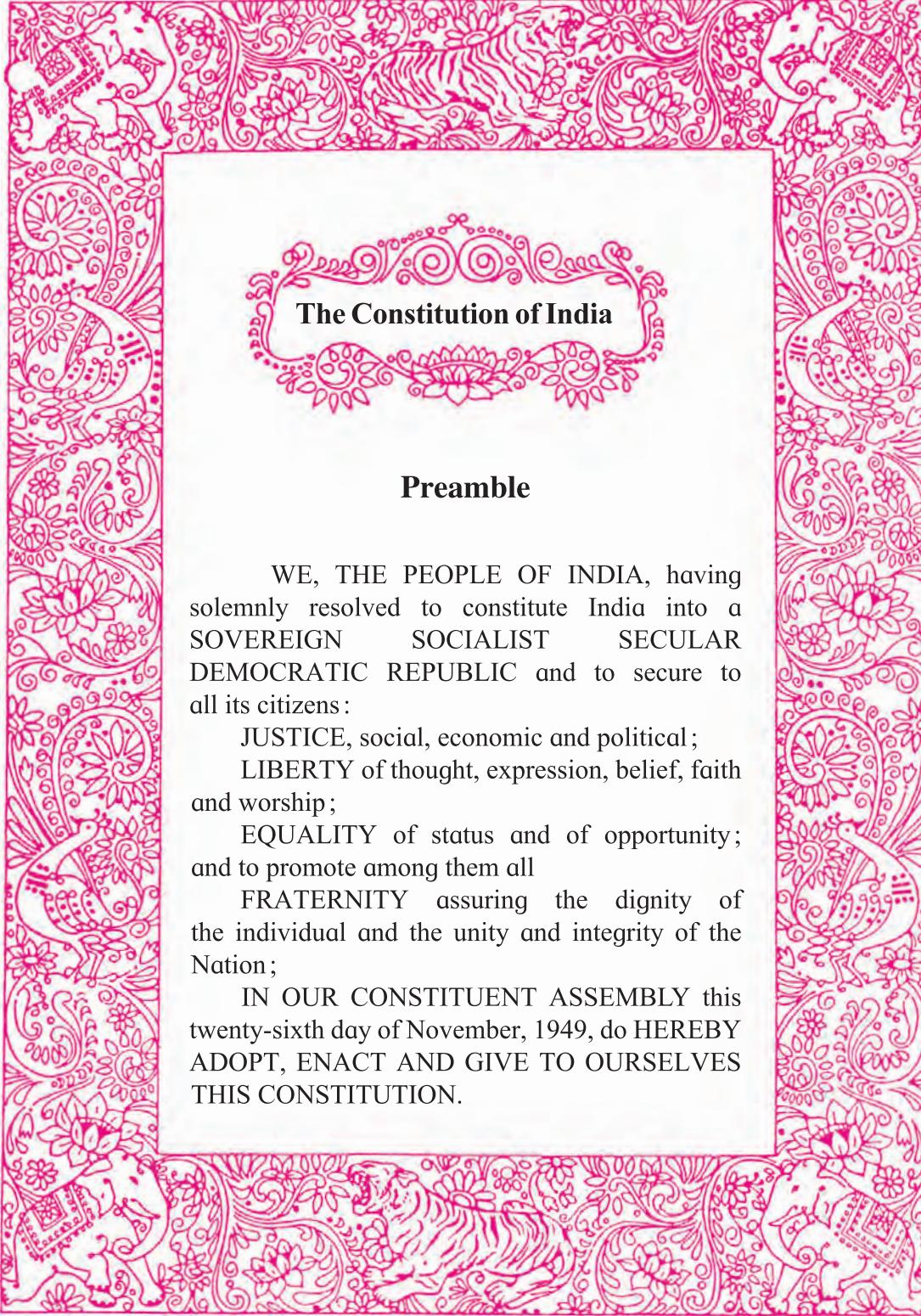
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The Constitution of India

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens :

JUSTICE, social, economic and political ;

LIBERTY of thought, expression, belief, faith and worship ;

EQUALITY of status and of opportunity ; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation ;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhū-Gujarāta-Marāthā
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā^ā
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,
Jaya jaya jaya, jaya hē.

PLEDGE

India is my country. All Indians
are my brothers and sisters.

I love my country, and I am proud
of its rich and varied heritage. I shall
always strive to be worthy of it.

I shall give my parents, teachers
and all elders respect, and treat
everyone with courtesy.

To my country and my people,
I pledge my devotion. In their
well-being and prosperity alone lies
my happiness.

PREFACE

We have a profound sense of satisfaction and happiness in bringing out this debut textbook for Home Management at 12th standard. As the subject has been introduced at 12th standard, syllabus has been developed considering the fundamental aspects and it aims at giving the recent knowledge of the subject.

In the era of industrialization, globalization and digitization, effective management of resources is the crux of smooth, healthy and quality life. This textbook covers fundamental concepts as well as recent trends in the field of home management. It also focuses on skill enhancement activities, environmental protection and consumerism. Some topics help to be beneficial in entrepreneurship development giving the opportunity for ‘earn and learn’.

We believe that the knowledge given in the textbook will open up spheres of career opportunities and develop entrepreneurial skills in students.

Dear students and teachers, the book gives a number of colourful illustrations, pictures, charts, graphs and smart art to create interest, enhance clarity in understanding and improved visual appeal. The language is kept very simple for easy understanding of the subject. Q.R. code is given on the first page of the textbook. You will enjoy the information given in the Q.R. code. At the end of the book, bibliography along with website and glossary is provided. The draft of the book was finalized by incorporating the suggestions given by the expert reviewers.

This book has been prepared by the special efforts of the home management subject committee and invitee members, subject experts, quality reviewers and artist. Bureau expressed heartfelt thanks to them.

The committee hopes that the students, teachers and parents enjoy handling this textbook along with gaining a lot of knowledge.



(Vivek Gosavi)

Director

Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune.

Pune

Date : 21 February 2020

Bhartiya Saur : 2 Phalgun 1941

Competency Statements

- | | |
|--------------------------------------|--|
| 1. Family Income | <ul style="list-style-type: none">• To understand the definition and meaning of Family Income.• To acquire knowledge of various types of family income.• To learn about the sources of family income.• To understand the ways of supplementing family income. |
| 2. Money Management | <ul style="list-style-type: none">• To understand the meaning, importance and steps in preparing family budget.• To understand the definition, importance and types of savings.• To gain knowledge about the meaning and types of Investment.• To learn the guidelines for investment.• To understand the meaning and importance of account keeping.• To get acquainted with the methods of account keeping.• To know the methods of self evaluation for money management. |
| 3. Time Management | <ul style="list-style-type: none">• To understand the concept, definition and classification of time.• To understand the concept and definition of time management.• To identify the characteristics of time as a resource.• To get acquainted with the components of time management.• To understand the importance of time management.• To gain knowledge about the guidelines in time management. |
| 4. Management of Human Energy | <ul style="list-style-type: none">• To understand the definition and concept of human energy.• To know the energy cost of household activities-Light, Moderate and Heavy.• To understand the meaning of fatigue• To acquire knowledge about physiological and psychological types of fatigue.• To understand the ways of reducing fatigue.• To understand the application of management process to human energy. |
| 5. Work Simplification | <ul style="list-style-type: none">• To understand the meaning and definition of work simplification.• To understand the importance of work simplification.• To gain knowledge of Mundel's classes of change for work simplification.• To understand the techniques of Work Simplification.• To apply Mundel's classes of change to various household tasks. |
| 6. Consumer Awareness | <ul style="list-style-type: none">• To understand the meaning and definition of consumer.• To develop ability to identify the responsibilities of a consumer• To identify the various problems faced by consumers• To know the rights of a consumer.• To know the guidelines for wise purchase• To identify the labels and certification marks while purchasing products.• To understand consumer protection act 1986 and the redressal process. |
| 7. Home Decoration | <ul style="list-style-type: none">• To gain knowledge about the elements of art.• To understand the application of art elements to home decoration.• To understand the principles of design.• To understand the application of principles of design to home decoration. |
| 8. Household Accessories | <ul style="list-style-type: none">• To understand the meaning and definition of household accessories.• To know the functional and decorative accessories.• To get acquainted with some important accessories for home decoration and the care to be taken.• To know the importance of accessories in home.• To learn the guidelines in selection and placement of accessories. |
| 9. Floor Decoration | <ul style="list-style-type: none">• To know the concept of Rangoli as floor decoration.• To learn the importance of Rangoli decoration.• To get acquainted with the materials used for Rangoli.• To understand the types of Rangoli. |
| 10. Household Lighting | <ul style="list-style-type: none">• To understand the concept of lighting.• To know the sources of lighting.• To understand the principles of lighting.• To learn the types and methods of lighting. |

For Teachers

Home management is a process of managing the home effectively to achieve good health, happiness and satisfaction of the family members. To achieve this objective, it is necessary that each individual has the knowledge of principles and practices of management process.

The subject is being introduced at 12th standard and the present textbook is the debut textbook at standard 12th. The textbook aims at giving scientific knowledge of management of family resources and their application in home environment. This text book is focused on understanding the concept and application of management of family resources such as family income, money, time and energy. It also deals with work simplification, consumer awareness, home decoration, home accessories, floor decoration and household lighting.

An effort in giving knowledge regarding the recent concepts and their application in management of family resources as well as allied subject matter was aimed at while writing this book. Money management includes latest techniques in digital transactions and e-banking processes. Time management covers components of time management for effective utilization of available time. Similarly, new trends in Rangoli design have been incorporated for the purpose of developing entrepreneurship skills. Household lighting aims at use of LED and CFL lighting fixtures, solar lighting system to create awareness regarding conservation of energy.

The topics like home decoration, household accessories and floor decoration would help the students to develop an aptitude in interior decoration and increasing the aesthetic value of a home.

The sub units have been planned to cope up with the ever-increasing demands on the important resources, to bring in ease and comfort in daily chores, need for creating consumer awareness, to face the problems of space crunch and becoming friendly with technological advancements.

This text book includes interesting information and suitable illustrations to achieve the above said purposes. The figures, pictures, charts, graphs, smart art and photographs will help the students to understand the subject clearly. Book also includes description of related activities to maintain uniformity in conducting them. Topics for project or assignment are suggested at the end of each unit. Teachers can allot any one topic suggested or any topic related to the unit to student for said purpose. Considering the advancement in technology, QR code is introduced to give more and recent information to the students. This new format of the text book is activity based and emphasizes on related activities and practical experiences. It is expected that the teachers give exposure to the students for hands on experience and use of technology for skill development.

The structure of this text book will expose the students to newer fields of knowledge. In present scenario the knowledge of this subject at 12th will open up career opportunities and develop entrepreneurial skills in students.

We believe that the teachers and parents would receive this book with full support.

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1. FAMILY INCOME

- 1.1 Definition of Family Income
- 1.2 Types of Family Income
- 1.3 Sources of Family Income
- 1.4 Supplementing Family Income

Let's Discuss :

What is Family Income ?

Meaning of family income is not limited to money income, only. Family income includes money, material goods and services available to family and also the satisfaction gained by its utilization. Various sources such as salary of the family member, income from land or immovable property owned by the family, scholarships, gifts and income through virtues and skills, like expertise in singing, painting, cooking, event management etc. are the sources of family income. Even money saved through kitchen garden, use of skills of family members is part of family income.

1.1 Definition and Meaning of Family Income :

Definition :

- According to Nickell and Dorsey - “Family Income is the stream of money, goods, services and satisfactions that come under the control of the family, to be used by them to satisfy needs and desires and to discharge obligations”.
- Gross and Crandall have defined family income, as “flow of money earned by the family, goods and services received or created and satisfaction received by the family members during a specific time period.”

Thus, it is clear that income includes not only money in cash but also other resources

like knowledge, energy and skills, services of durable goods owned by family as well as the advantages one receives from resources of the community.

Understand the Types of Income :

1.2 Types of Family Income :

Family income is divided into following three types :

1. Money income
2. Real income
3. Psychic income

1. Money Income : Money income is in the form of currency like coins and notes, bank drafts or cheques. Every country has its specific currency. For example, ‘Rupee’ is the currency of India. Because of the purchasing power of money on various goods, services and other items, the said can be considered as an important non-human resource. Income in terms of money is usually received in the form of wages, salary, rent, interest, dividend or profit.

Money income is important to every individual, as :

- It is a medium of exchange
- It measures the value or worth of a commodity or service

- It is a tool to measure the standard of living of individual, families as well as a society.

2. Real Income : Defined as, “a flow of commodities and services available to family over a given period”. It includes residential accommodation, goods and services, etc. and human resources like energy, knowledge, skills, virtues and abilities of family members. Real income can be divided into two groups-

a) Direct Real Income : Material goods and services available to the family without paying money are known as direct real income. It includes ancestral property available to family, community services provided by the Government like street lighting, transportation facilities and public parks, etc. It also includes overall services rendered by family members to each other.

b) Indirect Real Income : Indirect real income means material goods and services available to the family by spending money or through some other type of exchange. Any type of paid help and services are included in indirect real income. For example, maid servants, paid education, paid hospital facilities etc.

3. Psychic Income : Satisfaction derived from consumption of material goods and money income is called psychic income. It is difficult to measure but one can perceive it. One may have enough money income or real income or both but a person may not necessarily have psychic income. If both types of income are utilised wisely and the needs of family members are fulfilled according to their priorities, said income can be earned.

Do you know :

Sources of family income :

1.3 Sources of family income :

Various sources of family income are as under :

- 1. Salary :** Monthly income earned from government, semi-government or private job is a monthly salary of the individual, which depends upon the type of job, educational qualifications and experience. In a private job, salary amount and amount of increment is not always fixed. Salary is considered as a regular and fixed source of income.
- 2. Wages :** Payment for any intellectual or physical work is called wages. It means fixed monetary returns on specific jobs. While fixing the wages importance is given to production, working hours and types of work. This source of income cannot be considered as a fixed source of income.

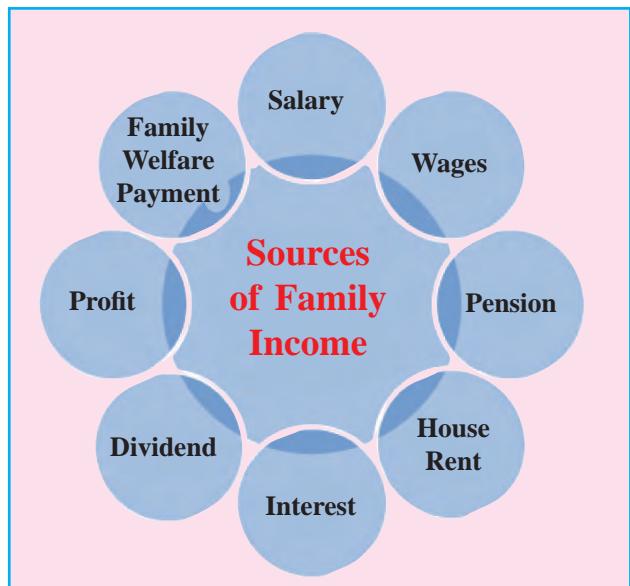


Fig. 1.1 Sources of Family Income

- 3. Pension :** Pension is the money that is paid regularly by government, management or company to an individual who has stopped working because of old age which can be termed as retirement. Retirement is unavoidable to an individual in any type of job. The period of the service always depends upon the age of the person.

Retirement age differs according to the type of job. In general, pension is calculated with reference to average of the basic pay drawn during last ten months of service. This is a good source of income after retirement.

4. House Rent : A house owner receives some amount per month from the tenant which is called house rent. House rent definitely is a fixed source of income. It provides financial aid. House rent depends on the locality, area and facilities provided within the house.

5. Interest : It is an important source of income. From the amount of money deposited in a bank, post office or in any other saving scheme, some income on capital is earned. This is known as interest. The rate of interest varies with the period of deposit. If the period of depositing the amount is longer, the rate of interest is more. If interest is calculated in compound way, financial benefits are more to the depositor.

6. Dividend : If a person purchases shares from a particular company, he/she can get some amount from companies profit as dividend. The dividend received, depends on profit of the company as well as number of shares a person possesses.

7. Profit : Running a business requires money. If a person receives some amount from his business and if it is more than the amount he/she has invested and spent, the additional amount can be considered as net profit. Net profit is the real profit as it is real financial gain of the person. Net profit differs according to the type of business. Some businesses require more capital and more physical work as compared to others. While selecting the business this should be considered.

8. Family Welfare Payment : A person in government, semi-government or private institution receives some extra amount,

excluding his salary as family welfare payment. Facilities provided and amount depends on type of job and seniority of the employee. Usually, financial facilities such as medical allowance, transfer allowance, recreation fund, house rent and city allowance are provided under family welfare payment.

Let's Discuss :

1.4 Supplementing Family Income :

There are two ways of supplementing family income :

- a. By increasing family income
- b. By cutting down expenditure

a. Increasing family income : Money income and real income of family can be supplemented through proper utilization of human resources like knowledge, skills, ability, capacity, and time. Additional efforts of family members play an important role in supplementing family income.

Family Income can be supplemented by following means :

1. Home scale and small-scale industry :

Small-scale or cottage industry can be started by any family or individual, who has entrepreneurial skills. Such industry supplements family income. Head of the family or any other member of the family can help in these activities. For example, cookery unit, food preservation, knitting sweaters, apparel construction, embroidery, crochet work, DTP, screen printing, boutique, beauty parlor etc. Now a day small hotels are very popular to supply meals to the working people.

Some small-scale industries like soap making, oil extraction, jewellery making, candle making, spinning cotton and silk yarn etc. can also be undertaken. Government also provides financial help to such type of small-scale industries.

2. Part-time job : Any member of the family can supplement income by taking up part-time jobs. In part-time job one has to work for few fixed hours and is paid accordingly. For example, undertaking the typing work in some office, maintaining accounts in some factory or shop, etc. In big cities, call centres are coming up where students can get employment along with their studies. Children, college students too, can earn their pocket money by taking up summer jobs during vacations.

3. Tuition or hobby classes : An educated family member can earn money by taking tuitions in his/her spare time. Some students studying for higher education can take tuitions to meet their expenses for education. Hobby classes are another popular area for generating additional income.

4. Preservation and storage of food : An individual can save time and money by purchasing cereals, spices etc. which are available at much lower rates and in bulk during the season, for the whole year. Fruits and vegetables can be preserved when these are easily available at cheaper rates which can be used for preparation of pickles, chutney, jams, squash, etc. and preserves vegetables by drying.

5. Kitchen gardening : Seasonal eatables can be grown in the courtyard or terrace of house by taking a little effort. Seasonal fruits and vegetables like lemon, guava, papaya, mango, etc. can be obtained by planting these trees. Additional money can be earned by selling surplus vegetables and fruits in the market.

6. Proper use of material resources : Available excessive material resources can be used for earning money. One or

two rooms can be rented out, if the house is bigger than required for the family. This rent will supplement the family income.

7. Proper saving and investment : An individual must save some money for financial security and to meet incidental expenses likely to occur in future. Likewise, saving can be invested in certain schemes, which pays more enhanced amounts and returns by which some monthly income can be assured and gained.

Ways of Supplementing Family Income

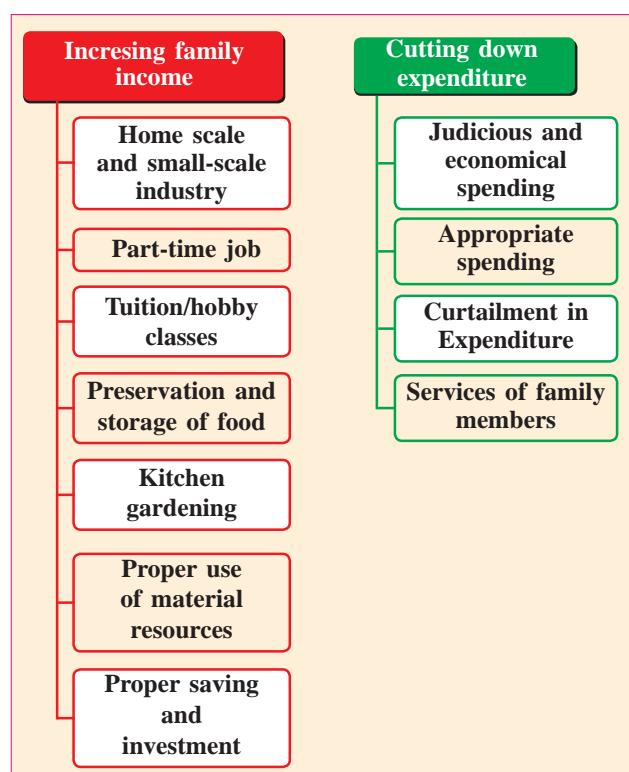


Fig. 1.2 Ways of Supplementing Family Income

b) Cutting down expenditure :

Expenditure can be reduced by proper management of income and proper use of available resources.

1. Judicious and economical spending
can be helpful in cutting down expenses. At the first place money must be spent on priorities and necessities and then

on comforts and luxuries, for example, instead of having lunch in hotel and restaurant one can have packed lunch, prefer food at home, avoid frequent weekends and sharing of vehicle at workplace. One should make purchases after comparing rates at various shops.

2. Appropriate spending also leads to cutting down the expenditure. Instead of purchasing expensive items, one can always go for less expensive substitutes. For example, one may buy seasonal fruits and vegetables which are cheaper. One can reduce expenses by making purchases from wholesale or government shop.

3. Expenditure can be curtailed by making use of government facilities and

services. Money on magazines can be saved by borrowing them from a nearby public library. Making use of government hospitals, school, colleges etc. also help in saving money.

4. Services of family members also help in cutting down the expenditure. For example, if some one knows stitching, he/she may stitch cloths at home and can save the stitching charges.

Similarly, coaching children at home, fixing an electric fan or repairing of electric appliances by some family members can save money. Economic crises can be avoided by doing household jobs by the members of the family according to their work efficiency.

Can You Recall?

- Family income may be defined as money earned or purchasing power of family members during a specific period of time plus the goods and services received or created in that time by the family.
- Family income is divided into three types- money income, real income and psychic income.
- Sources of family income- salary, wages, pension, house rent, interest, dividend, profit family welfare payment.
- Supplementing family income - there are two ways of supplementing family income:

increasing family income and cutting down expenditure.

- Increasing family income - home scale and small-scale industry, part-time job, tuition/ hobby classes, preservation and storage of food, kitchen gardening, proper use of material resources, proper saving and investment.
- Cutting down expenditure - judicious and economical spending, appropriate spending, expenditure can be curtailed, and services of family members also help in cutting down the expenditure.

• **Objective questions :**

1) Multiple choice questions :

1. In family income _____ is considered as regular and fixed source of income.
 - a) share
 - b) dividend
 - c) salary
 - d) interest
2. Amount received by home-owner from tenant is termed as _____
 - a) home loan
 - b) home income
 - c) house rent
 - d) real income
3. Material goods and services available to the family without paying money is known as _____ income.
 - a) money income
 - b) real income
 - c) direct income
 - d) indirect income
4. The _____ is received on profit of the company as well as number of shares a person possesses.
 - a) salary
 - b) dividend
 - c) interest
 - d) pension

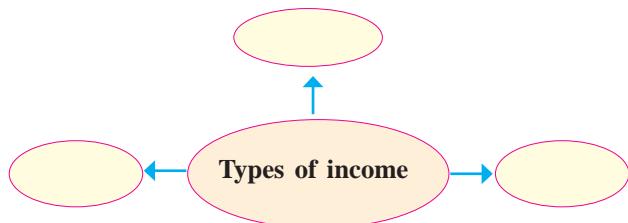
2) Identify whether the following statements are true or false :

1. Money is a human resource.
2. Payment for any intellectual or physical work is called wages.
3. The sense of satisfaction which family members derive through use of goods and services is called real income.

4. House rent is not a fixed source of income.

3) Short answer questions :

1. Complete the chart :



2. Complete the diagram :

$$\boxed{\text{Real Income}} = \boxed{\quad} + \boxed{\quad}$$

3. How kitchen gardening helps to increase family income ?
4. Give difference between : Real income and Psychic income.

4) Long answer questions :

1. Discuss various ways of supplementing family income.
2. Give classification of family income.

Projects / Assignment :

1. Identify other supplementary sources of your family income and write a report.
2. Visit any home scale industry in your society and write a report on, how it supplements family income.



2. MONEY MANAGEMENT

- 2.1 Family Budget**
- 2.2 Saving and Investment**
- 2.3 Account Keeping**
- 2.4 Evaluation of Money Management**

Let's Discuss :

In previous unit we studied about family income. Every family does not possess same income, hence planning of family income is necessary. Planning of money means balancing expenditure and saving in accordance with income, For example, budgeting. Hence in this unit we will study about money management.

2.1 Family Budget

Making family budget is the planning step of money management. Budgeting involves understanding how much money a family earns and spends over a period of time. Budget is making a plan for spending and saving money. It is a basic necessity of every family to fulfil the basic needs of family members, as it is an important measure of economic stability and wellbeing.

Definition and Meaning :

Morgan defines budget as, “Budget is a plan for future expenditure.”

Mann states that, “It is a good guide for family spending.”

According to Tolstrup, “It is a plan in order to give every member of the family the utmost satisfaction from the money spent.”

A budget is much more than a plan for the use of money. It actually helps families to see how they can use their income to attain those needs which they consider most important.

Family budget is a guide to realistic spending which is aimed at avoiding over expenditure.

Remember this :

Importance of family Budget :

Following are the importance of family budget :

- Planning enables family to take an overview of the use of income. It is a valuable means of comparing various items.
- As it is a plan of money expenditure, it helps in fulfilling wants and desires of the family. It also helps in fulfilling future wants.
- Budget facilitates adjusting irregular income to regular expenditure.
- Budget encourages conscious decision making which is beneficial for the fulfilment of long term goals.
- Budget helps one to live within one's income.
- Budget can develop good purchasing skill and better consumerism.
- Budget gives a clear picture of various items of expenditure which reduces unnecessary expenditure. It automatically saves more money.

- Adjustments arising from increase or decrease in family size and income are more easily accomplished when the family operates on budget.
- Economists and researchers in political science examine family budget as an index of cost of living of the family.
- While making family budget, if matured children are allowed to participate, it has special significance. It provides good training to children.
- Many of the household conflicts are due to unsuccessful financial management. Budget helps in avoiding such type of conflicts.
- It is possible to plan for entertainment, comforts, luxuries, functions and savings from extra money.

Do you know ?

What are the different steps in making budget ?

• Steps of preparing Family Budget :

Budget of a family should be realistic. To make family budget systematically, certain steps need to be followed. Careful preparation of budget is important to avoid omission of any steps in budgeting. These steps are as follows;

1) List the commodities and services needed :

The first step is to make list of commodities and services needed by the family members during the proposed period of budget. In order to cover all types of wants, it is categorised into individual wants and common wants. While making the family budget, it should be observed that common wants must be fulfilled. List of individual wants should be prepared according to the necessity. To finalize this list, there should be a family meeting and informal discussion. This will give psychological satisfaction to each member and budget will be successful.

2) Estimate the cost of desired items : After making the list of commodities and services, it is very essential to estimate the cost of desired items. Knowledge of market rates is very important in this respect. Experienced homemakers are aware about this. While estimating the cost, probable rise in prices should be added to previous market rates. Gathering information of market rates of various commodities should be shouldered to members of the family according to their interests. After estimating cost of different items of expenditure, total expenditure should be calculated. This task may be tiresome, but it is very essential for the success of the budget.

3) Estimate the total expected income : In this step, total monetary income of the family is calculated. It is usually seen that judgement of expected income is not done properly, which affects planning of expenditure on different items. Hence, accurate estimation of expected income is needed. While estimating fixed income, take home-salary of the earning members should be considered. If house rent is a source of income, house-tax should be deducted, and remaining amount should be considered as income. Planning should be done in such a way that primary wants are satisfied through fixed income.

Gifts, dividend, bonus, royalty, payment for extra work and income from side business should not be grouped under fixed income. As this income is not certain, family should not depend on this income for fulfilment of primary wants.

4) Balance the expected income and expected expenditure : The success of budget depends on responsibility with which this step is followed. There are two main reasons which

are responsible for imbalanced budget. They are :

- a) Inadequate income.
- b) More expenditure.

a) Inadequate income : The way to overcome imbalanced budget is to increase money income. Homemakers and other members of the family can extend valuable co-operation in this respect. If homemaker is employed or engaged in gainful work, it adds to the income. Now days to get a job is very difficult but there are various self-employment opportunities. A homemaker can select any occupation according to her choice. While selecting any work, job or self-employment, a homemaker must be careful about her household responsibilities and she should be confident that her engagement will not affect the happiness and satisfaction of family members. Skill of family members can be utilised in income generating production, which will help in increasing money income.

b) More Expenditure : By reducing the expenditure, balance of income can be achieved. To reduce the expenditure one should consider following points :

- i) The comparative market survey for quality and cost of items will help the family to reduce the expenditure.
 - ii) Avoid the purchase of items which are less important. This can help in balancing of budget.
 - iii) Family members can utilise the skill of stitching or knitting, ironing clothes, repairing household appliances at home, etc. This will help to save the extra amount of expenditure on paid services.
- 5) Check the plan :** Success of the budget depends on its practical use. This includes checking the prepared plan for reality.

A family budget must satisfy primary and secondary needs of the family, otherwise members of the family will be dissatisfied. A budget must have some provision for unexpected expenditure. A flexible budget has more practical use. If budget is prepared according to the long term goals of the family, its practical value for the family is increased. Therefore, the best budget is where income and expenditure is balanced.

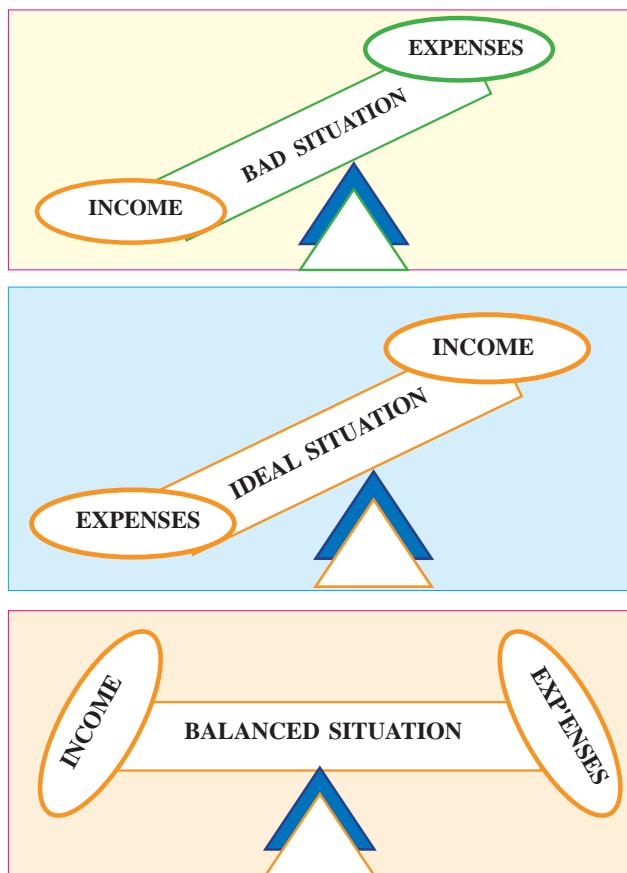


Fig. 2.1 Allocation of income and expenditure

2.2 Savings and Investment

Saving and investments are the important components of financial management of the family.

A) Savings :

According to economists, “saving is a planned remaining amount after deducting expenses from income. Saving is the abstinence from present consumption for the sake of future consumption”

Savings are made for future and unexpected needs and financial security whereas investments mean placing the family funds in such a way that assuring the security of principal and receiving the maximum financial benefit. Generally the amount, which remains after deducting total expenses from one's income, is considered as saving of the family. The money saved from today's income can be used to fulfil future needs which can either be planned or unplanned. Savings are the result of careful planning. Thus saving should form an important component of a family budget.

Always remember :

- **Importance of savings :** A person saves money for so many reasons, some of which are foreseeable, while others are not. Importance of savings is as follows :
 - **It minimizes economic insecurity :** Main objective of saving is to bring financial security. Retirement of head of the family, closure of business or losing a job suddenly reduces the family income. Saving can help the family under such circumstances. Irrespective of such circumstances the demands of the family members must be fulfilled and savings are useful for the same. Economic insecurity causes financial worries and this leads to mental tension. Savings help us to avoid such tension.
 - **Helps in physical disability :** Physical inability can be caused by sudden illness or accident. This may lead to loss of pay or earning due to absence at work. Saving help the person to take medical help, which is a costly matter now a days. Household expenses are possible with the help of saving under such conditions.
 - **Provision for old age :** In some private jobs pension scheme is not applicable. Such people have to depend on the
- **Future use :** Saving is putting aside money for future use. Though future is uncertain we can plan for the same. To make our future life satisfying and independent savings are essential. Some saving schemes are such that they help the person to use the saving after stipulated period with financial benefits like, fixed deposit scheme in banks.
- **Provision for occasional expenses :** Some occasional expenses require large amount of money like marriage ceremony, higher education of children, etc. For this, some special saving schemes are introduced for the benefit of people. These long-term schemes of saving, thus help in occasional expenses.
- **Socio-economic status :** A person having large amount of saving account automatically gets status in society, because people think that they can get financial help from such a person in time of difficulties. To gain such status people try to have more savings.
- **Source of income :** Different saving schemes benefit the people by paying interest. If the amount is fixed in a bank, rate of interest is more. Thus, one can earn income on savings.
- **To maintain standard of living :** Every family has particular standard of living, which is mainly decided by economic status. Savings are useful to maintain standard of living during the period of crisis.
- **Source of getting loan :** A person may require loan for various purpose. Loan

savings. Expenses of medical aid also increase according to advancement in age. If saving is well planned, a person need not be dependent on anybody even in his or her old age.

is always sanctioned to a person from whom repayment is possible. A person having saving in the form of fixed deposit in a bank can get loan on it.

- **Major purchases :** It is not possible for everybody to make major purchases instantly. Proper planning can help to save the amount required for purchasing. Middle class families can use this method for costly purchase.
- **Love for off springs :** This is a natural emotion and so provision is made for financial responsibilities regarding children. Some parents plan their saving for satisfaction and make secured life of their children. For example, building house.
- **Good Habit :** Saving is a good habit. Person belonging to each income group can develop this habit. Once it is developed, it will endure because of the benefits.

• Types of Savings :

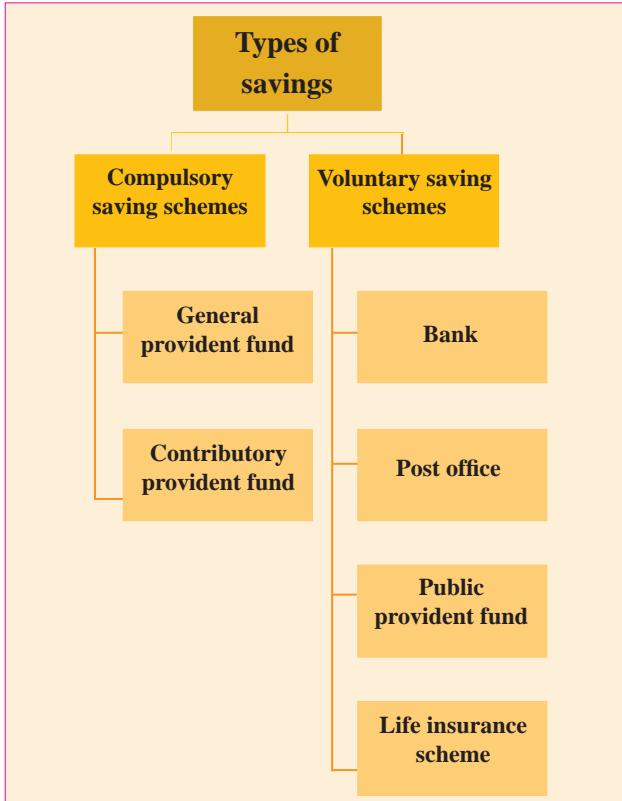


Fig. 2.2 Types of Savings

1) Compulsory Saving Schemes : Savings, which are inevitable, are called as compulsory savings. Person as a part of rules and regulations of the institute has to make certain compulsory contribution from salary.

Following are the two types of compulsory savings :

a. General Provident Fund : This scheme is provided for government servants. A person completing one year of government job, has to enrol himself in this scheme. This is compulsory for permanent as well as temporary employees. Every employee has to contribute minimum of 10% of his basic pay or voluntarily more towards this fund. The government pays compound interest. The rate of interest fluctuates from time to time. After completion of service period accumulated fund plus interest is paid to the employee. Loan facility is provided for some common occasions. Non-refundable loan can be granted after completion of minimum 10 years of continuous service.

b. Contributory Provident Fund : This scheme is beneficial for government, semi-government and private employees. Employees contribute some percent (as per regulation) of their basic salary towards provident fund compulsorily. Employer contributes the amount, which is equal to the contribution of the employee. Employee gets the total fund accumulated after particular year or after retirement. Employee and employer cannot misuse this fund because of legal obligations. Nominated person gets the amount of provident fund in case of an unfortunate death of the employee.

2. Voluntary Saving Schemes : When the selection of amount and type of saving scheme totally depend on the depositor, saving can be called as voluntary savings. A person interested in saving is free to choose the saving institution and amount of savings.

a. Banks : A bank does business by taking charge of people's money and lending it to those who need it. The bank pays interest on the money it collects which are called 'deposits'. It charges interest on the money it gives called 'loans'.

Do you know ?

How to open a Saving Accounts in a Bank?

A request for opening a saving account will have to be made on the prescribed form of the bank. Besides giving the relevant particulars, a person will need to furnish the specimen of their signature and copies of two passport size photographs. Person will need to be introduced to the bank by a respectable party, i.e. a customer, an employee of the bank or some other well-known person. The account may be opened by a single person or jointly by two or more persons. Either of the persons can operate the account. A nominee's name has to be mentioned. Savings account can be opened by depositing certain amount according to bank rule. Nominee is a person who would get the saved money in case the account holder dies. This way the bank satisfies itself about your integrity and financial standing. After this, the bank will accept your deposit and give the following facilities :

- **Pass book :** It serves as a copy of your account in the books of the bank.

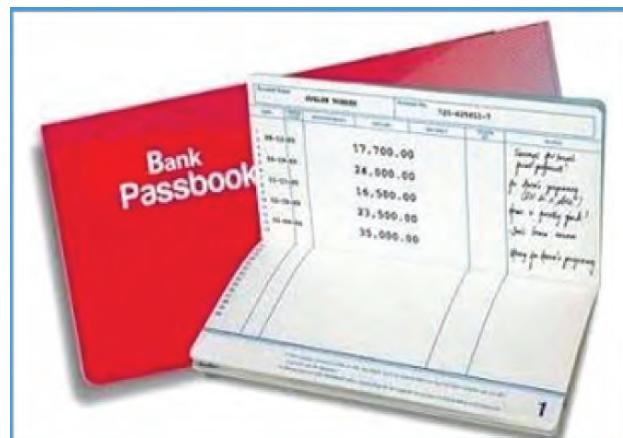


Fig. 2.3 Passbook

- **Cheque Book :** It is to be used for withdrawing money from the bank.

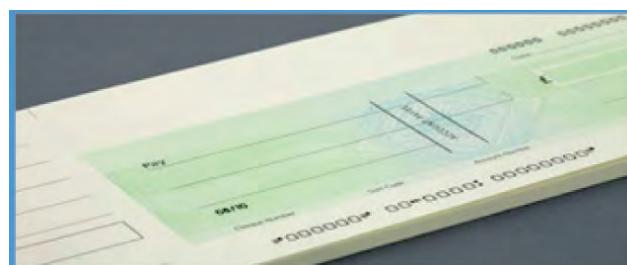


Fig. 2.4 Cheque Book

- **Credit Card :** Most banks provide credit card facility to their customers. This card can be used for purchase of goods and services from selected outlets authorised by the bank. It is also known as plastic money. The amount of credit a customer can avail of is limited as agreed upon at the time of issue of the credit card. One can also withdraw money using a credit card throughout an automated teller machine (ATM). At the end of every month you receive a statement of the total credit availed by you. You have to repay the whole amount or part of it as mentioned in the statement. A high rate of interest is charged on the outstanding balance; therefore, you should be careful in using a credit card.

- **Debit Card** : This card is similar to credit card except in the following terms :
 - ❖ This card is issued against your savings bank account.
 - ❖ As you make a payment using this card, the money is automatically debited from your account.
 - ❖ In this manner you use your money instead of taking credit from the bank.



Fig. 2.5 Debit Card

- **ATM** : Using a credit or a debit card, you can withdraw money from an ATM at any time of the day or at night (24 Hours services). These are located in various places like a bank building, shopping complex, a residential area or railway/ bus terminal etc. Thus cash is available even beyond the bank hours. In the case of a debit card, a person withdraws his or her own money for which no interest is charged.



Fig. 2.6 ATM Card

- **Loans** : Today financial institutions provide loans for many purposes like personal use, education, purchase of a house, vehicle, household durables, maintenance and repairs of house; setting up own business, etc. The interest charged by these institutions varies according to the purpose, amount, repayment period and type of institution (government and private). These loans can be repaid easily in monthly instalments. To avail of these loans you need to provide either a guarantor and/or a bond and/or security in the form of fix deposit, property or jewellery etc.

- **E-Banking** : These days the internet provides you the following services at the press of the button.

- ❖ To know the balance, application for check book or draft, credit card payments etc
- ❖ Utilization of telemarketing facility to purchase goods or to avail services.
- ❖ Purchasing railway and air tickets.
- ❖ Payment of telephone, electric bills etc.
- ❖ This saves your time while making trips to the bank and other places.



Fig. 2.7 E-Banking

Types of Saving Schemes of Banks :

- Saving Account
- Current Account
- Fixed Deposits
- Recurring deposits
- Pigmy Account

Know this :

What is UPI ? :

Unified Payments Interface (UPI) is an instant real-time payment system developed by National Payments Corporation of India facilitating inter-bank transactions. The interface is regulated by the Reserve Bank of India and works by instantly transferring funds between two bank accounts on a mobile platform. This mobile banking interface has been facilitating and integrating safe and swift cashless transactions. UPI is operated through Immediate Payment Service (IMPS). You can instantly transfer amount without having to wait for queue clearance like in NEFT. UPI is simple to use.

Do you know ? : BHIM, RTGS, NEFT

BHIM : (Bharat Interface for Money) is a mobile payment App developed by the National Payments Corporation of India (NPCI) based on the Unified Payments Interface (UPI). The app is named after Dr. B.R. Ambedkar and launched on 30th December 2016, it is intended to facilitate e-payments directly through banks as a part of the 2016 Indian bank note demonetization and drive towards cashless transactions. BHIM allow users to send or receive money to or UPI payment addresses, or to non-UPI based account by scanning a QR code with account number and IFSC code or MMID (Mobile Money Identifier Code). By BHIM a person can exchange funds from any bank account of any branch to any other bank account of same or different bank.



Fig. 2.8 Logo of BHIM-UPI

RTGS : (Real Time Gross Settlement) is an electronic payment system that allow individuals to transfer funds between banks. It is applicable only for money transfer within the country. It is one of the fastest interbank money transfer facility available through banking channels in India. The beneficiary bank has to credit the recipients account within 30 minutes of receiving the funds transfer message. It is mostly meant for large transactions.

NEFT : (National Electronic Funds Transfer) is operates on a deferred settlement basis. Fund transfer under NEFT is settled in batches as opposed to the real-time settlement process in RTGS. The batches are settled in hourly time slots. Customers having savings or current account are eligible to avail NEFT or RTGS service. Individuals who do not have a bank account can also deposit cash at the NEFT-enabled branches. NEFT takes time to transfer money and some amount is charged for the process.

Internet is my friend :

What is Digital Wallet ?

Digital Wallet : Individual can store money in digital wallet and use it for utility purposes like recharge, bill, toll, for payment at shop by scanning QR code for example - paytm

Internet is my friend :

Find out, information of various digital wallets.

b. Post Office : The department of post is a government organization coming under ministry of communication. It is

commonly known as post office. It was founded on 1st October, 1854.

A person can save money in the post-office. Saving in a post-office has certain advantages such as it is conveniently located, person can start a saving account even with a very small amount and person can get income-tax benefit by investing in many of its scheme. The method of opening an account is the same as that in a bank.

Post office provides following schemes for saving :

- Saving Account
- Recurring Deposit
- Saving Certificates
- Monthly Income Scheme (MIS)
- Public Provident Fund (PPF)
- Pradhanmantri Suraksha Bima Yojna (PMSBY)
- Post Office Life Insurance (PLI)
- SukanyaYojna
- Atal Pension Yojna (APY)
- Pradhanmantri Jiwan Jyoti Bima Yojna (PMJJBY)
- Rural Post Office Life Insurance (RPLI)

Find out :

Collect information about the above mentioned schemes



Fig. 2.9 Logo of Post-Office

- c. **Public Provident Fund :** This is a type of voluntary saving. Any adult

can open the account and save from Rs. 100 and above. The minimum period of the scheme is 15 years which can be further extended for 5 years. The greatest advantage of this scheme is relief from income tax. A depositor has to deposit minimum amount of Rs. 100 before 31st of March every year to continue the account. A person can invest maximum of Rs. 1,50,000/- every year. The rate of interest will vary every year.

- d. **Life Insurance :** Life insurance policy can be termed as an “agreement” between the depositor and Life Insurance Company. The main objective of life insurance is the family protection, provision for old age and security for educational purposes. The life insurance scheme was taken mainly as a measure of security in the event of death but now it offers many schemes and therefore considered to be an important and superior avenue of savings for every investor.

Remember this :

Advantages of life insurance :

- It provides safety to the dependents in the event of premature death of the policy holder. It also offers cover for life risk.
- It is a provision for old age and provides money for education, marriage of children or for house building, provides loan facility etc.
- A person gets tax benefit.
- It helps capital formation which ultimately contributes to the economic development of the country.

Types of Life Insurance Schemes :

1. **Whole Life Insurance :** Under this policy, premium is payable throughout the

lifetime of the insured. The only possible disadvantage is that the person may feel the pinch of premium after retirement when the regular salary income reduces. The mode of payment can be monthly, quarterly, half yearly or annually.

2. Endowment Insurance : This is a goal-oriented policy. It is the most popular form of life insurance since it not only makes provision for the family of the insured in the event of his premature death but also ensures a lump sum, to the same person who was insured. The amount insured becomes payable at the end of endowment term which may be from 5 years to 20 years. Money back policies are the example of endowment insurance.

B) Investments : Investment is the use of money for the purpose of making more money. Investment is different from saving in that it sets out not only to preserve capital but also to make it grow as fast as possible coupled with maximum security of the principal. Although; the purpose behind investment for all families is to earn more money, safety of the capital is also important.

Do you know ? Meaning of Investment.

Definition of Investment :

According to expert, “Investment refers to an asset or item that is purchased with the hope that it will generate income or appreciate in the future.”

- **Guidelines for Investments :** Some guidelines are helpful for investment because if care is not taken while planning, a person may have to face financial losses and individual may face difficulties in using the amount when necessary. To avoid this, following guidelines need to be considered.

1. Safety of the Capital : The safety of the capital is of utmost importance. The purpose of investment will be lost if the capital itself is rendered insecure. Hence, following points must be considered in this respect :

- ❖ Initial stages of private company may be unsafe for investment.
- ❖ Consider the reputation and financial position of the company and demand for their product.
- ❖ While making investment in private company, sufficient information should be gathered from reliable sources and consider legal aspects.
- ❖ All business dealings should be in legal and written format especially while investing in immovable property.
- ❖ It is always safe to invest small amount in different companies than investing large sum in one company.

2. Cash profit : Cash profit varies according to the type of investment. Rate of investment and percentage of dividend changes according to the type of business. While investing large amount little difference in rate will make great difference in financial gain. Careful thinking is needed in this respect. Income tax rebate is given on specific types of investment. While considering financial profit, security of the capital takes secondary position because more security means less profit. If profits are regular and stable they should be preferred because they provide fixed income. This income particularly is helpful after retirement.

3. Liquidity : If the earning member loses his job or resigns from it, the income is depleted. Sometime individual requires extra amount for expenditure then

individual can raise this amount if the investment is in liquidity. Investment in immovable property has less liquidity. If an individual owns shares in prospering company, by selling them, individual can raise the amount, but if the company is not doing well, the value of shares will reduce and this will result in financial losses.

4. **Ease of management :** This principal is applicable especially for real estate investment. If the investment in real estate is in a far off place, it creates management problems. Regular supervision is necessary for this investment and the manager appointed should be a trustworthy person.

Types of Investment :

1. **Real Estate :** Real estate investment in immovable property is traditional and a popular form of investment. Purchase of a house and land are the examples of this type of investment. This kind of investment is also done to give financial support to children or by renting out the house, this investment adds to the monthly income of the family. Agriculture business can add to the income.
2. **Shares :** Capital is required to start a business. To raise the capital, company sells their shares and promises to pay dividend to the shareholder. Amount of dividend depends on the type of shares. A person who has invested money in shares should be very vigilant about information regarding price of the shares. If current price of the share is more than the purchased price, it indicates that the company is making good profits. On the other hand, if current price is declining it will indicate that current financial position of the company is not satisfactory. A person who wants to earn money can dispose off his shares when the sale value of the shares is on the higher side. Shares can be of two

types i. e. Preferential shares and Common shares.

3. **Bonds :** Bonds were originally introduced by government to encourage the habit of saving among common people. A person could purchase bonds at the rate of rupees hundred per bond. After maturity, bond holder used to get back his money along with interest.

4. Mutual Funds :

Definition : “A mutual fund is a professionally managed investment scheme, usually run by an asset management company that brings together a group of people and invests their money in stocks, bonds and other security.”

As an investor, an individual can buy mutual fund ‘units’. These units can be purchased or redeemed as and when required by considering NAV (Net Asset Value).

5. **Precious Metals and Gems :** Investing money in precious metals and gems is a traditional form of investment. It has high liquidity. For example, investment in gold, silver, diamond etc. An individual can sell these out in crises situation to get cash.



Fig. 2.10 Types of Investment

2.3 Account Keeping

Household account keeping is an important part of money management of the family.

Account is a major method of checking the budget as it is put into action. That means it is the **controlling step of money management**. Account shows the distributions of money after expenditure have been made. An account is a systematic and summarised record of transaction. It shows how the money is actually spent by the family.

Always remember :

Advantages of Account Keeping :

- **Importance of Account Keeping :**

Account keeping helps to recognise how money is spent under various categories of expenditure provided for in the budget. It helps to recognise the exact amount spent on various categories as against the estimated expenditure shown in the budget. It helps to keep a check over the family budget. If the family overspends on a particular category during the first half of the month, the family will have to reduce their expenditure on this category in the latter half of the month.

Records are helpful as past history, to show what emergency expenditure it has incurred in the past. Past records give an idea regarding the prices of various items; this helps families in planning their budget. It also helps to decide from where and when to buy. The prices of certain items vary with seasons. Past records help to identify whether the purchase was right or not.

- **Methods of Account Keeping :** There are two commonly used methods of account keeping.

1. **Mental Method :** In this method, the accounts are not kept in the written format. The amounts spent on various items of expenditure are calculated and effort is made to keep a check on expenditure mentally. However, it may

be difficult for some people to remember all the expenses.

2. **Written Method :** Expenditure done in various categories are recorded by using various methods such as :

- a) **The Sheet System :** Records of expenditure may be kept on loose sheets kept at a convenient place. The place should be accessible at all times.

- b) **Envelope System :** This system consists of dividing the money into previously planned amounts and placing the money for each group of item into separate envelopes to be spent as the need arises for example ; food, housing, travelling etc. This system could be used by people who receive their weekly wages and who operate mostly on cash method of payment.

- c) **Note Book System :** For keeping family records special books can be bought by the family or an exercise book can be used by drawing suitable columns as per the family budget. This can be worked out on weekly basis. A good quality bound note book can be easily handled by the children and thus they can also be involved in the process of budgeting and account keeping.

- d) **The Chart System :** Separate charts can be prepared for each category, indicated in the budget and the amount spent under each, is recorded here. Such charts can be prepared on weekly or monthly basis and can be filed. This system is suitable for a person who is very regular and has a systematic and organised method of working.

Find out :

The difference between note book system and chart system.

2.4 Evaluation of Money Management

This is the third step of money management. It helps to review how the money has been used by the family. At the same, it tells us whether the plan of budget and the control step of account keeping were successful or not for giving satisfaction to the family members. It gives

guidelines for modifications and improvement in budgeting and account keeping. It can be carried out by checking the budget and account keeping at every step of use of money. It can be done by asking questions to oneself or getting it checked from the experts.

Can You Recall ?

- Making family budget is the planning step of money management.
- Steps in making the budget for a family are- List the commodities and services needed, Estimate the cost of desired items, Estimate the total expected income, Balance the expected income and expected expenditure, Check the plan.
- Importance of savings – It minimizes economic insecurity, helps in physical disability, provision for old age, future use, provision for occasional expenses, socio-economic status, source of income, to maintain standard of living, source of getting loan, major purchases, love for off springs, good habits.
- Types of saving scheme are compulsory saving schemes and voluntary saving schemes.
- Compulsory saving schemes include general provident fund and contributory provident fund.
- Voluntary saving schemes include bank, post office, public provident fund and Life Insurance Company.
- Types of investments are real estate, shares, mutual funds, bonds, metals and gems.
- Account keeping is the control step of money management.
- Evaluation of money management is essential for the improvement in future money management.

Exercises

• Objective questions :

1) Multiple choice questions :

1. A plan for spending and saving is termed as _____
 - a) household account
 - b) household record
 - c) budget
 - d) interest
2. _____ is an example of UPI.
 - a) NEFT
 - b) IMPS
 - c) RTGS
 - d) BHIM

3. Easy purchase of railway and air tickets is possible through _____

- a) E-banking
- b) RTGS
- c) IMPS
- d) NEFT

4. Income for a family comprises of money, goods and _____

- a) desires
- b) services
- c) satisfaction
- d) wants

5. _____ varies according to the type of investment.

- a) Interest
- b) cash profit
- c) budget
- d) services

2) Match the following columns :

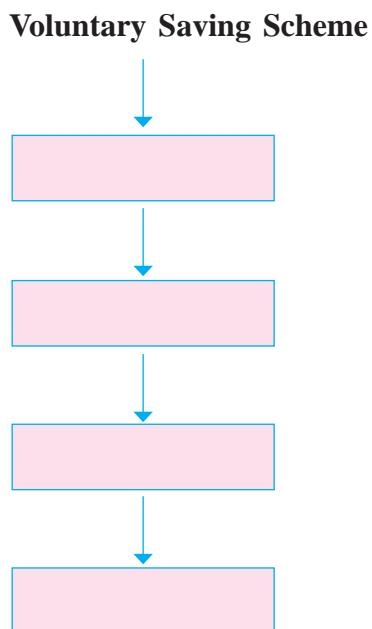
A	B	C
Step in making budget	ATM Card	Practical use
Savings	General provident fund	Shopping complex
Compulsory scheme	Future use	Government servants
Bank	Check the plan	Marriage use

3) Identify whether the following statements are true or false :

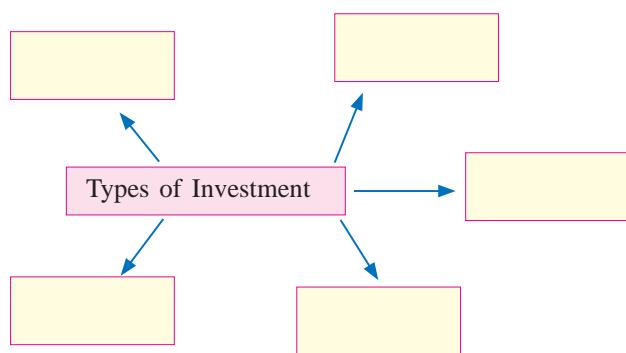
1. Budget is a type of household account.
2. One of the most important items in the budget is savings.
3. Savings in Post office and bank are the voluntary types of savings.
4. Inevitable savings are voluntary type of savings.
5. Family goals affect the budget.

4) Short Answer Questions :

- a) Complete the diagram.



b) Complete the table :



- c) Write about post office saving scheme.
- d) Give reason : Why should a family make a spending plan ?
- e) Differentiate between credit card and debit card.

5) Long answer questions :

- a. Define “family budget” and explain its importance.
- b. Explain the steps involved in making the family budget.
- c. Describe the objectives of savings.
- d. Explain types of investments.

Projects / Assignment :

1. Visit bank/post office/other cooperative society and collect the information on various saving schemes offered and write a report.
2. Prepare family budget for any one income group i.e. low income, middle income and high income group.

Practical/Related activities :

1. Make a list of your own expenditure for a week and priorities them.
2. Find out the names of some policies offered by the Life Insurance Company.



3. TIME MANAGEMENT

- 3.1 Introduction to Time and Time Management
- 3.2 Characteristics of Time as a resource
- 3.3 Components of Time Management
- 3.4 Importance of Time Management
- 3.5 Guidelines for Time Management

Let us discuss about Time and Time Management:

Time is a most valuable resource available to every individual. Everyone has twenty four hours a day to do one's personal day-to-day activities in order to achieve the goals. Time is an intangible asset; one recognizes its value and worth only when it is lost. We face acute shortage of time very often in personal life, academic life and work life, when we have lot of commitments to fulfill. The problem of shortage of time arises mainly because we do not care for time management. A basic awareness, along with practice and perseverance is necessary for proper utilization of time. The awareness and importance of time should be imparted to every individual in early years of life. One must be aware of the time span available and time needed to complete the routine within it.

3.1 Introduction to Time and Time Management :

Do You Know ?

The British Association for the Advancement of Science introduced the **CGS** system of measurement in 1874 by combining fundamental units of measurement, as Centimetre (**C**) for length, Gram (**G**) for mass, and Second (**S**) for Time.

What exactly is time ?

Time is resource to measure quantitatively but its nature is unclear. Time is a measurement of sequence of events, duration of events, and intervals inter se. Time is a fleeting, limited and intangible human resource which is always calculated and used accordingly. The time of the day is as shown on clock or announced on the media like radio, television constantly guide us in carrying out days activities , distribution of time for work, rest, entertainment and checking the progress during the day. The second (S) is internationally accepted base unit of time. A minute (min) is 60 seconds in length; an hour is of 60 minutes in length and length of a day is 24 hours or 86,400 seconds.

1. According to Merriam Webster dictionary,

“Time is defined as a continuum in which event succeed one another from past through present to future.”

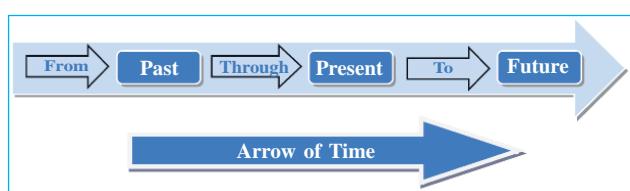


Fig. 3.1 Arrow of Time

2. According to American Heritage Stedman's Medical Dictionary, Time is

defined as “A duration or relation of events expressed in terms of past, present and future, and measured in units such as minutes, hours, days, months or years.”

- 3. “Time is a measured or measurable period during which an action, process, or condition exists or continues.”**

According to Albert Einstein, “Time has no independent existence apart from the order of events by which we measure it.” So event is the soul of time.

Time is spent with its relation to energy, money, material goods and other human resources. It cannot be seen, touched, or tasted, but can be measured by its duration. In the modern world of today, time is regarded as money, having social significance and personal value too. Time is well known to everybody, but at the same time it is difficult to define and understand. Many a times, time available to us, in comparison to our goals and ambitions is limited. We neither can produce extra time nor can store it for future use. With this consideration, proper management of time is very necessary.

Classification of Time :

Of all the resources, time is one of the easiest to measure but most difficult to understand. System of time differs in various disciplines. **Clock time**, the only system of which most of us are aware, stems from the regular movement of the Earth in relation to the Sun. Clock time means a minute, hours, day or year as indicated by clock or calendar.

Curt P. Richter narrates the existence of internal clock of the body. Body gets used to a pattern which is repeated each and every day. For example one feels hungry at regular fixed time for having food, similarly one feels sleepy when he or she approaches the time of routine

sleeping hours. Such type of time is called as **Biological time**.

Psychological time is awareness of passage of time or the sense of its passing slowly or quickly. For example, Work time seems to be moving fast while waiting time seems to be moving very slowly. As during exam student feels the days of study get over very fast.

On the basis of **Clock time**, time is classified in following three categories.

Work Time	• Time for work and work related activities
Rest Period	• Time needed for rest
Leisure Time	• Non work or free time, Hobby or interest enrichment time

a) Work Time : Time spent for the performance of work is called as **work time**. Work time consists of time required for the preparation of work, time consumed for actual work performance and time related to post work finishing. It's very easy to measure work time by using clock hours. **Jean Warren** develops a system of work unit and work load to calculate work time in time management. **Walker's** defined work unit in home management is “the amount of household work done in one hour under average conditions by an average worker.” The work load is the sum of work units. For example - Time required for meal preparation, washing of clothes, office time or study hours.

b) Rest Period : Time needed for the rest is called as **rest period**. This time includes sleeping, lying down, and change in body posture and position in relaxed condition. Rest is very important in order to keep the body in a healthy condition.

Always Remember :

For energy consuming work, rest period should be at least 57% of the total time of work done. After doing 40 minutes of mental work, an individual should have at least 2 minutes of rest.

Duration of rest period, and type of spending of rest period depends on the type and duration of work, condition of work place, stress of work and health of a worker. For example, long duration physical work requires more rest period than sleeping or laying down condition. While mental work requires change of work time for relaxation or by creating cheerful work atmosphere by introducing music etc.

c) **Leisure Time** : leisure time is an important part of the total pattern of living. Leisure time is usually considered as time free from the demand of work or duty and the activities of leisure are those that are done for their own sake. It is also called as non-work or free time. **Gross, Crandall and Knoll** has defined Leisure time as, "all non work hours or all waking hours not spent in work." **According to Cannigham**, "leisure time is a time which gives more satisfaction and enriches the interest and skill of the individual after spending it." It may also be defined as - "Time when you are not working; time when you can do whatever you want to do."

Gross, Crandall and Knoll classified Leisure time into **Free time** and **Discretionary time**. Free time is a time used for doing daily routine activities, for example, time for physical care, travelling time needed for work. Discretionary time is time spend for their own sake and creative activities.

Reading, listening to music, watching television, puzzle solving are some common passive leisure time activities. Playing outdoor or indoor games which require some physical activities, travelling for trips etc. are some common active leisure time activities.

Leisure time gives greater opportunity for creative and satisfying recreation. Leisure time activities are determined by age, occupation, income, available material goods, socio economic status, season and time etc.

Leisure activities should keep alive the imagination, or delight in symbols and ceremonies, a love of nature, and a feeling for endless variety and mystery of human relationships. There is need for some spontaneity in the use of leisure time.

What is Time Management ?

Time management is a practice or procedure of effective use of time while performing various activities or task. The basic concept of time management is that, one can spend enough time to perform important things or activities for successful accomplishment of desired end.

1. According to **Iain Maitland**, "Time Management may be defined as a system of controlling and using time as efficiently as possible."
2. According to **Dr. C. S. Yadav**, "Time management can be defined as activities or tools which allow you to effectively manage your time."
3. Time management is a set of principles, practices, skills, tools, and systems that help you to use your time to accomplish what you want.

The main objective of time management is the proper utilization of time available, so that an individual can accomplish individual and family goals. According to **Gross et al.**, "The general goals of time management are similar to management of other resources. They are originated from the values of individuals. But, time management has specific goals : for some people it is simply minimizing of work

time and for all individuals, it is accepting the limitation of time and achieving balance among work, leisure, and rest in its use, all leading to the general goal for achieving satisfaction with the use of one's time." Developing the ability to locate ourselves in our environment with reference to time is an important part of time management.

The secret of time management lies in successfully identifying and eliminating time wasting activities with effective and efficient utilization of time. In order to be a good time manager, grab the time, utilize it properly and invest it into productive work. Do not allow the time to flow and pass away without offering any result.

3.2 Characteristics of Time :

Time is the ongoing sequence of events taking place. We measure time using clock and calendar. For successful time management people must know the characteristics of time. Following are the characteristics of time.

- **Time is limited :** It is limited in the sense that life is finite and the time at our disposal in comparison to our ambitions and goals is restrictive. Every individual has 24 hours a day to perform various activities. No one can increase the time availability.
- **Time is fleeting :** Time is always fleeting. We cannot store time and use it as per our requirement. It is so precious that it cannot be recovered once lost.
- **Time is rigid :** This is the most important characteristic of time. Time is very rigid in nature. No one can stop the time; neither produce nor prolonged the time. It is fixed and rigid in nature.
- **Time availability is same to all individuals :** Irrespective of caste, country, religion, sex, age the availability of time remains same. Every individual in the world

has 24 hours a day and 60 seconds of a minute. No single day can supply more than 24 hours.

- **Time cannot be recovered once lost :** Time is an invaluable resource that cannot be recovered once lost. Individual has to use it when it is available. So it is necessary to grab the time and utilize it in proper way for result oriented or productive activities.
- **Time is non-transferable :** Some time we have ample time and we really get board due to it. Also at several instances we are running short of time and cannot accomplish our goals. At both the situations one cannot transfer the time from others. We have to manage our own time. We neither can hire or purchase the time, nor can save it for future use.
- **Time is intangible but easy to measure :** Time is a valuable intangible human resource. One can feel the passage of time. It is easy to measure time by clock, calendar, milestone events etc. We measure time using units like seconds, minutes, hours, days, weeks, months and years.
- **Time is continuous :** Time is a continuous flow of events which travels from past through present to future. No one can stop time for any reason.
- **Time is precious :** Time is more precious than money. One can create money by using other resources but time cannot be created, purchased or stored.

3.3 Components of Time Management :

Time management is consisting of Goal setting, Planning, Setting Deadlines, Delegation, Prioritising, Time Allocation, and Utilizing Feedback. These key factors are called as Components of Time Management.

- **Goal Setting :** Goal setting is the first step in time management process. It is the



adjustment required, if any. Set limited and specific goals at a time to avoid confusion and to achieve it successfully. Goals should be realistic, clearly stated and achievable. Use sequence of short-term to long-term SMARTer goal setting for fulfilments of more goals and desires. Goals which are Specific, Measurable, Attainable, Relevant and Time Bond in nature are called as SMART Goals.

- **Planning :** Effective planning plays an important role in time management. Planning provides clear picture of future action and activities to be done in stipulated time. It also shows time sequence of activities and events. One has to prepare a list of activities to be done in available period of



time; it may be a day or week or of more. While preparing To Do List think about the important, urgent, high priority and pending work. These types of activities should be on the top of the list or time plan. Task Plan or Time Plan may be daily, weekly, monthly or annually. The accuracy of planning depends upon exact estimation of required time for a particular task and preciseness of TO Do List.

base of success in each and every activity or task. Goal setting helps individuals to decide exactly what he/she wants, strategies of action taken to achieve the goals, intention, the priority check and

- **Setting Deadlines :** Set deadline for each task or activity. It is beneficial in formulating and setting procedure, strategies, and proper allocation of resources to complete the task within set limits. Realistic estimation of the time needed for a particular activity is important in setting deadlines. Dividing task into smaller parts and making time estimation for each part is an easier way to set deadlines for whole task. For Example, setting deadline for study of examination, student can group the subjects, divide time and make a time slot for each subject or each topic.

Every individual is the best judge to decide his/her own time requirement for completion of specific task and to set deadlines for specific task. Planner, calendar or diary prove to be beneficial to note down the important dates according to set deadlines.

- **Delegation :** Delegation of planned activities is implementing or controlling step of time management. Delegation of some or all planned activities or activities which need not require personal skill and interest should be delegated to competent and capable person for effective management of time. The person selected for delegation of work should be capable enough for taking new decisions while performing activities, skills in allotted work, and capacity of making adjustments in time plan or in set goals according to situation.

- **Prioritising :** Prioritise the activities according to their urgency and importance. Prioritising of work or activities or task is important for effective time management. Doing the right activity at right time leads to achievement of set goals. For prioritising of work, person has to know the difference between important and not important as

well as urgent and not urgent work. It can be identified by using **Urgent-Important Matrix**.

	URGENT	NOT URGENT
IMPORTANT	DO IT NOW 	PLAN TO DO
NOT IMPORTANT	DELEGATE 	AVOID

Fig. 3.2 Urgent-Important Matrix

Use Your Brain :

Complete the **Urgent-Important Matrix** by evaluating your tasks.

	URGENT	NOT URGENT
IMPORTANT	Urgent and Important tasks a. b. c. d.	Not urgent but Important tasks a. b. c. d.
	1	2
NOT IMPORTANT	3	4
	Urgent but not Important Tasks a. b. c. d.	Not urgent and Not important Tasks a. b. c. d.

- **Time Allocation :** Time allocation means the distribution of time for different activities or work. It is important to practice the

appropriateness in allocation of proper time for specific activity. Doing activity at wrong time can lead to wastage of time; it may be an hour or whole day. One has to identify the right time of the day for different activities and work by self observation and evaluation. For example; student has to identify the effective time period for study, for someone it may be early morning hours and for others it may be night hours. So also, someone requires only an hour for study while other may need more than hour for the same.

- **Utilising Feedback :** It is an important process or step in time management. Evaluating time plan, achievement of set goals and implantation of time plan are the major methods of obtaining feedback in time management. Devices like Clocks, calendars, buzzers etc. are used to evaluate the time plans. Standard of performance and achievement of goals in prescribed time are also used for seeking feedback in time management. Obtained feedback is further used in every step of time management to make necessary changes in goal, planning, delegation of activities, prioritising and allocation of time.

Always Remember :

The Four D's of Time Management :

- **Do It :** If work or activity is urgent, do it immediately.
- **Delegate :** If activity can be done by someone else, delegate it.
- **Delete :** Filter task list by deleting unnecessary and not important task.
- **Defer It :** Postpone some tasks and deal with the urgent and important activities first.

3.4 Importance of Time Management :

The importance of time management is self evident. Every individual has twenty four hours

a day to use. One must be aware of the available time and time needed to complete the daily routine. Everyone must remember that time cares only for those who take care of time. So, for the achievement of goals, proper planning and utilization of time is very important which is definitely possible only by time management. The importance of time management is as follows :

- **Improves productivity :** Unnecessary and avoidable activities consume a large portion of individual's available time. Sometimes delays and lethargy in work add to the problem in a significant way. Time management provides guidance and direction to identify and eliminate wasteful activities. Time management skills and tools help to develop suitable work procedure, controlled operations and make a balance between available time and allotted work. Time management teaches us how to utilize available time most efficiently and effectively. It ensures higher work rate and improves performance rate. It helps to get work done cheaper, faster and better. Reducing wasted time and efforts allow individual to make time for wide range of activities that brings more balance and fulfilment in individual's life.
- **Develops to control on the situation :** Time management guides us to set goals clearly, to prioritise the activities, to plan the task carefully etc. and also solve the questions like what to do, when, why, by which method and how long to do ? All these things develop control on the situation. With effective time management individual can command the situation and achieve the set goals as per the desired standards.
- **Provides too many choices :** In this modern age, individual has so many ways of spending time. So every individual needs

some sort of plan to make intelligent choices. Time management helps to make conscious choices so that individuals can spend more of their available time for doing things that are important and valuable to them. For example: use of internet for study.

- **Increases free time :** Time management gives hints and tips for utilization of time. It also gives valuable suggestions for the recognitions of work load and distribution of work. Time management also provides guidelines to decide as to which work is to be delegated and how. This strategy will reduce the pressure of work load and offer more free time. For Example, use of paid help for mechanical work like washing of cloths, cleaning utensils reduces the actual work time. This free time can be utilized for personal development, creative thinking, goal setting etc.
- **Helps to develop personal skill and interest :** Many people feel that, they have too much to do and not enough time to develop their personal skill and interest. Lack of time is blamed for everything from not getting enough exercise, poor finance etc. Time management helps to use the time in better ways by conscious planning, prioritizing work, calculating work load and proper distribution of time results in some spare leisure time which is useful in developing personal skills and interest. Spending leisure time in an appropriate way shows progress and gives satisfaction in life.
- **Create good-will and reputation :** Time management orient time cautiousness in people and time oriented people are always noticeable. Their efficiency and effectiveness is quite visible. Planning time and observing the same is a normal routine for such people who cultivate discipline, regularity and punctuality in work pattern. Such type of

person gets goodwill and special reputation among others.

- **Helps to achieve goals in time :** Time planning leads one to think through many goals in advance. Careful time planning saves time and energy resulting in relieving tensions created by indecision and uncertainty to achieve goals in time. Time plan also determines when certain task can best be done. For example, preparing time schedule of studies in advance helps students to get prepared for exams and keep some time for revision.
- **Provide time for emergency :** Every individual sometimes finds weekly plans difficult to follow an unplanned and unexpected demand of work. For example, unexpected guest at home or ill health of family member demands more time and creates crucial situation. Such emergencies can be dealt with by assigning some free time during planning step.
- **Eliminate the nervous strain and fatigue :** Yearly calendar of special and seasonal activities, vacations, holidays, anniversaries and birthdays is a great help in managing time. It enables the individual to look ahead and see when and where he/she can and must incorporate these special activities into current plans. Long range planning of this kind enables one to keep tasks from piling up and eliminates nervous strain and fatigue.

3.5 Guidelines for managing Time :

Every individual has to develop a system of time management for proper utilization of time. Following are some important guidelines for managing time :

1. Access and analyse the workload in relation to the time available.

2. Form clear and specific goals and objectives of work to avoid delayed decision making process.
3. Enlist and prioritise your work and task on the basis of its urgency and importance by using urgent-important matrix.
4. Calculate the time cost of work and work load.
5. Organize yourself properly to complete your work in time.
6. Increase your efficiency at par excellence by increasing skill and capacity in work.
7. Use leisure time for skill enhancement and personal development.
8. Prepare time schedule of the day, week and month.
9. Develop self monitoring and self evaluative work procedure and time management system.
10. Delegate the work which need not require self participation.
11. Develop positive attitude towards work which proves beneficial in minimizing work time.
12. Plan your rest period and leisure time.
13. Tactfully handle the interruptions in activities.
14. Avoid gossiping and chit-chatting in spare time.
15. Keep some time for visitors and guest in your daily time plan.
16. Always talk precisely and in brief.
17. Say ‘no’ to unnecessary extra work, activities and communication.
18. Always remember Four D’s of time management.

Can You Recall ?

- Time is a most valuable, intangible human resource.
- Time is fleeting and limited.
- Time is defined as, “continuum in which events succeed one another from past through present to future.”
- Time Management may be defined as a system of controlling and using time as efficiently as possible.
- Time management improves productivity, develops to control on the situation, provides too many choices, increase free time, helps to develop personal skill and interest, create good-will and reputation, helps to achieve goals in time, provide time for emergency, eliminate the nervous strain and fatigue.
- Of all the resources, time is one of the easiest resource to measure but most difficult to understand.
- Body shows regular fixed time for routine body needs is called as biological time.
- Psychological time means awareness of passage of time.
- On the basis of clock time, time is classified as a) work time b) rest period c) leisure time.
- Characteristics of time are –Time is limited, fleeting, rigid, equally available, cannot be recovered once lost, non-transferable, intangible but easy to measure, continuous, precious.
- Goal setting, Planning, Setting Deadlines, delegation, Prioritising, Time Allocation, and Utilizing Feedback are the key Components of Time Management.
- SMART Goals stand for Specific, Measurable, Attainable, Relevant and Time Bound goals.
- Every individual must follow the guidelines for managing time.

Exercises

• Objective questions :

1) Multiple choice questions :

1. Time is a fleeting, limited and _____ human resource.
a) intangible b) transferable
c) tangible d) easy
2. Time has no independent existence apart from the order of _____ by which we measure it.
a) sequence b) motions
c) activity d) events
3. The main _____ of time management is the proper utilization of time available to accomplish the individual and family goals.
a) Principle b) objective
c) characteristic d) definition

4. Goal setting is the _____ step in time management process.

- a) first b) second
c) third d) last

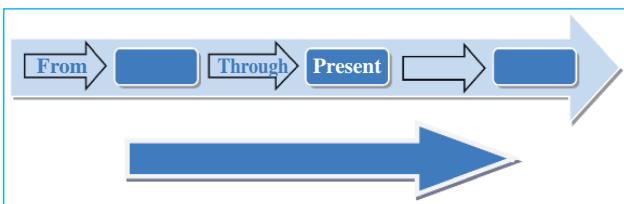
5. Discretionary time is time spent for _____ activities.

- a) passive b) creative
c) negative d) active

2) Complete the following table :

Type of Time	Example
• Clock time	•
• Work time	•
• Biological time	•
• Leisure time	•
• Psychological time	•
• Rest period	•

3) Complete the following figure :



4) Identify whether the following statements are True or False :

1. A second is internationally accepted base unit of time.
2. Time management orient time cautiousness in people.
3. Time management is unable to gives hints and tips for utilization of time.
4. Doing activity at planned time can lead to wastage of time.
5. Rest is needed after doing mental work also.
6. Puzzle solving is an active leisure time activity.

• Short Answer questions :

1. Define the terms :

1. Time
2. Time management
3. Clock time
4. Biological time
5. Psychological time
6. Work time
7. Free Time
8. Rest period
9. Leisure time

2. Differentiate between the following :

1. Clock time and biological time
2. Work time and leisure time
3. Work time and Rest period

3. Write short notes on the following :

1. Concept of time
2. Concept of time management
3. Goal setting
4. Planning in time management
5. Setting Deadlines
6. Delegation of task
7. Prioritizing the activities
8. The Four D's of time management

• Long Answer questions :

1. Write in detail the classification of time.
2. Write components of time management.
3. Illustrate the importance of time management.
4. Explain the characteristics of time.
5. List out the guidelines for managing time.

Project/Assignment :

1. Observe the daily time schedule of your family, friends, and relatives.

Practical/Related activities :

1. Prepare a weekly "To Do List".
2. Prepare a time plan for study.



4. MANAGEMENT OF HUMAN ENERGY

- 4.1 Definition and Concept of Human energy
- 4.2 Energy Cost of Household Activities
- 4.3 Meaning, Types and Controlling of Fatigue
- 4.4 Management Process Applied to Human Energy

4.1 Definition and Concept of Human Energy :

Let's Discuss :

We have learnt about the human energy as a resource in XI standard. In XII standard we will learn about its management. Everyone requires energy to do any type of activity. All body parts need energy to do the work. So, energy is the basic requirement of human being for growth and development and also for physical and mental output. Human energy is received from the food consumed by an individual. Certain amount of energy is needed for natural body processes such as respiration, circulation, secretion, excretion etc. This is called **Resting or Basal Metabolism**. In addition to this, energy is also required for performing a particular task. But availability of energy to anyone depends on his or her mental health and physical status. The amount of energy available to the individual varies with their age, sex, weight, physical health, physical phase, mental status and interest in specific activity. Hence, energy management is very difficult and complex.

What is meant by Human Energy ?

Energy is an essential part of our daily life. It is the unseen force necessary to work, development and growth. No activity is possible without energy.

Definition : Energy is defined as capacity to do the work. It can also be defined as ability of a person to do the mental and physical work.

Definition of Energy Management : It is the process of monitoring, controlling and conserving energy for doing a particular activity.

Remember it :

Everyone requires energy to perform any task. The amount of energy required for performing particular task varies from person to person. It depends mostly on body structure,

physical and mental health, interest and skills required for performing the task. Energy requirement also depends on the nature of work, use of body posture, working conditions etc. If a person is healthy and mentally sound, interested in particular task and has proper posture at work and gets congenial work environment he will definitely conserve the energy with positive output. Hence, energy management is needed to achieve the goals.

4.2 Energy cost of Household Activities :

The knowledge about energy costs of various activities is very essential for conserving the energy. In order to have a well balanced energy spreading pattern, one needs to know the cost of energy required for various activities.

Definition :

Energy Cost -The energy required to perform any task is called as “energy cost”.

Always Remember :

The human energy is required to perform any activity needed for various muscular efforts as well as maintaining natural body processes.

Energy cost of a particular activity can be calculated by deducting total energy required for performing the task with energy required for basal metabolism. Thus, difference between total energy cost of task and energy cost for resting metabolism gives the energy cost of a particular work.

Formula for Total Energy Expenditure (TEE) and Total Cost of Activity (TCA)

- **Total energy expenditure (TEE)**

$TEE = \text{Energy required for basal metabolism} + \text{Energy required for particular activity.}$

- **Total cost of particular Activity (TCA)**

$TCA = \text{Energy required for particular activity} - \text{Energy required for basal metabolism.}$

The amount of energy required for a particular activity is also measured in terms of Oxygen consumption. It is expressed in terms of Calories. One calorie is the amount of heat required to raise the temperature of one gram of water to 1°C . 1000 calories is equal to 1 kilo calorie.

Unit of energy is kilo calorie denoted as Kcal or Kilo joules denoted as KJ.

As stated by **WHO (World Health Organization)**, the energy expenditure (Kcal/hour) by men and women is as follows:

Sr. no.	Type of Work	Men	Women
1.	Light	140	100
2.	Moderately heavy	175	125
3.	Very active	240	175
4.	Very heavy work	300	225

Fig. (Table) 4.1 Energy required by men and women for different types of work

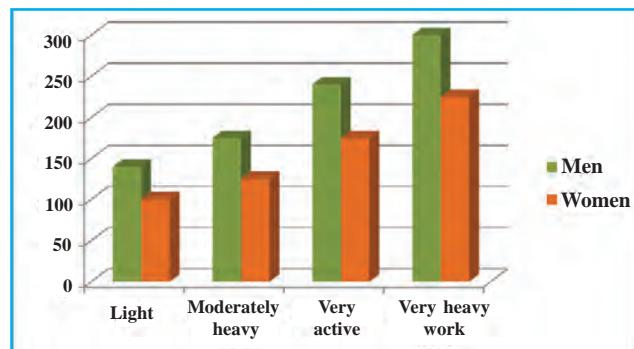


Fig 4.2 Graph indicating energy required by men and women for different types of work

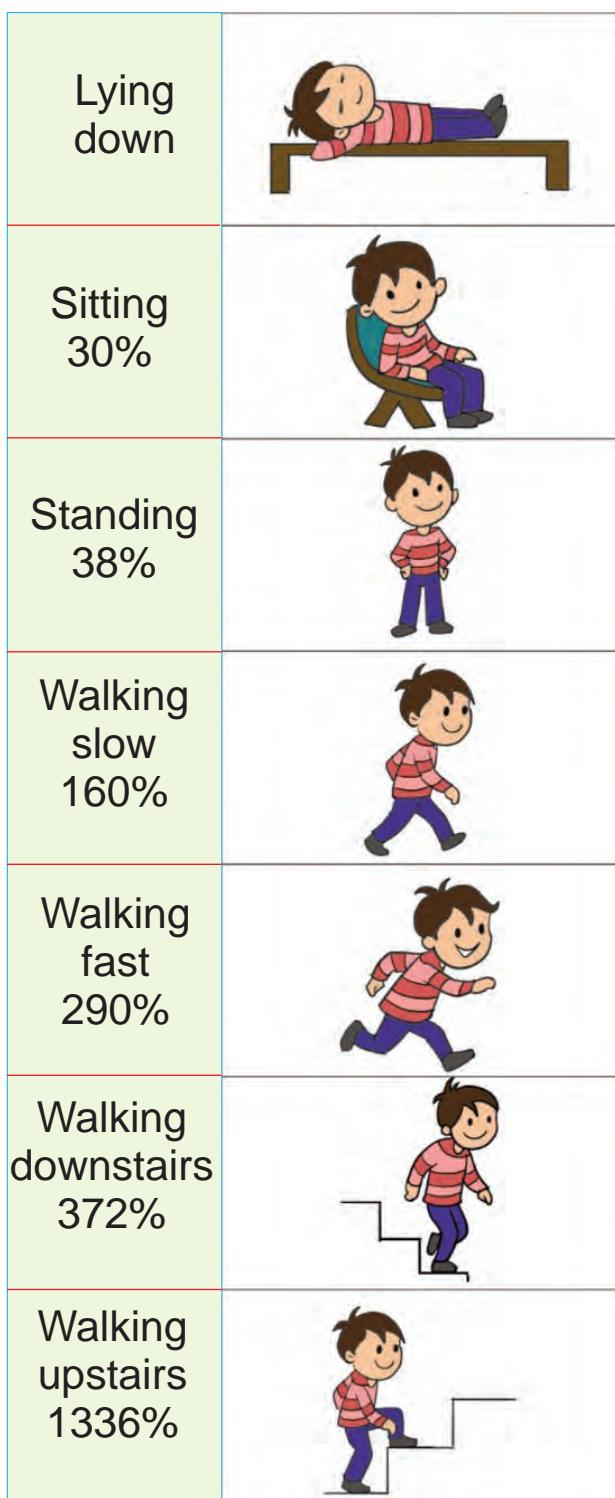
The household activities are classified into three categories on the basis of energy cost:

- **Light work :** It is the type of work that requires less than 100% additional energy above the resting level. For example, watching TV, peeling potatoes, kneading, cutting vegetables, dusting, sewing, hemming, knitting etc.
- **Moderate work :** It is the type of work that which requires additional energy between 100-150% more above the resting level. Example- Ironing clothes, sweeping floor, making chapatis, washing vessels etc.
- **Heavy work :** It is the type of work that requires 150-200% additional energy above the resting level.

Example - Washing clothes, mopping floor, grinding masala, fetching water, going upstairs, lifting heavy items etc.

Sr. no.	Type of Work	% Above Resting	Activities
1.	Light work	Below 100	Hemming, sewing, knitting, crocheting, dusting, chopping etc.
2.	Moderate heavy	100-150	Ironing, kneading dough etc.
3.	Heavy work	150-200	Mopping, Scrubbing floor, lifting heavy objects, fetching water, washing clothes, climbing stairs with heavy luggage etc.

Fig. (Table) 4.3 The classification of household activities



(Percentage increase over lying still)

Fig 4.4. Energy requirement for different activities

The knowledge of energy cost of different types of household activities helps the individual to manage and conserve one's energy. One can

alter light, moderate and heavy work in the daily schedule and make it more comfortable.

Each and every activity requires various movements of body parts. This is called as efforts.

Definition of effort-Effort means earnest and conscientious activities intended to or accomplish something. It is force acting on a body in the direction of its motion.

When a person is doing any type of work he/she requires several types and combination of efforts. They are as follows:

1. Mental effort : It is required for doing any type of work, even for performing routine tasks. For example; reading, writing, puzzle solving, thinking, studying etc.

Doing routine work for example cutting vegetable, swiping, cooking dressing, cleaning also requires mental thinking about how to perform and way to perform the activity.

2. Visual efforts : While performing every activity, each one requires visual effort. Our eyes must direct the movements of hands, feet and other body parts in order to complete the work. For example, while cooking eye movements are necessary to direct the body parts such as hands to add the ingredients, mixing well, frying, kneading, washing etc. The activities such as reading, watching requires intensive visual efforts.

3. Manual efforts : For performing each activity, person requires manual efforts. Manual efforts means the work done by hand movements. For example, cooking, mopping, washing utensils, sweeping, carrying things etc.

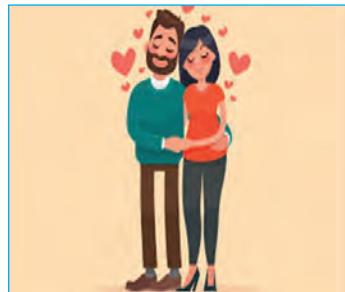
4. Torsal efforts : Movements of the torso is called torsal effort. Torso means middle part of the body excluding hands, legs and head. Example of torsal movements are bending, leaning, sitting, rising, turning etc. The activity such as washing clothes, arranging furniture, mopping requires torsal effort.

5. Pedal efforts : The activities performed by legs are called as pedal efforts. Many activities in day to day life have to be completed by pedal efforts. Walking, running are the examples of pedal efforts.

- **Energy demands during different stages of life cycles :** Energy demands during different stages of life cycles are listed below:

Stage I : Foundation

This is the beginning stage of family life. It consists of only husband and wife in the family. So, the energy requirement for doing the household work for two persons will be less. But if the homemaker is working outside then energy demands will be more. Thus, the home maker must be aware for balancing the work in home and outside.



Stage II : Expansion

In this stage there is arrival of new members in the family. Hence, it is a very busy stage for



every home maker in her life and demand more energy. Children are dependent on their parents. Caring and rearing of children demand more energy. So, more awareness regarding energy cost is needed to avoid tiredness and to maintain health.

Stage III : Contraction or Retirement



In this stage children are brought up and are independent. Hence, the workload on homemaker will be less. Many times children also share the work and responsibilities will be reduced. This results in less demands of energy.

Let us discuss :

4.3 Meaning, Types and Controlling of Fatigue

When a person is doing any activity for longer time, his capacity for working to do the task consistently reduces. It means his body's capacity to do the work as before is not the same. This inability to work consistently throughout the period may be due to over work, lack of concentration or lesser interest in the work or muscular strain etc. So, he or she may experience tiredness. When body is not able to do the work as before, it is called as fatigue. It can be caused by doing the activity in a particular posture, poor posture, and poor working environment, lack of interest, concentration or muscular strain.

Definition : Fatigue is tiredness or boredom arrived after performing a particular task. It is reaction of a person as a whole to a situation as he or she consciously or unconsciously interprets and evaluates it.

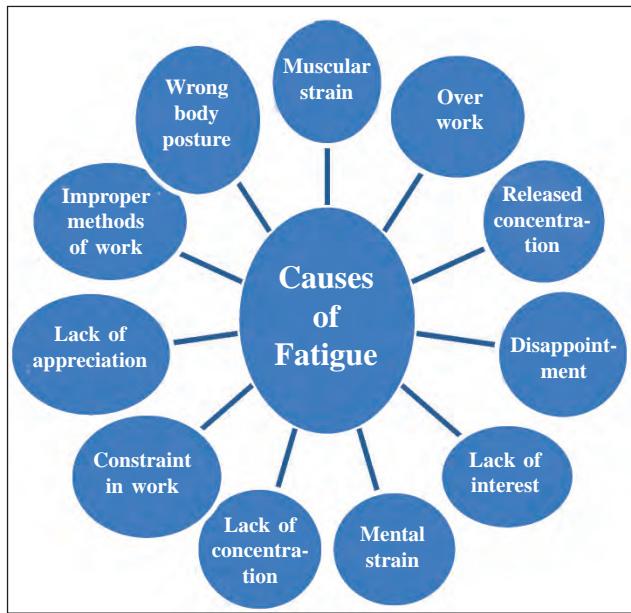


Fig 4.5 Causes of fatigue

- **Types of fatigue :**

Know this :

In order to conserve the energy and avoid fatigue one should plan daily activities to achieve the day to day goals. One should balance the household work in such a way that one can achieve the goals according to physical capacities. If energy consumption is greater than the physical capacities, person will develop fatigue. If person get fatigued it has adverse effect on the health and become an obstacle to achieve the goal.

Types of fatigue :

There are two types of fatigue

1. Physiological fatigue
2. Psychological fatigue

1. Physiological fatigue :

Definition : Physiological fatigue is the state of body in which one's ability to do the work is reduced. This is the after effect of previous or earlier work. Physiological fatigue reduces the physical ability of a person to do the work.

Do you know ?

For doing any work we require energy. This energy is provided to the body through food.

Energy requirement is met by glucose released by carbohydrates provided through the food. Glucose is stored in the form of Glycogen. This glycogen is oxidised or utilized by the body while doing any work. When the body is working for longer hours or during heavy muscular activities, glycogen is broken down into lactic acid and deposited in the muscles. Deposition of lactic acid in the muscles causes physiological fatigue. So, there is need to remove the lactic acid from the body. Lactic acid can be reduced by providing oxygen to the body. The oxygen will be available to the body only after rest. During rest period, availability of blood oxygen helps in oxidation

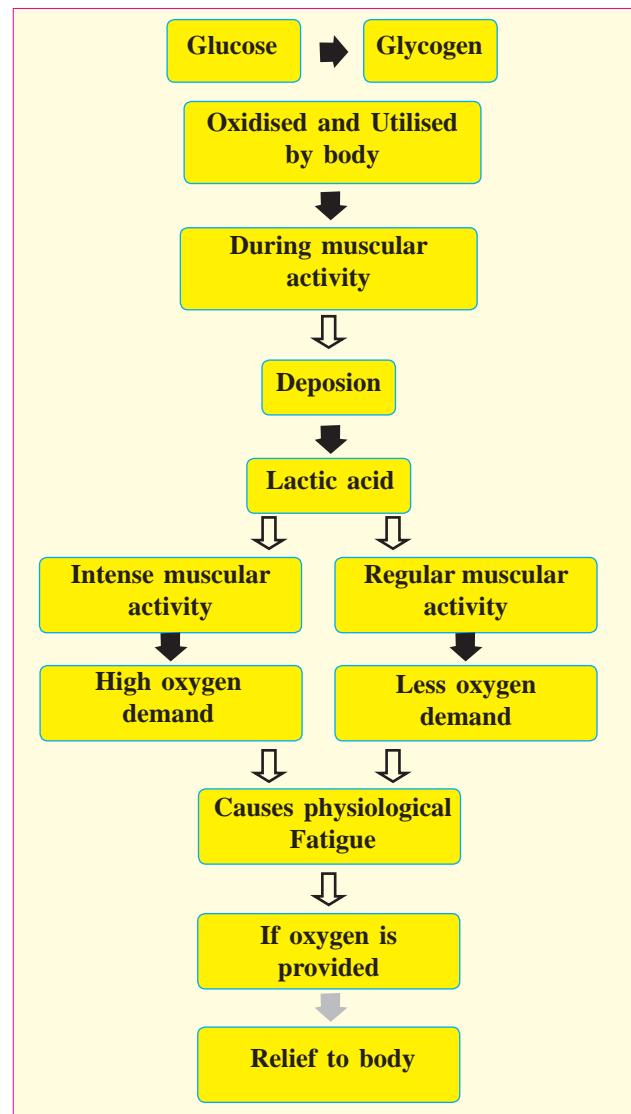


Fig. 4.6 Diagrammatic representation of physiological fatigue

of accumulated lactic acid to carbon dioxide and water. In this way, the body relives fatigue. Hence, the recovery of physiological fatigue is possible by removal of lactic acid and carbon dioxide from the body.

- **Factors affecting fatigue:**

- Likes and dislikes of person
- Type of activity performed - light, moderate and heavy
- Posture in performance of activity-natural or unnatural
- Duration of performance-time required to complete the activity
- Health of person- poor physical health, poor sleep, illness etc.

- **Measures to relieve the physiological fatigue :** Following are the measures to relieve the physiological fatigue :

1. **Rest periods :** Rest periods during the activity help to prevent physiological fatigue. The length of rest period and number of intervals will depend upon the type and nature of activity and individual work pattern. It means, if the activity or work is heavy it is necessary to have rest period for longer period than the moderate or light activity.

It also depends upon how much the person is fatigued. When the person is more fatigued longer rest period is needed.

2. **Balanced diet :** A person must be healthy enough for doing any type of work. If the person is under weight or over weight, it has direct effect on his efficiency of work. Hence, balanced diet with proper intervals of eating is very essential for maintaining efficiency in work and avoiding fatigue.

3. **Recreation :** Recreation can help in relieving fatigue. If person gets tired after work, some recreation will be helpful to overcome the fatigue.

4. **Change of job :** Change of work is also a type of rest for a particular work. One can alter heavy work with light one and vice versa. It will help to relieve the muscular tension and thus relieve the fatigue.

5. **Utilizing energy in a proper way :**

By avoiding unnecessary steps in the work, energy can be saved. This can be achieved by simplifying the work. Proper way of utilizing energy will help in reducing fatigue.

6. **Use of proper body posture :** Many studies have proved that use of improper or wrong postures increase the fatigue. Improper body postures increase muscle tension and pain in joints, ligaments and tendons. Adoption of proper body posture and keeping body parts in alignment help to increase the productivity in work and lessens the fatigue.

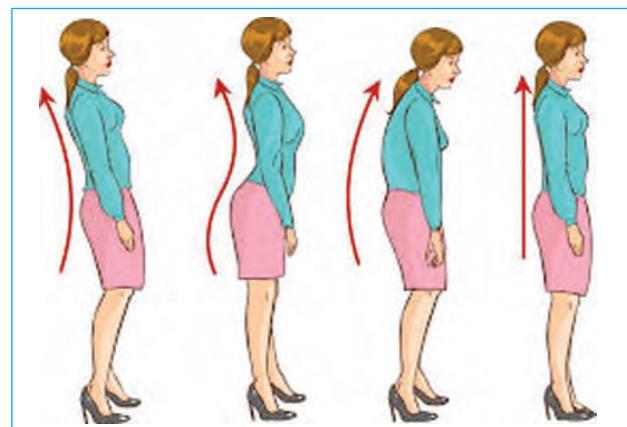


Fig. 4.7 Maintaining good posture is necessary to avoid fatigue

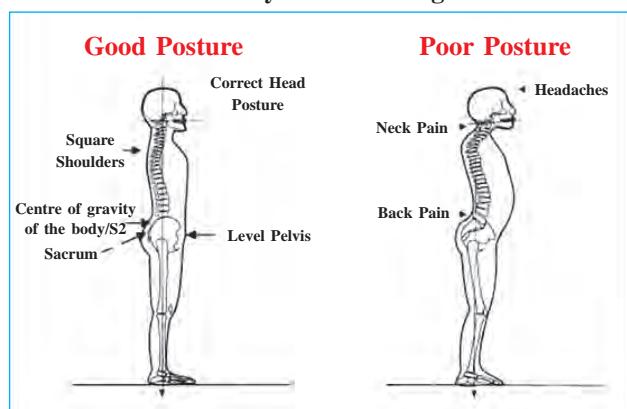


Fig. 4.8 Good posture lessen the fatigue

- **Psychological fatigue :** Many of us experience such type of fatigue in our day to day life. According to **Howard Bartley** psychological fatigue is simply one form of inadequacy to meet the demands the person recognizes. It may occur due to lack of knowledge, skills and capability to perform any type of work. This type of fatigue reduces the capacity of an individual and thus the output.

There are two types of psychological fatigue :

- 1. Boredom fatigue :** If a person dislikes the work or work is monotonous and repetitive in nature he desires to stop the work. The person feels unsatisfied and restless. Boredom may arise from stereotype nature of job, negative attitude towards work, person's habits, dislikes, unsatisfactory working conditions etc. In such conditions work will be interrupted and disliked which lead to boredom fatigue.
- 2. Frustration Fatigue :** When a person is not able to achieve the goals he/she sets or his/her plans fail to work or he/she is a failure to achieve better results, it leads to frustration. Poor planning, mental tensions or pressure of completing work in time, non cooperative atmosphere while working, lack of skill, inability to satisfy the demands, worry and tensions etc. can cause this type of fatigue. Lack of appreciation and motivation may also increase such type of fatigue.

- **Symptoms of psychological fatigue :** Psychological fatigue can be easily recognized by some symptoms which are as follows :



Fig. 4.9 Symptoms of psychological fatigue

- **Measures to relieve psychological fatigue:** It is necessary to overcome and manage the psychological fatigue in order to get better results. There are some measures to relieve such type of fatigue.

➤ **Motivation :** It plays an important role in reliving fatigue. When the person dislikes the job or is a failure in his/her works, he/she can be encouraged by providing motivation. High motivation makes more mental energy available for the particular task where as less motivation releases less energy. Thus, it can be said that motivation plays an important role in reliving the fatigue.

➤ **Develop working skills :** According to Johnson, a skill means the ability to execute a pattern of behavioural elements in proper relation to a certain environment. Skills in any work are necessary to improve the performance of work. Acquiring skills in performing the activity makes easy and smooth performance of work and achievement of the set goals.

➤ **Creating interest in job :** Interest in any activity enhances the job performance. It can be achieved by gaining knowledge regarding the particular work. Interest

reduces the energy consumption and reduces the fatigue too. Interest can be created in any activity by using variety of ideas.

- **Setting immediate goals :** Dividing the work in small steps lessens monotony in the work and makes it easy to achieve the short term goals. If small steps/goals are achieved it gives satisfaction to the worker. Achieving intermediate goals ultimately helps in reaching the final goal and thus helps in relieving the fatigue.
- **Change in routine time :** Routine activity in home making makes the home makers mentally fatigued. Change in daily routine pattern helps to avoid fatigue. For example, going out for shopping or recreational activity, or doing the work of his/her interest such as singing or painting will make a complete change in the routine. It is needed to avoid fatigue and speed up the remaining activity.

4.4 Management Process Applied to Human Energy :

The steps in management process planning, controlling and evaluation are applicable to human energy management. For effective use of energy, individual needs to plan, control and evaluate the daily work.

1. **Planning :** This is the first step in management process. It involves making the activity plans and implementing them. A person should plan the daily routine activities as per energy demands, ability to work and effects of fatigue arising after performing the activities. Planning

is also essential to conserve the energy and balance the energy expenditure pattern. Management of energy involves time management because time and energy are inseparable. In other words, we can say that they are closely related. Here, planning is needed to make activity plan as per the time available, energy cost for different activities and rest periods to avoid fatigue. The main aim is to reduce the amount of energy to be used.

2. **Controlling :** Controlling is the process of putting the plan in actions. Knowledge of proper and simple working methods in relation to energy consumption as well as clear instructions is needed in order to achieve the desired results. Motivation while working gives energy to the worker while carrying out the activity plans and controls the fatigue. Skills developed for particular work improve the quality of work as well as make it easier to complete the task in the given time and energy.

3. **Evaluation :** Evaluation is checking the work for its effectiveness. It is a measure by which success or failure of plans can be evaluated. Learning self evaluation for the use of energy will help to improve the future plans. So, after completing any activity it is necessary to evaluate the work for energy used for activity. One can ask some questions to evaluate the success in utilizing the energy.

Thus, application of management process helps in managing and conserving energy.

Can You Recall ?

- Energy is the ability of person to do the mental and physical work.
- The amount of energy required for various activity varies from person to person and mostly depends upon the type of work.

- Performing any type of activity requires several types of efforts. Those are mental, Visual, manual, torsal and pedal efforts.
 - Energy required for doing any task is called energy cost. On the basis of energy cost, household activities are classified as light, moderate and heavy work.
 - Fatigue means tiredness or broadness arrived after particular work. There are two types of fatigues-Physiological and psychological fatigue.
 - Use of proper body posture, maintaining
- rest periods, recreation, change of work and having balanced diet are measures to relieve the physiological fatigue.
- Motivation while working, developing skills, creating interest in job and setting short term goals are some measures to relieve from psychological fatigue.
 - For effective use of energy there is a need to person need to plan, control and evaluate the work.
 - Ultimate goal of energy management is to conserve the energy.

Exercises

• Objective questions :

1) Multiple choice questions :

1. Energy means ability of a person to do _____
 - a) physical work
 - b) psychological work
 - c) mental work
 - d) physical and mental work
2. It is easy to measure time and money, but it is difficult to measure energy without _____
 - a) special equipment
 - b) formulae
 - c) observations
 - d) calculations
3. If the work is done with _____ speed, energy cost will be Very high.
 - a) less
 - b) more
 - c) medium
 - d) very high

4. _____ is certain amount of energy required for maintaining natural body process.

- a) Metabolism
- b) Resting metabolism
- c) Work metabolism
- d) Any other

5. Heavy work demands _____ additional energy than the resting level.

- a) below 50%
- b) below 100%
- c) 150-200%
- d) above 200%

2. Identify whether the following statements are True or False :

1. During energy management fatigue should not be taken in to consideration
2. Energy is the basic requirement of man for the maintenance of life growth and physical output
3. Unit of energy is kilo gram or gram

4. Energy is also measured in terms of oxygen consumption by body per minute.
5. The energy required for performing any tasks is called energy management.

• **Short Answer questions :**

1. Define the terms :

1. Energy
2. Energy cost
3. Fatigue
4. Energy management

2. Differentiate between the following :

1. Physiological fatigue and psychological fatigue
2. Light work and heavy work
3. Manual efforts and pedal efforts
4. Boredom fatigue and frustration fatigue

3. Write short notes :

1. Types of efforts
2. Types of fatigue
3. Controlling fatigue
4. Energy demands during different stages of life cycles
5. Causes of fatigue

Project/Assignment :

- Identify the common fatigue situations faced by you and your family members.
- Recognise your mental fatigue situation and suggest remedies for it.

Related Activity :

- Write down the reasons of fatigue after performing the activities in a day by you.



5. WORK SIMPLIFICATION

- 5.1 Meaning and Definition
- 5.2 Importance of Work Simplification
- 5.3 Mundel's Classes of Change
- 5.4 Techniques of Work Simplification
- 5.5 Application of Mundel's Classes to Household Activities

Let us discuss about Work Simplification :

Majority of household tasks are tedious, monotonous, time consuming and require patience and various types of skills. It is observed that every individual is trying to conserve energy and time while doing such work. Hence, it becomes necessary to know how to simplify the work by acquiring knowledge of work simplification. If the methods of work performance are systematic, necessary equipment is efficient and the work environment is suitable then work can be simplified. Work simplification means use of simple and easy method of working. To accomplish maximum work within given time and energy or spending minimum time or energy, to accomplish both, a given amount of work, maintaining the same standard or quality of work, are the main principles of work simplification.

5.1 Meaning and Definition :

Nickell and Dorsey defined Work simplification as “conscious seeking of the simplest, easiest and quickest method of doing work”. In other words Work Simplification is defined as technique of accomplishing a task by using the least amount of time and energy.

According to Gross and Crandall, “Work Simplification is accomplishing more work with given amount of time and energy or reducing the amount of either or both to accomplish a given amount of work”.

- Nodeller has defined work simplification as follows :

“Work simplification is the systematic procedure for analysis of work to-

- a. Eliminate unnecessary work
- b. Arrange the remaining work in the best order possible
- c. Standardize the proper work methods
- d. Establish accurate time-standards.”

According to Gilbreth, Thomas and Clymerthe term work simplification is a commonsense approach to make-work easier. Any type of work can be simplified by applying scientific management of time and energy.

5.2 Importance of Work Simplification :

Many scientists have done time and motion studies in the industrial field. It is revealed from these studies that some-times unnecessary motions are made while working and extra time and energy is spent for those motions. If methods of work are improved by reducing unnecessary motions while working, saving of time and energy is possible. At the same time there is an increase in production. The experience is similar in household work. Hence different experiments were conducted to find out new methods of work to reduce fatigue. Conducive environment, efficient equipment and simple, easy, and rhythmic work methods can reduce expenditure of time as well as energy.

Work simplification applied in household work helps in many ways :

1. It minimizes work time by eliminating unnecessary movements and by adding more effective motions.
2. It reduces energy expenditure by reducing motions in work.
3. Individual does not get tired, as the working method is simple, easy and more trouble-free.
4. More work can be done in given time and energy as muscles involved in a particular work are systematically and efficiently used.
5. The work output is more, and constant working is possible because of evaluation and elimination of strenuous body posture.
6. It helps to inculcate time consciousness in the worker.
7. Motion-mindedness is created in the worker.
8. It reduces frustration resulting from lack of effectiveness in work performance.
9. Worker learns easier working methods of a specific task.
10. Worker develops the habit of careful observation and evaluation of own working method.

5.3 Mundel's Classes of Change :

The work simplification studies of household tasks have shown that improvement in work methods is possible, and "best work methods" can be developed for different households. The improvement is possible by changing old habits, which is not an easy and quick process; it requires intense desire and attitude for change.

Do You Know ?

The concept of classes of change was stated by **Dr. Marvin Mundel** at Purdue University in 1940. Hence these changes are known as **Mundel's Classes of Change**.

Dr. Marvin Mundel has classified motions

into five levels and shown how without actual laboratory procedure, improvement can be made on the job through a careful analysis of what is being done. The classes or types are given names according to the place where we make the changes.

Mundel has classified these changes into following types :

1. Changes in body position and motion
2. Changes in work arrangement and equipment
3. Change in production sequence.
4. Change in finished product.
5. Change in raw material.

1. Changes in body position and motions :

With changes carried out in body posture and motions, time and energy can be saved. The worker should arrange the work place so that most of his/her body is resting while both hands work rhythmically from right to left. One should avoid walking more while working. According to Goetz, Eldena, Sarah and Fitzsimmons, "classical work simplification is based on motion economy, which helps in reduction of time for household task". To apply the changes in body position and motions while performing tasks, one can follows principles of motion economy for better and effective result.

The important Principles of Motion Economy are as follows :

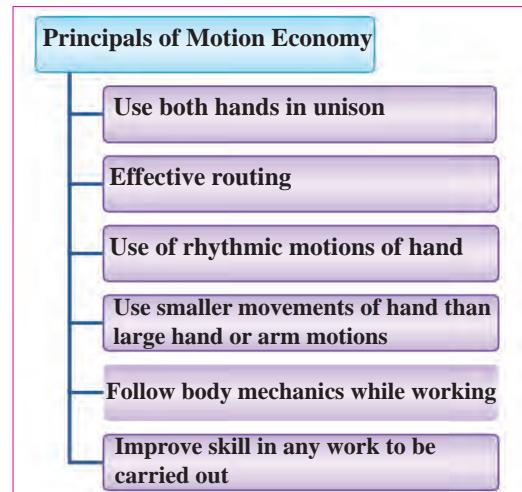
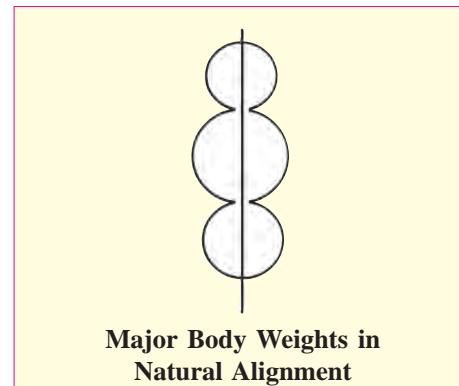


Fig. 5.1 Principles of Motion Economy

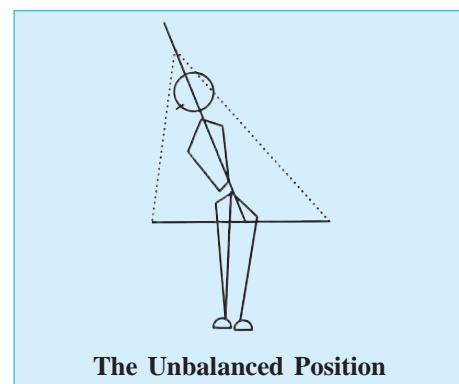
- **Use both hands in unison :** We do not think that we can work by using the left hand because we are habituated to work by using the right hand. But if the right hand is put to more work, after some time its efficiency is reduced. Hence both hands are to be used wherever possible for example-lifting a bag of articles, drying clothes etc.
- **Effective routing :** While performing any task we must arrange the work centers in such a way that one has to walk through the shortest paths for the work and use them, so that walking is reduced and energy is saved. Plan of work should be made ahead of time to reduce total distance walked during the job.
- **Use of rhythmic motions of hand :** When one type of action is done repetitively, that action gets speed. It is called rhythm. Gross and Crandall defined "Rhythm as a muscular performance and with repetition of movements at the same tempo". The work is done quickly due to rhythm because actions done one after another do not require impulse every time. In repetitive jobs like dish washing or mopping the floor, rhythmic motions of hand should be used. While cleaning utensils it becomes easy to clean one type of utensils at a time such as collecting and cleaning all dishes or glasses in continuity.
- **Use smaller movements of hand than large hand or arm motions :** By using smaller movements of hand than large hand motions or arm motions, worker's energy is saved. Similarly, using smooth movements than jerky ones makes the work easier.
- **Use of body mechanics :** If the worker follows principles of body mechanics, the energy requirement for particular task can be reduced and work output can be increased.

i) **Keeping body parts in alignment :** When various body parts are correctly positioned, i.e. each centered over the base of support, it results into stability in standing as well as in sitting positions. When any part gets out of line, muscular effort is required to maintain body balance in addition to whatever work the body is doing thus resulting into strain.



Major Body Weights in Natural Alignment

Fig. 5.2 (a) Body Alignment-Natural



The Unbalanced Position

Fig. 5.2 (b) Body Alignment-Unbalanced

ii) **Using muscles effectively :** Effective use of muscles is important in doing any household task. Sweeping the floor and lifting objects from the floor by back bending is strenuous on the backbone. Instead of bending to sweep, one can use a long-handled broom and do the work by standing erect and in a stable posture. One can substitute leg muscles for back muscles when lifting weights or objects from the floor. One can use the bending posture by bending at knee and thigh

joints and using the strong muscles of legs.

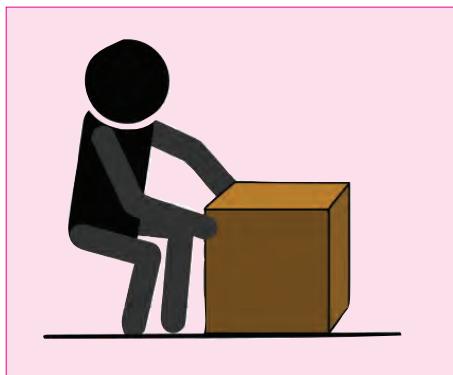


Fig. 5.3 (a) Good Way of Lifting Object



Fig. 5.3 (b) Bad Way of Lifting Object

- iii) **Consider Centre of gravity :** Considering the centre of gravity is of importance in lifting, supporting or carrying a load and reaching to get an object. It is desirable to keep the load close to the body. As far as possible keep the centre of the weight of the object through the centre of the body and avoid twisting the body. The custom of carrying any load on the back is an example of keeping the load close to body.

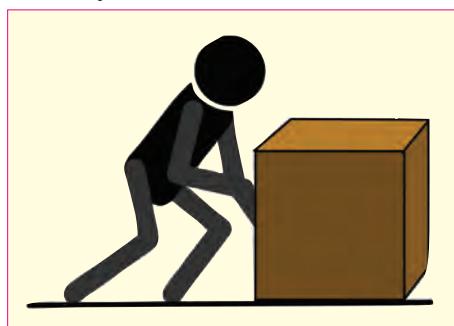


Fig. 5.4 (a) Good Way of Pushing Object

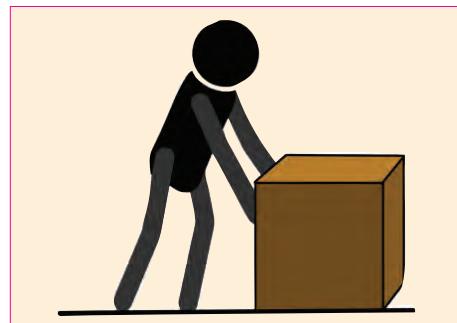


Fig. 5.4 (b) Bad Way of Pushing Object

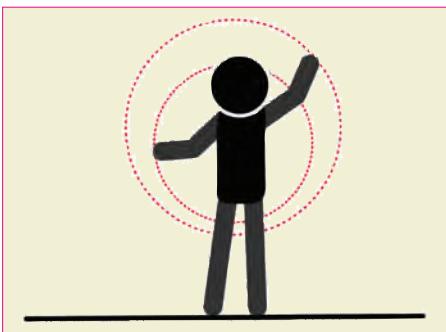
- iv) **Skill in work :** Skill is defined as "familiar knowledge" which is combined in practical application to work performance. It is essential to develop skill in carrying out the household chores, because it helps in eliminating extra motions. These skills can be learnt by observation, sharing the responsibilities with other workers in the family, and getting familiar with the work. When confronted with a task, trial and error method is used haphazardly by many of us. These methods are many times ineffective and result into many awkward motions. When the movements for any job fall into a smooth rhythm, the efficiency of the home-maker improves.

2. Changes in work arrangement and equipment :

This includes re-arranging or modifying kitchen equipment, organizing storage space; ensuring that the height and width of work spaces is suitable to the user; adding new, modern and improved equipment and tools in the home etc. Before, buying any equipment, its utility must be weighed against cost and the ease with which it can be maintained. In addition to acquiring the labour-saving devices, it is necessary that devices should be placed within reach and near at hand. Only then it can be used regularly and comfortably.



**Fig. 5.5 (a) Horizontal Plane/
Sitting Posture**



**Fig. 5.5 (b) Vertical Plane/
Standing Posture**

Fig. 5.5 Comfortable Working Area



Fig. 5.6 : Arrangement of Work Place

Always Remember :

- The height of the work surface must be adapted to suit the worker.
- Storage areas in the kitchen and elsewhere are often capable of being re-organized to help the housework to proceed better.
- Items needed often should be placed within reach and at accessible place.
- Grouping of material required for a particular job helps to save worker's energy.

3) Change in production sequence : Work done haphazardly creates confusion and causes delays. As there are number of activities to be done in the home, such as cooking, getting children ready for school, packing lunch boxes, bed making etc., each activity should be followed up in a sequence. When there are many activities to be done in a shorter time one must also think of combining or dovetailing of tasks. Finding the best order of work or the easier method of doing a task and putting it into practice saves both steps and motions. For example, in cleaning the house, continuation of each process of sweeping, dusting, and mopping floor throughout the house helps to save time in handling of tools, develops rhythm in work, and creates faster flow of work.

4) Change in finished product : Most families have certain preconceived standards for housekeeping. Habits are deeply ingrained and sometimes difficult to change. Careful thinking on the part of the homemaker and his/her ways of persuading the family to accept new ideas can permit them to change some of their ways. The worker might have to change some of her or his standards or expectations about how the finished product should be in appearance, taste, shape, size etc. For example, if the finished product without any fancy decoration is accepted by the family then it makes the task simplified.

5) Change in raw material : This change refers to the raw ingredients used in a product keeping the final product same. For example, using paper napkins in place of cloth napkins saves the efforts of cleaning. Using ready to use mixes available in market-for certain recipes, or even buying ready-made products such as spices, sprouted beans and pulses, or frozen foods and clothes made of new fibers may be easier to maintain than traditional materials.

A combination of these five types of changes, careful and imaginative thinking, willingness to modify existing work habits and ability to get the support of the family will go a long way towards making the tasks of the worker easier, quicker and more satisfying.

5.4 Techniques of Work Simplification :

Work simplification is primarily based on motion and time study. Improvement in work methods of an individual is possible through observing, recording and analysing various motions of worker while working. There are variety of techniques which could be used to study motion and time required for completion of task. These techniques are classified in two major categories :

Formal Techniques and Informal Techniques.

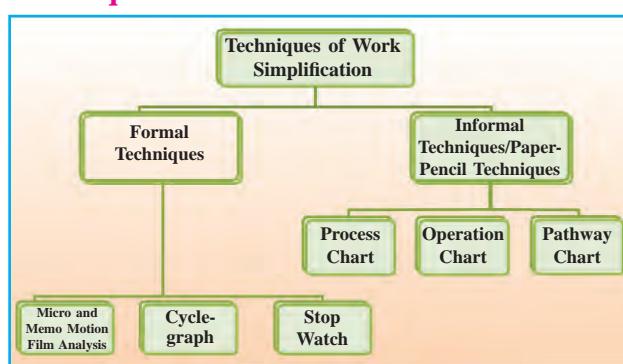


Fig. 5.6 Techniques of Work Simplification

➤ **Formal Techniques :** Formal Techniques require specific equipment and devices. These techniques are more accurate, effective and scientific in way of studying

motions. These techniques include Micro Motion and Memo Motion Film Analysis, Cycle-graph, and Stop Watch.

- **Micro Motion and Memo Motion Film Analysis :** These two techniques are primarily used for detail and accurate analysis of the task. The tasks which can be easily filmed are analyzed by these techniques. In this, motion picture or video film of task is prepared under normal working condition. This recording of work is further analyzed by an expert person. According to needs, it can be rechecked by multiple persons also. These techniques are useful in analyzing motions of hand or other parts of body. These techniques are very expensive and generally not used to study household task.

- **Cycle-graph :** It is a photographic device. Cycle graph is used to register the pathway of light projected by a small electric bulb attached to some part of the body. The graph of the task plotted by device shows the pattern of movements, like smooth and rhythmic or non-rhythmic motions. For example; while ironing, small electric bulb is attached to hand to register the pathway of the activity. This technique is effective in studying ways of reduction in motions and method of improvement in work.

- **Stop Watch :** Stop watch is used to record the time needed to complete the specific task. It can be used with other techniques also. This technique is effective in creating time awareness among worker.

➤ **Informal Techniques :** These simple techniques of work simplification are known as Paper Pencil techniques. According to its name, simple paper and pencil is used to

record the motions while performing activity. These are commonly used to study various household tasks. Some of these techniques are Pathway Chart, Process Chart, and Operation Chart.

Do you know ?

Frakn B. Gibreth and Lillian M. Gilbreth, American Industrial Psychologist, invented the script of motion and time study by using signs, symbols and abbreviations. They have termed these as "*Therblig*". It is a reversal of their name *Gilbreth*.

- **Pathway Chart :** It is also known as pin and thread/string method. Floor plan of work place drawn in scale and proportion, soft board, pins, and thread are required to prepare a pathway chart. Initially, floor plan is placed on soft board and pins are fixed on the activity centres where worker turns while working. The movements or path of the workers travelled during work are recorded by winding thread around the specific pins. After completion of the task, thread is removed from the floor plan and distance travelled by the worker is measured from the thread used. Further, this process is analysed, revised floor plan is prepared by adopting suggestions and improved pathway chart is prepared. To draw the conclusion of study, length of the thread is compared.

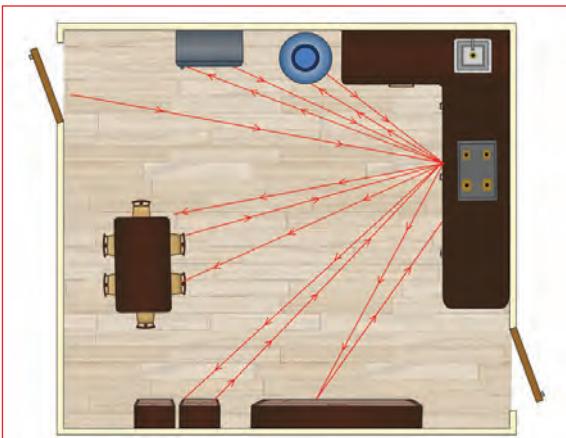


Fig. 5.7 (a) Pathway Chart - Original

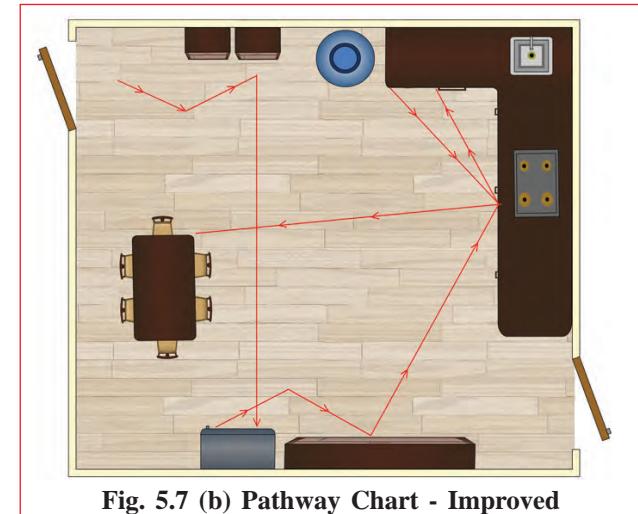


Fig. 5.7 (b) Pathway Chart - Improved

- **Process Chart :** It is a step by step description of method of work used by worker. It grossly analyses the movements of worker, activity in general and is useful in identifying unnecessary movements.

Following symbols are used for preparation of process chart.

Sr. No.	Symbols	Meaning	Description of symbols
1.	○	Small Circle	Movement from one place to another place
2.	○○	Big Circle	Operation
3.	□	Square	Quality Inspection with eyes
4.	△	Triangle	Delay
5.	○○	Circle in circle	Movement and operations simultaneously

Fig. 5.8 Symbols of Process Chart

At least two persons are required to prepare the process chart, one for doing the work and another one to observe and note down the same. Analysis of work is done by counting

repetitions of each symbol which is further used for identification of errors in movement and specific points where improvement is needed. One can effectively use this chart for improvement in work process by avoiding unnecessary trips from one place to another and delays in working.

- **Operation Chart :** Operation chart is used to study hand movements only. More detailed study of right and left hand operations is possible by the use of this chart. Three symbols are used in this chart-small circle for hand movements, large circle denotes movement of fingers and hand tougher and triangle indicates idleness of both fingers and hand. Minimum three persons are required to prepare the operation chart; one for observing right hand operations, other for observing left hand operations and the worker who performs task. Two separate charts are used to study the right and left hand movements.

Following figure shows the meaning and description of symbols used in operation chart.

Sr. No.	Symbols	Meaning	Description of symbols
1.	○	Small Circle	Movement of Hand
2.	○○	Big Circle	Movement of fingers and hand tougher
3.	△	Triangle	Idleness of both fingers and hand

Fig. 5.9 Symbols of Operation Chart

5.5 Application of Mundel's Classes of Change in Household Activities :

- a. **Drying clothes :** While drying clothes following points must be kept in mind:
 - The rod or rope used for drying clothes should be at proper height. If it is too high it will create fatigue for shoulder

muscles. If it is too low bending at the back might become necessary and can cause back pain.

- If a stand is used for activity, it should be of proper height.
- The clothes to be dried should be put in a bucket and this bucket should be placed on a stool of proper height.

b. **Sweeping the floor :** While sweeping the floor the following points must be kept in mind:

- A thick and long broom should be used to cover more area in one stroke.
- A part of the floor should be thoroughly cleaned and only once.
- The movements involved should be smooth, rhythmic and minimum.
- The arrangement of furniture should be done thoughtfully so as to cause no obstruction in sweeping.

c. **Mopping the floor :** While mopping the floor following points must be kept in mind:

- A long handled mop should be used to avoid bending at the back.
- The mop should be of good quality-either of sponge or of good absorbent material.
- While mopping the floor, the motions should be rhythmic.

d. **Cutting vegetables :** While cutting or chopping vegetables following points must be kept in mind :

- Use a good quality knife with a sharp and sturdy blades.
- The knife should have a good handle for giving a good grip to hold it.
- Use a good quality chopping board.
- Place it near the preparation counter in the kitchen which is the first place of its use.

Use your brain :

Find out the other household tasks, which need improvement and apply Mundel's classes of change.

These are few examples of application of Mundel's classes of change, though there are many more which can be experienced in daily life. This will certainly help the individual in conservation of his/her energy and time due to simplification of the tasks.

Can You Recall ?

- Individuals have lot of responsibilities within and outside the home; hence they must carefully study how they can improve their methods of work.
- Work simplification is the means of work improvement.
- Work simplification is achieved through application of scientific management.
- It is defined as "conscious seeking of the simplest, easiest and quickest method of doing work".
- Work simplification is possible by analyzing the existing methods of work, by using the five classes of change given by Dr. Marvin Mundel.
- Each class of change suggests specific improvements in order to increase the

efficiency of work and that of the worker.

These classes suggest-

- 1. change in body positions and motions,
 - 2. change in working arrangements and equipment,
 - 3. change in production sequence,
 - 4. change in finished product,
 - 5. change in raw materials.
- Formal and Informal Techniques of work simplification should be used to analyse and improve the working methods.
 - If these changes are made in household work, it requires less time and energy and one does not feel tired.
 - Work simplification can help to improve standard and output of work.

Exercises

• Objective questions :

1) Multiple choice questions :

1. Work simplification means utilization of the least amount of _____ and energy.
a) equipment b) time
c) money d) devices
2. Conducive environment, efficient equipment and simple, easy and _____ work methods can reduce expenditure of time as well as energy.
a) routine b) standard
c) regular d) rhythmic

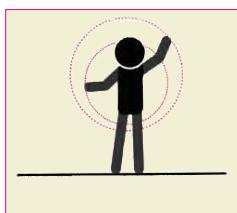
3. Script of motion and time study is termed as _____
a) Operation Chart b) Therblig
c) Gilbreth d) Delmun
4. The concept of classes of change was stated by Dr. Marvin _____ at Purdue University in 1940.
a) Mundel b) Markar
c) Muillar d) Monto
5. Operation chart is used to study _____ movements only.
a) hand b) leg
c) finger d) body

2) Identify whether the following statements are true or false :

1. The custom of carrying any load on the back is an example of considering center of gravity.
2. Work simplification cannot improve standard and output of work.
3. Use of mop having long handle keeps body in alignment.
4. Floor plan of work place is essential in preparation of pathway chart.
5. Use of instant mixes in cooking is an example of change in the finished product.
6. While hanging clothes on a rope for drying, keeping bucket on a stool instead of on floor is advisable.

3) Identify the figures :

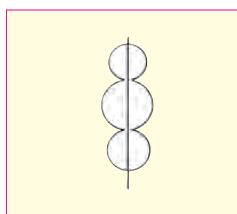
1.



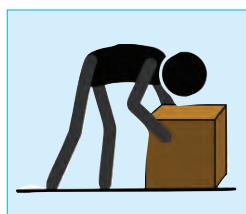
2.



3.



4.



4) Complete the table :

1.

Symbols	Meaning	Description of symbols
○		
	Big Circle	
△		Idleness of both fingers and hand

2.

Symbols	Meaning	Description of symbols
○	Small Circle	
○○		Operation
	Square	
△	Triangle	
○●		Movement and operations simultaneously

• Short Answer questions :

1. Define the terms :

1. Work Simplification

2. Write short notes :

1. Body posture while working.
2. Changes in work arrangement and equipment.
3. Rhythm in work.
4. Use of both hands while working.
5. Formal Techniques of work simplification
6. Operation Chart
7. Process Chart

3. Answer the following in brief :

1. Explain the principles of 'body mechanics'.
2. Write the importance of work simplification.
3. Explain the principles of 'motion economy'.
4. Write the formal techniques of work simplification.

• Long answer questions :

1. Define work simplification and explain its importance.

2. Name the classes of change and Illustrate any two classes.
3. List out the most important points one must remember in arranging a work center from the point of view of work simplification.
4. Describe pathway and process chart.
5. Classify the techniques of work simplification and explain the operation chart.

Project/Assignment :

1. Observe and list out the right and wrong body posture while performing activity.

Project/Related Activities :

1. Prepare pathway chart of any household activity.



6. CONSUMER AWARENESS

- 6.1 Meaning and Definition of Consumer
- 6.2 Responsibilities of Consumer
- 6.3 Problems faced by Consumer
- 6.4 Rights of Consumer
- 6.5 Guidelines for Wise Purchase
- 6.6 Consumer Protection

6.1 Meaning and Definition of Consumer :

It is an old saying that consumer is the king because he is the person on whose decision; demand of any product or service depends. Thus, consumer plays a vital role in shaping the decision of the market/industry regarding the conduct they offer. People get into different profession and or side business either by choice or by circumstances, but everyone, in any case is a consumer. Consumer is the one who consumes goods and services available in the market.

“A consumer is a person who buys any goods or hires any service for valuable consideration. Person, who avails goods or services exclusively for the purpose of sustaining his livelihood is called a consumer”

The term does not include a person who obtains goods or services for resale or for any commercial purpose.

6.2 Responsibilities of Consumer :

Consumer should act rationally. A consumer should keep in mind the following responsibilities while purchasing, using and consuming goods and services :

➤ Before Buying :

- It is a responsibility of a consumer to plan in advance before buying.
- Consumer must enquire about past performance of product/services.

- Consumer must enquire about reputation and past performance of producer/seller/service provider.
- Consumer should avoid hasty and impulsive decisions, regarding purchase in sales and schemes.

➤ While Buying :

- It is the responsibility of a consumer to be more alert and to question more about prices, quantity and quality of goods bought and services used.
- Consumer should ask about demonstration regarding the operation of the product/service.
- Consumer should buy standardized goods as they provide quality assurance. For example, buy goods with certification mark such as, ISI mark on electrical goods, FPO mark on food products and Hallmark on jewellery.
- Consumer should read labels carefully so as to get information about prices, net weight, and manufacturing and expiry date of product.
- Consumer should assert himself/herself to get a fair deal.
- Consumer should read and know about the contents of guarantee / warranty

card and obtain it and getting it signed by a dealer

- Consumer should ask about a receipt/bill while buying the product and also check those bills during transaction.

➤ **After Buying :**

- Consumer should use products as per instruction given in user manual.
- Consumer should keep bills and guarantee card safe.
- Consumer should learn about the risks associated with products and services, follow manual instructions and use products safely.
- Consumer should together join hands and raise voice to promote and protect consumer interest.
- Consumer should file a complaint in an appropriate consumer forum in case of defect in product/service.
- Consumer societies should be formed as it plays an active part in educating consumers and safeguarding their interests.

➤ **Sustainable Consumption :**

- Every consumer should practice appropriate method of consumption in order to sustain the resources for future.
- Consumer should consume only what one needs.
- Consumer should not waste products and resources.
- Consumer should avoid using the products that create pollution such as plastics, chemicals. Instead of that everyone should use natural biodegradable products such as cloth bags, jute bags, paper bags etc.

Remember the 3R's of a dutiful consumer :

- **Reduce** : Consume only what you need, if possible reduce consumption of water, electricity, fuel and other non-renewable resources.
- **Reuse** : If a product can serve you for a longer period, use it instead of buying a new one.
- **Recycle** : Don't litter the environment, recycle degradable or recyclable materials through proper channel.

Source : www.consumer.tn.gov.in

6.3 Problems Faced by consumer :

Consumers face number of problems in dealing with traders and manufacturers. Some of the main problems are listed as follow :

- **Adulteration of goods** : Adulteration of goods is one of the major problems faced by consumers in day to day purchases. Adulteration of food substances by traders through addition of substances which are injurious to health, for example- small pebbles in rice, starch in milk and cheese, plastic pieces in sugar and used tea leaves are generally sold in markets. Consumers also face adulteration problems for goods like clothes, medicines, drugs, cosmetics, household equipments etc.
- **Supply of duplicate and defective goods** : Consumers often get cheated by traders due to supply of duplicate and defective goods. Many unethical traders illegally use popular brand names and sell their products, also many traders sell defective pieces of goods during sales in order to fool the customer.
- **Variation in prices** : The consumer has to pay different prices for same item at different places. Traders use deceptive or incorrect rates on products and sell goods and items above MRP (Minimum retail price). Many showrooms of big companies add prices of maintenance

of showroom, additional taxes and free home delivery charges at product cost which is hidden at expense of customer.

- **Wrong weights and measures :** Consumers are cheated by traders by not using standard weights and measurements according to Standard Weights and Measurements Act 1976. Under weight stones are used in place of standard weights, boxes, bottles or measuring glass of containers having shape that would give less quantity. Even in shopping malls, customers are cheated with wrong weights pasted on packets.
- **Misleading Advertisements :** Everyday new products are launched. Normally manufacturers give information about their products via advertisement. After purchase, consumer realizes that it doesn't match with what he/she has seen in the advertisement. Businessmen make false claim of products via advertisements. For instance advertisement of Beauty products, health drinks etc.
- **Sale of Substandard goods :** In place of standard goods, sub standard goods are sold at higher price. For example, selling of furniture made of inferior quality wood, substandard ingredients in food items, use of sub-standard bulbs and electrical appliances.
- **Artificial Scarcity :** Artificial scarcity is faced by lot of consumers especially in festive season. Essential commodities such as edible oil, potatoes, rice, wheat, sugar, pulses etc are not available in market. Customers have to pay a higher price though the rates of these substances are low or has to do without these items. When there is a possibility of rise of price in these substances, these substances get vanished from markets. When there is a rise in the price of these substances these commodities suddenly

appear in the market.

- **Poor Quality of Sales Personnel :** Many times sales personnel have not been given appropriate training by their employers as they fail to give proper information about the products. Sometimes salesmen exaggerate about the product so much that it lures the customer to buy the product.
- **Online Shopping Problems :** Online shopping is one of the fastest growing markets in India but we, as Indian consumer face many issues. Consumer face issue related to product quality most of the time. It is the most common problem faced by customers as there is no guarantee of product quality. Most of the time online products do not get delivered within the stipulated time. Consumers have to wait for days before they finally receive their product. Consumers become victim to online payment issues. Payment failures are due to errors in banking websites, hacking of online banking accounts, issues with one time password (OTP), payment gateway error have now become common issues during online payment. Online websites offer vague stipulations which leave consumers confused about refund and return of products.

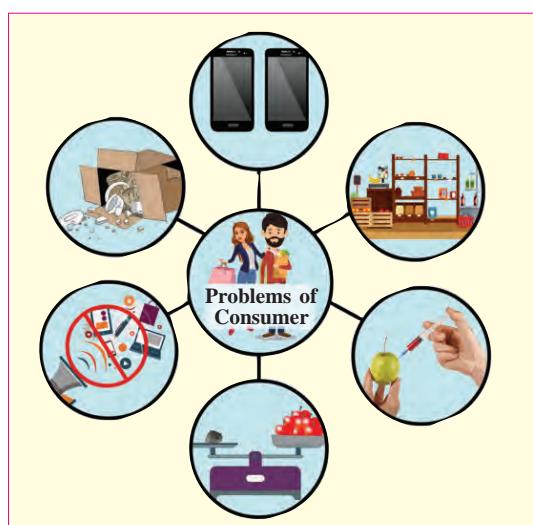


Fig. 6.1 Problems faced by consumer

6.4 Rights of Consumer :

It is very essential for the consumer to know one's basic rights as well as about the legal framework and procedures that follow with the infringement of one's right.

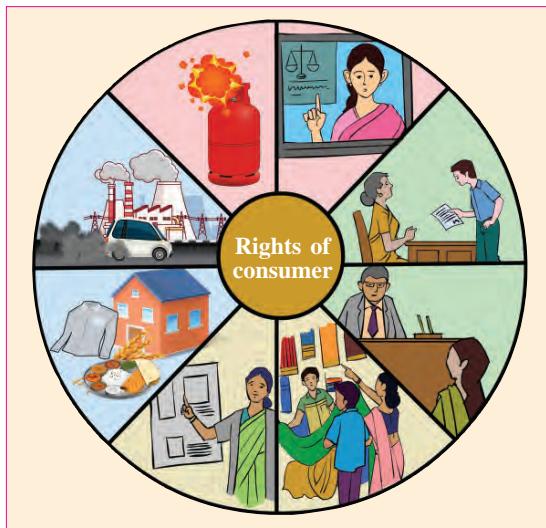


Fig. 6.2 Rights of consumer

- **Right to Safety :** This right talks about the right to be protected against the marketing of goods, products or services, which are hazardous to life and property. The purchased goods and services availed of should not only meet their immediate needs, but also fulfil long term interest. Before purchasing, consumer should insist on the quality of the products as well as on the guarantee of the product and services. They should preferably purchase certified products such as ISI, AGMARK, etc. For example substandard electric appliances might cause serious injuries.
- **Right to be Informed :** The right to be informed about the quality, quantity, potency, purity, standard and price of goods, products or services, as the case may be, so as to protect the consumer against unfair trade practices. Consumer should insist on getting all the information about the product or service before making a choice or a decision. This will

enable him to act wisely and responsibly and also enable him to resist from falling prey to high pressure selling techniques. For example, the manufacturers provide detail information about the contents of the product, quantity, date of manufacturing, date of expiry, maximum retail price on the label and package of the product. Such information helps the consumers in their buying decisions.

- **Right to Choose :** This is the right to be assured, wherever possible of access to variety of goods, products or services at Competitive price. In case of monopolies, like railways, electric supply etc. it means right to be assured of satisfactory quality and service at a fair price. It also includes right to basic goods and services. This is because unrestricted right of the minority to choose can mean a denial for the majority of its fair share. This right can be better exercised in a competitive market where a variety of goods are available at competitive prices. This implies that the marketers should offer a wide variety of products in terms of quality, brand, prices, size, etc.
- **Right to be Heard :** The right to be heard and to be assured that consumer's interests will receive due consideration at appropriate forum. It also includes right to be represented in various forums formed to consider the consumer welfare. The Consumers should form non-political and non-commercial consumer organizations which can be given representation in various committees formed by the Government and other bodies. Many manufacturers have set up their own consumer service and grievance cells. Many consumer organizations are also working towards this direction and helping consumer in redressal of their grievances

- **Right to Seek Redressal :** This is a right to seek redressal against unfair trade practices or restrictive trade practices or unscrupulous exploitation of consumers. Consumers must make complaint for their genuine grievances. Many a times their complaint may be of small value but its impact on the society as a whole may be very large. They can also take the help of consumer organisations in seeking redressal of their grievances. The Consumer Protection\ Act provides a number of reliefs to the consumers including replacement of product, removal of defect in the product, compensation paid for any loss or injury suffered by the consumer, etc.
- **Right to Consumer Awareness :** Ignorance of consumers, particularly of rural consumers, is mainly responsible for their exploitation. They should know their rights and must exercise them. Only then real consumer protection can be achieved with success. Consumer education may be imparted through school and college curriculum and also consumer awareness campaigns run by both Government and NGO (Non government organization).
- **Right to Healthy Environment :** The right to physical environment will enhance the quality of life. It includes protection against environmental dangers like air, water and noise pollution over which the individual has no control. It acknowledges the need to protect and improve the environment for present and future generations.
- **Right to Basic Needs :** Right to basic needs ensures basic goods and services which guarantee survival. It includes adequate food, clothing, shelter, health, care, education and sanitation to lead a decent life.

6.5 Guidelines for Wise Purchase :

While sellers have all the information, high pressure advertising techniques and various gimmicks are used to lure consumers into their well spread out net. Many consumers are poor and pay heavily due to lack of knowledge, buying habits and general laziness. At present, market is flooded with new and better products and there is a rise in competition, the consumer needs to be wise and aware about various market trends. That is why a consumer needs to have knowledge about different products, their brands and models available. Buying wisely requires intelligence, cautions, effort and energy.

➤ How to buy :

- Plan before buying and buy only useful and affordable things.
- Consumer should read the labels carefully before purchasing a product.
- Think about durability after maintenance and repair services of the product.
- Compare the high priced with low priced articles and feature to feature and if both are even go for the cheaper one.
- While buying, consider safety and comfort of the product.
- Before buying expensive articles, consult as many people as possible who have bought the article.
- Be careful and look out for expiry date, manufacturing date, guarantee and warranty of the product.
- Payment should be made carefully by cash, e-wallet, cheque, credit card or debit card.

➤ When to buy :

- When to buy is an important point of consideration. We get discount during festive season. We also get schemes such as ‘Buy one get one free’, ‘Buy a car with free insurance’. We can buy

products promoting such schemes but as aware consumers we should also look out for hidden costs of item while buying one and getting one free.

- Some manufacturers also give ‘off-season’ discounts such as buying air-cooler in winters, woolen clothes during summers. As aware consumers, one should not blindly avail these discounts.

➤ **From where to buy :**

- It is generally advisable to buy the products from established shops. Consumers should avoid buying products from street hawkers.
- While buying from established shop, consider the reputation of the dealer or the wholesaler or the retailer to ensure quality of the product.
- Purchase from the dealer who provides sales service after buying.
- For perishable items, ensure that it remains fresh until you reach your home.
- Sometimes away from hometown, you may find some products which are attractive and beneficial. Try to find out whether maintenance of such products is available at your home town.

➤ **How much to buy :**

- Always buy the things which are necessary.
- Never buy in bulk, especially food items as they get wasted.
- Avoid impulse buying.
- Money resource is a limited commodity, use it properly.
- Consider resources at your disposal, For example : consider the amount of money and then spend.

➤ **What to buy :**

- It is necessary to understand the standard marks issued by BIS.

- Look out for ISI marks on electrical goods, cement, biscuits, mineral water etc.
- Look out for hallmark on gold and silver jewellery.
- Look for Agmark on agricultural products.
- Look out for ISO and FPO mark on fruits and vegetables.
- Look out for Vegetarian and Non-vegetarian marks on packed food items.
- Look out handloom mark on handloom items and red label star mark on electrical appliances.

❖ **Labels :** Label is a small piece of paper, fabric, plastic, or similar material attached to a product providing detail information about it. It is a significant means of product identification like branding and packaging. It is an informative tag, wrapper or seal attached to a product.

Labelling is an important element as it affects sale and distribution process of a product, which provides clear information about the grade, quantity, price, brand name, features, etc. to the customer. Labelling gives necessary information to the customer to buy product without hesitation.

Functions of label :

- **Identification of product :** Labelling identifies the product or brand easily. It prevents substitution of competitive product.
- **Grading :** Labelling is helpful in grading the product according to measure quality and features.
- **Description :** Labelling helps to describe the product according to quality and features.
- **Product promotion :** Labelling plays a significant role in promotion of the product. Offers such as free brush, free coin attracts the consumers to buy that product.

- **Protect the consumer :** Labelling also protects the consumer from buying adulterated and defective goods from the market and also gives a choice to the consumer to choose his own brand of product.
- **Makes the product attractive :** It helps in promotion of the product via its attractive design. The graphic design of various products gives an aesthetic finish to product and it attracts the consumer to buy the product. It is a source of attraction for consumers too.

➤ **Types of Labels :**

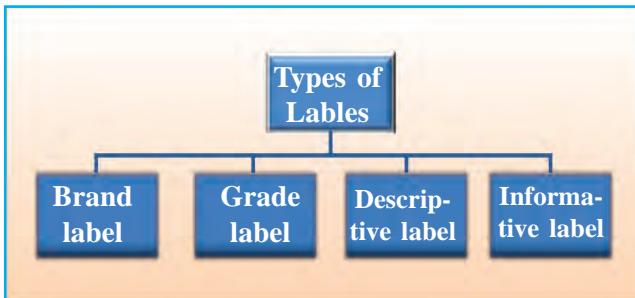


Fig. 6.3 Types of Labels

- **Brand label :** Brand label is a distinctive design or symbol. Trademarks and Brand names fall under this category. Most of the time consumer compares products of various brands while buying. Manufacturers also try to maintain the quality standards of their products to establish their image in the market which leads to a healthy competition. Consumers can identify the manufacturer from the brand and can register complaint if any.
- **Grade label :** A grade label identifies the quality of a product by a letter, number or word which implies a qualitative judgement of relative inferiority or superiority of the product.
- **Descriptive label :** Descriptive label means giving details of the product such as component parts of the products,

chemical analysis, weight size, use of artificial colour, directions for its use etc.

- **Informative Label :** An informative label attempts to help the consumer to make wise selection and care of the product. It gives special instructions or precautions on care and use of products than descriptive label. It may give factual information about the product based on laboratory tests and may include weight of the product, manufacturer's name, date of manufacture and expiry, contents of product etc.

➤ **Certification of label :** Consumers expect certain qualities from the products they purchase. Certification labels ensure that the product fulfils the qualities expected by the consumers. A quality mark gives the consumer a visual and easily identifiable quality assessment tool, originating from a reliable source. Indian Government established the Indian Standards Institute for certification of products. Certification labels such as ISI, Agmark, Woolmark, Handloom mark, Silk mark, Eco mark etc. are used for standardization of various products.

Know Your Standard Quality Marks

Standard Quality Marks	Information
	ISI Mark : ISI is a certification mark scheme operated by Bureau of Indian Standards (BIS), under the provisions of BIS Act, 1986. ISI marks are both mandatory and voluntary. Some of the ISI certification products include cement, electrical appliances, LPG cylinders, batteries, Automobile Accessories, Medical equipments, Chemical Fertilizers, infant foods etc.

Standard Quality Marks	Information	Standard Quality Marks	Information
	<p>Agmark : The Agmark certification is used on agricultural commodities for the benefit of consumers and producers by Director of Marketing and Inspection; an agency of Government of India. The scheme is legally enforced by Agricultural Produce (Grading and marking) Act 1937.</p>		<p>FSSAI (Food Safety and Standards Authority of India): FSSAI is certification mark which signifies that food is hygienic and meets the approved safety and standards set for food items under the Food safety and standards (FSS) Act 2006. Food packets generally contain a 14-digit license number issued by FSSAI along with FSSAI logo in the colour that contrasts with the background.</p>
	<p>Vegetarian and Non-vegetarian marks : As per food safety and Standards (packaging and Labelling) regulations 2011, every package of non-vegetarian food shall bear a symbol which constitutes of brown colour filled circle inside a square with brown outline having sides the double diameter of the circle.</p>		<p>BEE (Bureau of Energy Efficiency) star label mark: BEE star label mark gives a reference regarding energy saving of household electrical appliances and other equipments. In 2006 the Bureau of electrical efficiency (BEE) of ministry of power, Government of India, issued Red star label Mark. It is generally used for Refrigerator, Air conditioner, distribution transformers, induction motors, pump sets etc.</p>
	<p>Every package of vegetarian food shall bear a symbol of green colour filled circle, having a diameter not less than the minimum size specified, inside the square with green outline having size double the diameter of the circle.</p>		
	<p>Hallmark : The hallmark scheme was launched by Bureau of Indian Standards (BIS) on behalf of Government of India for gold jewellery in year 2000 and for silver jewellery in 2005. This scheme is voluntary in nature and consumers should buy gold and silver jewellery with a hallmark on it.</p>		<p>Handloom mark : Handloom mark was introduced by Government of India in order to promote handloom products in domestic and international markets. This scheme covers all handloom fabrics and products made thereof. The mark is generally found in two forms; one for domestic market in which 'handloom' word is written below the logo and the other one for international markets in which 'hand woven in India' is written beneath the logo.</p>

Standard Quality Marks	Information
 WOOLMARK  WOOLMARK BLND  WOOL BLEND	<p>Wool mark : The wool mark logo is owned by Woolmark Company of Australia. Woolmark is used to identify products that contain wool. Products with Woolmark logo are 100 percent pure new wool and have been approved and certified to meet quality specifications and offer natural comfort. It also contains Woolmark blend and wool blend which contains wool and other yarns such as polyester and nylon.</p>
 SILK MARK INDIA <small>Your Assurance of Pure Silk</small>	<p>Silk mark : Silk mark is a quality assurance label for pure silk and in addition serves as a brand for generic promotion of pure silk. It is not a mandatory mark, but it is an advisory mark promoted under the Silk Mark Scheme, backed by Silk Mark organization of India.</p>
	<p>Eco mark : Eco mark is a certification mark issued by Bureau of Indian Standards in 1991, to products conforming to a set of standards aimed at the least impact on ecosystem. The products with eco mark are soaps and detergents, paints, papers, plastics, cosmetics, textiles, batteries, wood substitutes, drugs, food items, pesticides etc.</p>

Use your brain :

Find out the International Certification Marks.

6.6 Consumer Protection :

In the modern marketing scene, an average buyer can be easily misled or cheated. Common consumer is neither knowledgeable nor well informed. He/she needs protection from unscrupulous sellers. Once cheated, a common consumer is not in a position to approach the civil court. The quick, inexpensive and speedy justice to the genuine complaints of the consumers is essential.

Realizing the importance of consumer protection world over, the United Nations adopted guidelines for protection of consumers on April 9, 1985. All countries are expected to take suitable legislative measures. Accordingly, 'Consumer protection act, 1986' was enacted in India with this in mind. This act was specifically designed to protect consumer interests. It is intended to provide justice which is, "less formal, less paperwork, less delay and less expense". The act came into force with effect from 01-07-1987.

Main objectives of consumer protection Act 1986

- To provide better protection of interests to consumers.
- Consumer councils and other authorities are provided for setting the consumer's disputes and other matters.

The Act is intended to protect the following rights of the consumer :

- 1) Right of Protection from marketing of goods and services which are hazardous to life and property.
- 2) Right to be informed about the quality, quantity, purity, standards and price of the goods/services so that consumers are protected from unfair trade practices.
- 3) Right to have access to variety of goods and services at competitive prices.
- 4) Right to be heard and to be assured that consumer interests receive its due consideration.

- 5) Right to stop unfair trade practices, restrictive trade practices and exploitation of consumers.
- 6) Right to consumer education.
- 7) Right to speedy and simple redressal to consumer disputes.

Features of Consumer Protection Act 1986, and filing of complaints-

- Simple formalities
- Advocates not compulsory
- Consumers themselves can conduct cases
- Complaint can be written in English, Hindi or Local language.
- Complaints may be sent even through Registered post.
- Registered Consumer Organization or Government can also file complaint on behalf of consumer.
- Less expensive
- Compensation can be claimed for the loss suffered including mental agony.

The Act envisages setting up of ‘consumer Disputes Redressal Agency’ at District, State and National level.

Redressal Agency Under CPA	Jurisdiction to decide consumer dispute	
	Value of goods/ services and compensation claimed	Appeals against order of
District Forums	less than Rs. 20 lakh	
State Commission	more than Rs. 20 lakh and less than Rs. 1 crore	District Forum
National Commission	more than Rs. 1 crore	State Commission

If the redressal agency is satisfied about the genuineness of the complaint, it can issue one or more of the following directions to the other party.

- 1) To remove the defects pointed by laboratory
- 2) To replace goods with new goods free of defect.
- 3) To return the price of goods or charge of services paid by the complainant
- 4) Compensation for loss or injury suffered by consumer due to negligence of opposite party in addition, punitive damages can also be granted.
- 5) To discontinue the trade practice or the restrictive trade practice or not to repeat them.
- 6) Not to offer the hazardous goods for sale.
- 7) To withdraw the hazardous goods from sale.
- 8) To cease manufacture of hazardous goods and to stop from offering hazardous services.
- 9) To pay any amount (not less than 5% of the value of the defective goods or deficient services provided), to be credited to the consumer Welfare fund or any other organization/person, to be utilized in the prescribed manner.
- 10) To issue corrective advertisement to neutralize the effect of a misleading advertisement.
- 11) To provide for adequate costs to parties.

Can You Recall ?

- A consumer is a person who buys any goods or hires any services for fulfilling own needs.
- Consumer should keep in mind the reasonable level of responsibilities while purchasing, using and consuming goods and services.
- Consumer faces number of problems like adulteration of goods, supply of duplicate and defective goods, variation in prices, faulty weights and measures, misleading advertisements, sale of substandard goods, artificial scarcity, poor quality of sales personnel and online shopping problems in dealing with traders and manufactures.
- Consumer Protection Act 1986 has provided rights like right to safety, right to be

informed, right to choose, right to be heard, right to seek redressal, right to consumer awareness, right to healthy environment and right to basic needs.

- Consumer should follow certain guidelines for wise purchasing. Buying wisely requires intelligence, cautious efforts and energy.
- Label is a small piece of paper, fabric, plastic, or similar material attached to a product that provides detailed information about it. Standard quality marks give assurance of quality of products to the consumers.
- Consumer Protection Act 1986 provides protection and justice from unfair means and practices of the business community to the consumers.

Exercises

• Objective questions :

1) Multiple choice questions :

1. Consumer is a person who _____ any goods or hires any services for valuable consideration.
a) resales b) buys
c) earns profit d) sales
2. Logo of _____ is used on Agricultural products.
a) ISI b) Hallmark
c) Ag-mark d) BIS
3. Consumer Protection Act, 1986 was enacted in the year _____.
a) 1987 b) 1986
c) 1985 d) 1988
4. Hallmark is a standardization mark used for _____.
a) fruits b) gold
c) textiles d) goods

2) Match the following pairs :

	A	B
1.	Starch in Milk	Festive season
2.	Consumer protection	Electrical goods
3.	Vegetarian food	Green circle inside square
4.	Artificial scarcity	Adulteration
5.	ISI mark	Judicial machinery

3) Identify whether the following statements are True or False :

- a) Consumer should keep bills and guarantee cards safe.
- b) As a consumer, one should not be aware about the rights of consumer.
- c) Adulteration is one of the problems faced by the consumers.
- d) ISI is a quality certification mark used in case of food products.
- e) Consumer Protection Act deals with the problems of manufactures.

• Short answer questions :

1) Define the following terms :

- a) Consumer
- b) Label

2) Write short notes on the following :

- a) Need of consumer protection
- b) Adulteration and supply of defective and duplicate goods
- c) Right to be informed
- d) How and what to buy
- e) Types of labels

3) Give reasons for the following :

- a) Consumer must plan in advance before buying.
- b) Buy only standard quality mark electrical appliances.
- c) There is need of consumer awareness.
- d) Consumer should read the label before buying any product.
- e) Legal protection is a necessity of consumers.

• Long answer questions :

- a) Explain the responsibilities and rights of consumers.
- b) Write about the problems faced by consumers.
- c) Describe the useful guidelines for wise purchase for consumers.
- d) Write about functions of labels.
- e) Explain consumer protection act 1986.

Project/Assignment :

- 1) Survey and report writing on awareness about consumer rights/ consumer problems.
- 2) Visit the consumer organization and write report on functions performed by it.
- 3) Collect the published information regarding consumer disputes.

Related Activity :

- 1) Collect and analyze labels.



7. HOME DECORATION

7.1 Introduction to Elements of Arts

7.2 Introduction to Principles of Design

Let's Discuss Home Decoration and Home Design.

Every human being has a wish that his/her home should be nicely decorated. One needs to understand that the home should not be merely decorated but it should be pleasant and appealing. It should create welcoming atmosphere so that the visitors feel comfortable. The family members, on returning home after working for long hours should feel relaxed. So, the home should not be merely decorated but should have good design.

Design is the creation and organization of form, space, colour, pattern and texture to achieve beauty and individuality. Considering the space crunch, especially in urban areas and the constantly increasing prices of the houses, utility of the space and economy become the important aspects to be achieved in designing of a home.

In order to create a good design for home, a family may take help of a professional Interior Designer. But it is necessary to remember that each individual has a natural ability to recognize beauty which can be utilized in creating beautiful atmosphere in the home. The knowledge of elements of art and principles of design can provide necessary guidance and the application of this knowledge in home design will definitely help to create lively and pleasant atmosphere in the homes.

7.1 Introduction to Elements of Arts :

Do you know the elements of art?

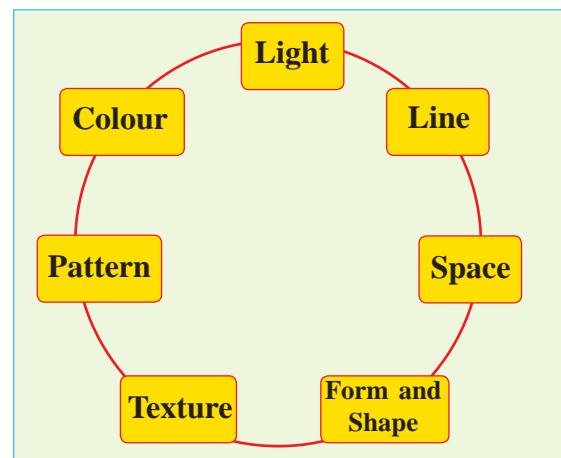


Fig. 7.1 Basic Elements of Art

1. Light : Light is one of the most important basic elements of art. It is an external element of art and design.

Definition : **Light is an element that illuminates and makes everything visible.**

It is both an art element and a necessity. Without light, no art is visible to the eye and no design can be produced, appreciated or utilized. The expression of beauty is incomplete without light.

Do you remember ?

Light can be natural or artificial. Both are important aspects of home decoration from the point of view of functionality and design.

a. Natural light : We all are familiar with this term. It is the visible radiant energy of the sun which makes everything visible to us. It varies widely in colour and intensity throughout the day and hence creates various psychological effects on human minds. Bright sunshine evokes cheerfulness in the interior of a home or any commercial place whereas inadequate lighting produces gloomy and sad atmosphere.

b. Artificial lighting : Artificial lighting is equally important in Interior decoration. It becomes the necessity at night and if the intensity reduces during the day time as well. It can be totally controlled. Its intensity can stimulate activity and creativity or relaxation. It can change the nature of space, direct human movement, provide appropriate atmosphere and enhance the richness of textures. It helps to create interest in home decoration by creating emphasis and rhythm at suitable places.



Fig. 7.2 (a) Natural light in Interior

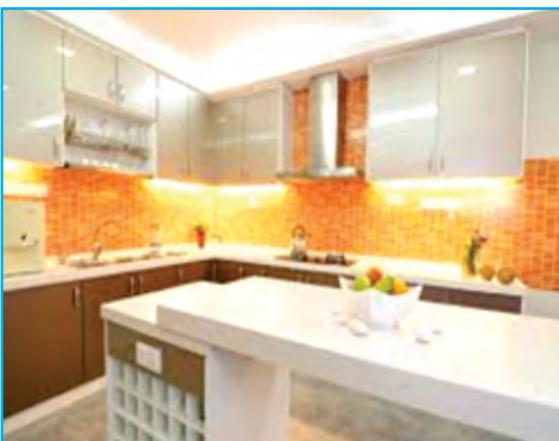


Fig. 7.2 (b) Artificial light in Interior

2. **Line :** Line is the basic element in creative design. Lines are important in-home decoration as they add character to a room and also create various psychological effects on human minds. Each line conveys certain feelings to the viewer.

Definition :

- Line is a chain of dots or points joined together.
- Line is a connection between two points in space.

Characteristics of Lines : Each line has peculiar characteristics because of which it becomes unique and important in any kind of design.

- Lines may be straight or curved; they have only one dimension that is length and no breadth.
- A line is versatile and can define or limit shape, divide areas, suggest movement, speed or direction.
- All lines have direction- horizontal, vertical or oblique. Each direction has a distinct and different effect upon the observer.
- A line, to certain extent is capable of expressing specific emotions. They assume expression and meaning through association with natural forms and human body positions.

Let's Discuss :

Psychological effects of lines : Various types of lines are associated with various human body positions and forms from nature. Thus, through these associations they suggest meaning and expression and create various psychological effects on human minds.

- a. **Vertical lines :** These lines through their association with human body at work which is vertical, indicate life and action. They symbolize feelings like uprightness, honesty, dignity, etc. Trees and mountains reach up to pierce the sky so we think of them as reaching, climbing and inspiring. Buildings, which are tall, are dominating

and powerful. At home the vertical lines of the doorways, draperies give the necessary strength and height to the room. Vertical lines create an optical illusion of increased height.

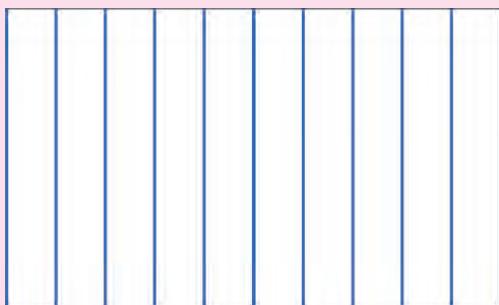


Fig. 7.3 (a) Vertical Lines

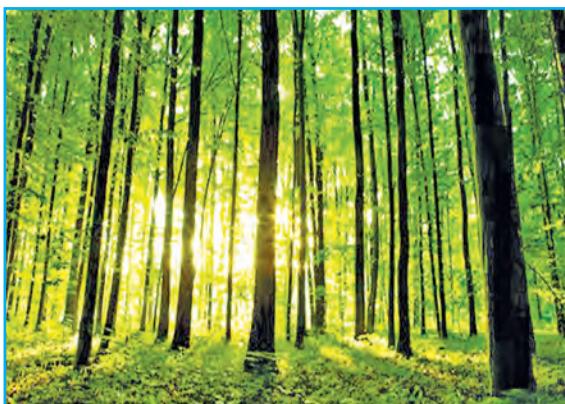


Fig. 7.3 (b) Vertical Lines in nature

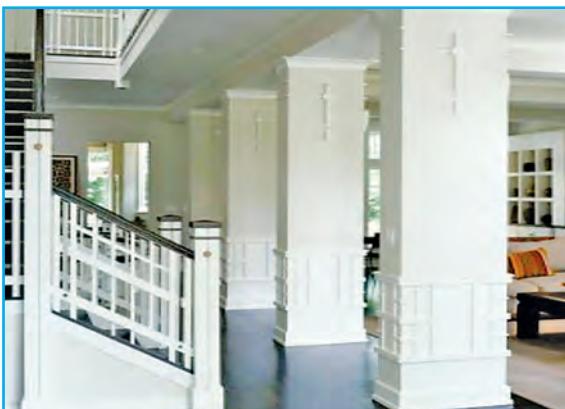


Fig. 7.3 (c) Vertical Lines in building

Fig. 7.3 Vertical Lines and their Associations

b. Horizontal lines : A horizontal line is observed in human body when man lies down and he is resting or sleeping. Any landscape painting with dominating horizontal lines gives a feeling of calm and

peaceful atmosphere. Thus, these lines evoke feelings of repose, rest, balance, stability. It is calm, passive and quiet as a still lake. At home we find such lines for beds, book cases, tables etc. Horizontal lines create an optical illusion of increased width.

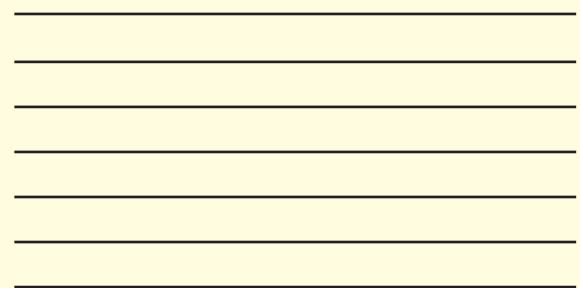


Fig. 7.4 (a) Horizontal Lines



Fig. 7.4 (b) Horizontal Lines in Home Furnishing



Fig. 7.4 (c) Horizontal Lines in Human Body

Fig. 7.4 Horizontal Lines and their Associations

c. Diagonal or oblique lines : Human body in movement takes this angular position. While applying force, for example while pushing a heavy piece of furniture human body position is diagonal. Similarly, while

driving a bicycle or riding a horse with speed, the human body position is diagonal. Thus, these lines suggest movement, force, restlessness, activity and excitement. They are dynamic, suggesting movement as in wind driven rain. In architecture they show the slant of roofs.

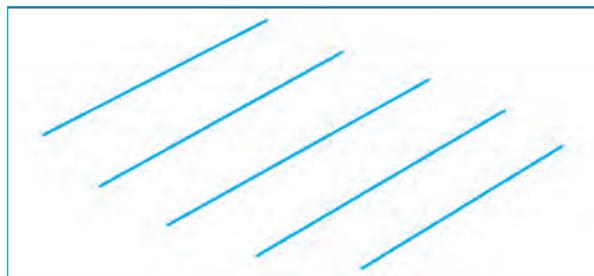


Fig. 7.5 (a) Diagonal Lines



Fig. 7.5 (b) Diagonal Lines in Human Body



Fig. 7.5 (c) Diagonal Lines in Nature

Fig. 7.5 Diagonal Lines and their Associations

d. Curved lines : These lines look gracious and flexible. Human body in the performance of dance or play takes number

of curved positions. They may take varied forms like a semicircle, spiral, undulating line etc. Because of harmonic transition in the change of direction, it has flowing continuity. Its slow lazy movement is passive, feminine and soft. They are youthful and gay. At home we observe them in curtains and furniture. Undulating lines convey gentle motion like the ripple in a pond.



Fig. 7.6 (a) Curved Lines



Fig. 7.6 (b) Curved Lines in Human Body



Fig. 7.6 (c) Curved Lines in Curtains

Fig. 7.6 Curved Lines and their Associations

3. Space : It is an important element of art. In interior design walls and floor create the

form of a room and enclose the space within. It is the space that we use for carrying out various activities.

Definition : Space is defined as emptiness, void or interval between things.

It is easy to understand the importance of space because for any human activity space provides the facility for movement and experience. It plays an important role in the use of an object.

Can you recall ?

Importance of Space :

- The importance of space is realized easily because for any human activity space it must. It provides the facility for movement and experience.
- It is the space within a piece of a pottery that determines the capacity and the nature of its use.
- It is the eye of the needle that enables the use of needle for the purpose it is intended to serve.
- It is the space inside a cupboard that enables the contents to be stored inside.
- Likewise, how much tea or coffee can be poured into a cup, how big a flower arrangement can be done in a given flower vas are the points related to the space enclosed within them.



Fig. 7.7 (a) Functional Space in a Cup

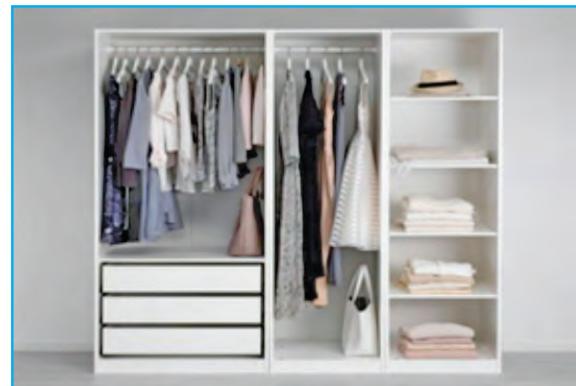


Fig. 7.7 (b) Functional Space in a Cupboard



Fig. 7.7 (c) Functional Space in a needle

Fig. 7.7 Functional Considerations of Space

Space is a very important element in interiors. Space can be cheerful or depressing, noisy and stormy or calm and peaceful depending on the way the designer has made use of the various elements to form the interior. In today's urban areas, space has become a costly element. The houses are pretty small in comparison to the houses seen in the past. The successful use of art elements helps to create the interiors that are functionally as well as aesthetically appealing. The successful use of art elements like colour, texture, pattern and light help to create the interiors that are functionally as well as aesthetically appealing.

- 4. Forms and Shape :** When various lines moving in different directions intersect each other various shapes are formed.

Definition :

- **Shape** is a two-dimensional enclosure of space.
- **Form** is defined as three dimensional shape.

Form and space are interrelated. Shapes are mostly the flat enclosures of space and form includes a volume surrounded by limiting factors. Form is something solid and tangible. Shapes and forms enable us to judge the size of objects.

Form is the most important element in home decoration. Without the beauty of form, excellent colour, texture and pattern are of no avail. A diversity of forms helps to give interest to interiors. For example, a rectangular sofa grouped with spherical lamp bases, curved upholstered furniture, pillows and supporting frames show a variety of forms within a room.

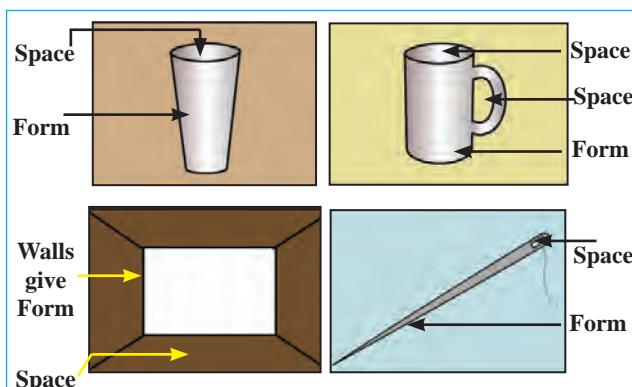


Fig. 7.8 (a) Form and Space



Fig. 7.8 (b) Diversity of forms in Interior

5. Texture : Each and every object whether natural or artificial has its own texture. That means each object has originality in

its texture. Thus, we come across varied textures around us.

Definition : Texture is the surface quality of a material or an object. It is understood either by touching the object or by looking at it.

Types of Texture :

- a. **Tactile textures :** The texture that is understood by running our hand over the surface is called as tactile texture, for example; rough, smooth, soft, hard etc.
- b. **Visual textures :** The texture that is understood just by looking at the object is called as visual texture.

Know this :

Textures are important in human life as well as in interior design.

- Textures add character and interest to materials and objects.
- They affect us physically, for example; the rough and coarse furnishing materials irritate us and hence make us uncomfortable.
- Textures affect reflection of light and thus the colours.
 - The polished, smooth surfaces reflect lot of light making the colours appear bright and brilliant thus creating glare.
 - The rough and coarse textures reflect less light and thus make the colours appear dark and ultimately make the interior dark and gloomy.
- They affect the maintenance of interiors.
 - Smooth textures reflect lot of light and show the dirt and dust and call attention for the cleanliness but can be cleaned easily.

- Rough, coarse textures do not show dirt and dust quickly but take time for cleaning.



Fig. 7.9 (a) A Carpet with Soft Texture



Fig. 7.9 (b) A Carpet with Rough Texture

Fig. 7.9 Textures in Interior Design

6. **Pattern** : Pattern is an important art element that should be considered in home decoration.

Definition :

Pattern refers to any kind of enrichment done on a surface.

Thus, it is defined as any surface enrichment.

Use of surface pattern for home decoration helps to create liveliness and interest in a room. But if it is used intensively, it may create restlessness and unnecessary excitement. Opinions differ on how much pattern is desirable in a room, but it is customary to use pattern on at least one fourth of the total surface areas. A large room can support more pattern than a small room.

Remember This :

There are four types of patterns- naturalistic, stylized, geometric and abstract.

- Naturalistic motifs** : These patterns resemble natural forms. They look like pictures usually of flowers, animals and sceneries.
- Stylized motifs** : They are based on natural forms but the lines are simplified and some imaginary forms are added for decoration.
- Geometric motifs** : They are based on the pure geometric forms of circle, rectangles, and triangles with variations. Geometric patterns include stripes, dots, checks etc.
- Abstract motifs** : These are artist's own representations of natural objects. He uses his imagination to indicate the objects. They do not represent any known form and are hard to understand.



Fig. 7.10 (a) Naturalistic Pattern



Fig. 7.10 (b) Stylized Pattern



Fig. 7.10 (c) Geometric Pattern

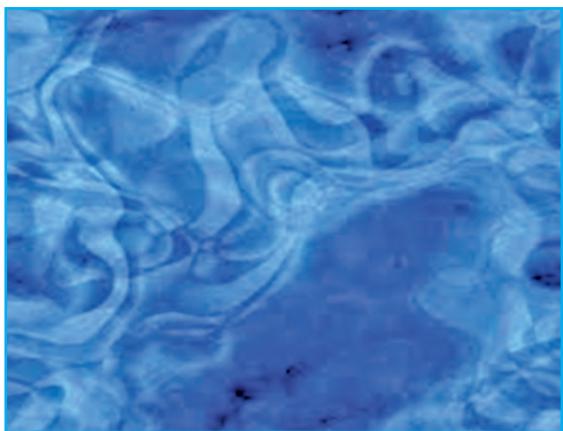


Fig. 7.10 (d) Abstract Pattern

Fig. 7.10 Types of Patterns

7. Colour : Colours have a tremendous effect on the emotions of people and are largely responsible for the atmosphere created. Different colours create different emotional responses. Some people are more sensitive and more stimulated than others by certain colour schemes. Thus selection of colours in Home Decoration needs to be done carefully.

Definition : Colour is the quality of light reflected from an object to the human eye.

Colour is the impression received by the mind from certain stimulations of the retina. When light falls upon an object, some of it is absorbed and remaining is reflected back. The apparent colour of an object depends

upon the wavelength of the light that it reflects.

For example, if an object appears green, it is absorbing all the other wavelengths of colour that make up white light and is reflecting only green rays. An object that appears white is reflecting all the colour rays that make up light, while a black object absorbs all the colour rays that make up light reflecting none.

Understand the following :

Dimensions or properties of colour : There are three dimensions or properties of colour.

i. **Hue :** It is the dimension of colour that helps to identify colour, in simple words it is the **name given to a colour** for example red, blue, orange all are the hues. **It also represents the warmth or coolness of a colour** for example; red is a warm hue, blue is a cool hue and green an intermediate hue. The hue of a colour can be changed by mixing adjoining hues.

ii. **Value :** Value indicates the **lightness or darkness** of a colour. The value of a colour can be changed by adding white or black to any colour. When white is added to a colour in more or less quantity, one gets many 'tints' and when black is added to a colour in more or less quantity, one gets many 'shades'. White has the highest value while black has the lowest value.

iii. **Intensity or Chroma :** Intensity refers to the **brightness or dullness** of a colour. It is the **strength or weakness** of a colour. Colours can be made bright by adding more colour and dull by diluting the colour or by adding grey colour to it. For example, pure red has high intensity while brick red has low intensity.

Always Remember :

Colour Wheel : The colour wheel has the same progression of hues as in the spectrum and they are bent into a circle. In Prang colour wheel, the twelve hues in a colour wheel can be divided into primary, secondary and intermediate hues.

i. Primary colours : Red, yellow and blue are primary hues. They are so called because they cannot be produced by mixing other hues. But many other colours can be produced by mixing them.

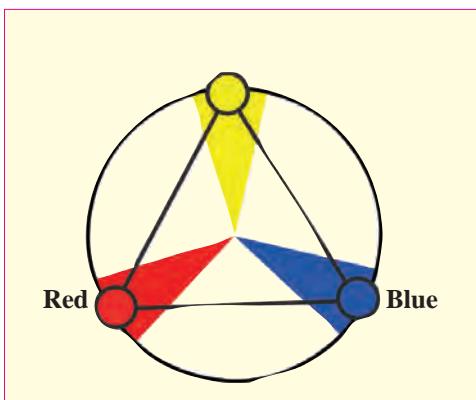


Fig. 7.11 Primary colours

ii. Secondary colours : Green, orange and purple are secondary colours. Equal amounts of two primary hues produce secondary hues.

- Green = Yellow + Blue
- Orange = Red + Yellow
- Purple = Red + Blue

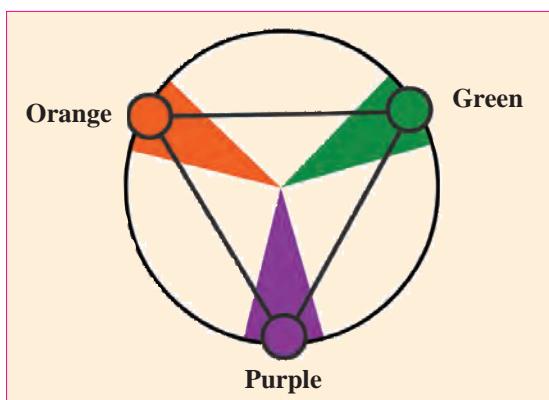


Fig. 7.12 Secondary colours

iii. Intermediate colours : These colours are midway between each primary and its adjacent secondary hue. There are six intermediate colours namely Yellow-green, Blue-green, Blue-purple, Red-purple, Red-orange, Yellow-orange.

- Yellow-green = Yellow + Green
- Blue-green = Blue + Green
- Blue-purple = Blue + Purple
- Red-purple = Red + Purple
- Red-orange = Red + Orange
- Yellow-orange = Yellow + Orange

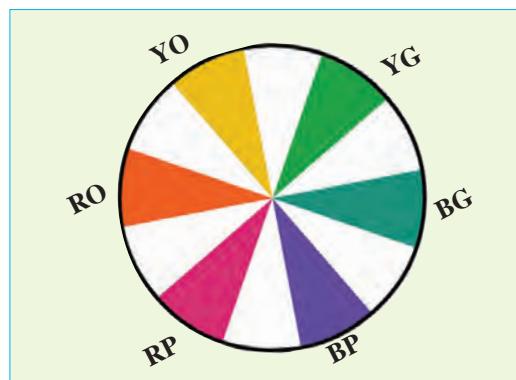


Fig. 7.13 Intermediate colours

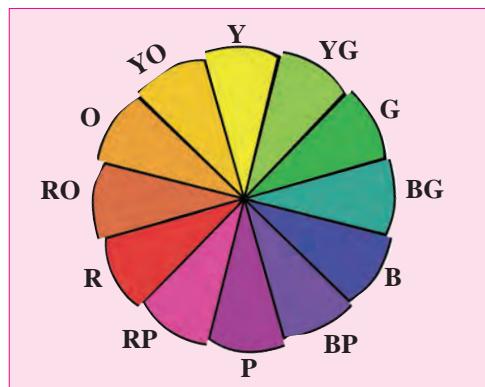


Fig. 7.14 Colour Wheel

Internet my friend :

1. Search various elements of art on internet and observe various pictures.
2. Search for colour wheel and colour schemes on the internet.
3. Read about the psychological effects of colour on human mind.
4. Find out warm, cool and neutral colours.

Colour Schemes : While using colours for home decoration, number of times it is observed that colour combinations done by some people look very appealing. Such people have colour sense and whatever combinations are done by them look interesting. But not everyone has such colour sense and colour schemes provide guidelines for them in selecting colours. It is necessary to remember that colour schemes are not the rules for selection of colours and that they just provide guidelines.

Classification of Colour Schemes

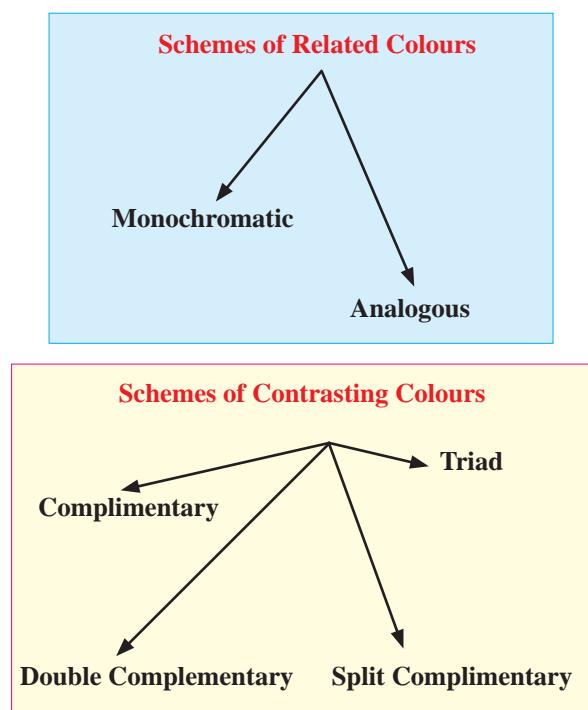


Fig. 7.15 Colour Schemes

Theoretically the following types of colour schemes are identified :

1. Monochromatic colour scheme : This scheme is also called as ‘single colour scheme’. In this colour scheme only one colour is selected from the colour wheel and used. For example, red, pink, maroon etc. This colour scheme is likely to be monotonous. To create interest, variations in colour values, colour intensities and textures need to be done.

2. Analogous colour scheme : This colour scheme uses the colours that are next to each other on the colour wheel. For example; yellow, yellow green, green, blue green. The selection of colours needs to be done very carefully in this colour scheme otherwise it may become too warm or too cold.

3. Complementary colour scheme : Colours that are exactly opposite each other on the colour wheel are called as complementary colours. Two such colours are used in this colour scheme. For example; blue and orange. Such colour schemes are usually dynamic and evoke a lot of interest.

4. Double complementary colour scheme : Two colours next to each other on the colour wheel and their complementary colours are used in this colour scheme. For example, yellow, yellow-green, purple and red-purple.

5. Split complementary colour scheme : The selection of one colour along with two colours that are on either sides of its complementary colour creates split complementary colour scheme. For example; blue, yellow-orange and red-orange. This is also a contrasting colour scheme.

6. Triad colour scheme : This colour scheme uses three colours which occur at the points of an equilateral triangle placed anywhere on the colour wheel. For example ; primary triad- yellow, red and blue.

Use your brain : Note that for each of the colour schemes, an example has been given. Find out one more different example for each colour scheme and write the same in the table given below.

Sr. No.	Name of the Colour Scheme	Example
1.	Monochromatic	
2.	Analogous	
3.	Complementary	
4.	Double Complementary	
5.	Split Complementary	
6.	Traid	

7.2 Introduction to principles of design :

A designer uses various elements of art to create design. The arrangement and selection of elements of art namely light, line, space, form and shape, texture, pattern and colour help the designer to express his/her ideas. Along with these elements of art, basic principles of design namely harmony, balance, rhythm, emphasis and proportion are used by the designer to create design and achieve his/her objectives.



Fig. 7.16 Principles of Design

The principles of design serve as guides in the process of formulating good designs.

In home decoration (home design), a person should take help of the elements of art and the principles of design to create beautiful and functional places. This helps to enhance the aesthetic appeal of interior spaces. Person must have the knowledge of manipulating the elements of art and principles of design for achieving this objective.

Let's Discuss all the principles :

1. Harmony : In simple words harmony is unity. It means similarity in appearance and characteristics of the elements of art used in a combined manner.

Definition : Harmony is the art principle which produces an impression of unity through the selection and arrangement of consistent objects and ideas.

It can be achieved through the selection of consistent lines, shapes, sizes, textures and colours. For example; for an article that is rectangular in shape, one should use horizontal and vertical lines for its decoration whereas for a circular object the use of curved lines turns out to be harmonious.

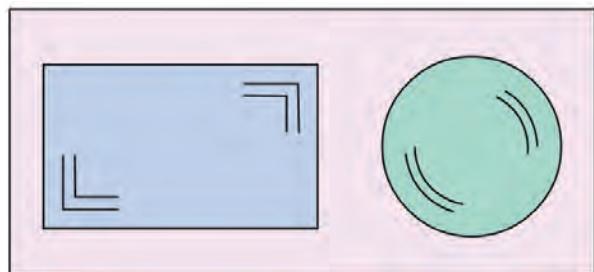


Fig. 7.17 Harmony Through Lines

Too much similarity may create monotonous effect. To avoid monotony some variety is needed which can be achieved through shapes, size, texture, idea and colour. A good design must combine these two important principles namely unity and variety to add interest.

In home decoration, in the arrangement of furniture shape harmony should be considered. Large objects or masses should be placed to follow the boundary lines of the enclosing shape, and only the smaller objects should vary from the general directions. To give variety, some of the small objects may be placed at slightly varied angles.

The first picture given below is a picture of a living room where the sofa is placed parallel to the wall length and the sofa chair is placed an angle to add a touch of variety. The second

picture has cartoon images on the wall which harmonize in the room as it is the children's bedroom.



Fig. 7.18 (a) Shape harmony in Furniture Arrangement



Fig. 7.18 (b) Harmony in Children's Bedroom

Fig. 7.18 Harmony in Interior Design

2. Balance : This is a principle that helps to create appealing visual impact in visual art as well as in all fields of home decoration.

Definition :

Balance is defined as rest or repose.

Balance is achieved by grouping shapes and colours around a center in such a way that there are equal weights on all sides of the center.

There are three types of balance—symmetrical, asymmetrical and radial.

a. Symmetrical balance : This is also called as formal balance. This balance is obtained by arranging identical objects or the objects having identical visual weights at equal distances from the central point. It creates formal atmosphere especially suitable in places where formal atmosphere is required for example in offices where formal meetings are to be held. It is quiet and dignified. It lacks variety and may become monotonous.

b. Asymmetrical or informal balance : It is also termed as informal balance. It is created when the objects that do not attract same amount of attention are arranged at different distances from the central point. It creates informal atmosphere and affords greater opportunity for variation in the arrangement.

c. Radial balance : When all the parts or elements radiate from the center out to the periphery the balance is called radial balance.

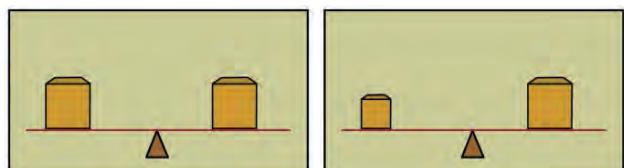


Fig. 7.19 Symmetrical and Asymmetrical Balance

Balance plays an important role in home decoration, where the visual weights on both the sides of an imaginary axis should attract equal attention of the viewer's. This can be achieved by using bright colours, bold forms, large patterns, strong contrasts which have more psychological impact on human minds. It is used in almost all the aspects of home decoration like furniture arrangement, flower arrangement, table setting etc.

In home decoration, while arranging the furniture, the large pieces of furniture should be placed first, with regard to balancing centers of interest in the room. The smaller, movable

objects would then be arranged so that they will make convenient groups as well as balanced units. After the furniture has been arranged, the attention is turned to the balance within each group. A well-balanced wall will have approximately the same amount of attraction on both the sides of the center line.



Fig. 7.20 (a) Formal Balance - Interior



Fig. 7.20 (b) Radial Balance - Rangoli Design

Fig. 7.20 Balance in Interior Design

3. Rhythm : Rhythm helps to create an orderly movement of the eye throughout the design or decoration.

Definition : Rhythm is defined as a kind of movement in a design. But it must be recognized that not all kinds of movements in a design are rhythmic. In art, rhythm means an easy connected path along which the eye may travel in any arrangement of lines, forms or colours in a design.

Rhythmic eye movement can be created through :

- Repetition of shapes
- Progression of sizes
- Radiating lines
- Continuous line movement

These are also called as types of rhythm.

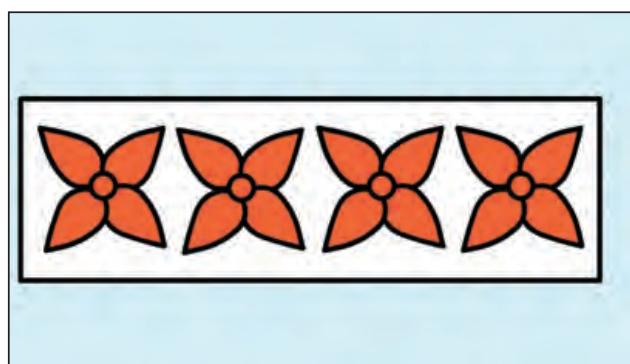


Fig. 7.21 (a) Repetition of Shapes

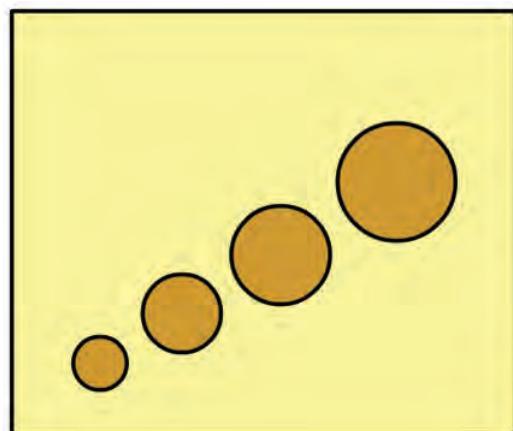


Fig. 7.21 (b) Progression of Sizes

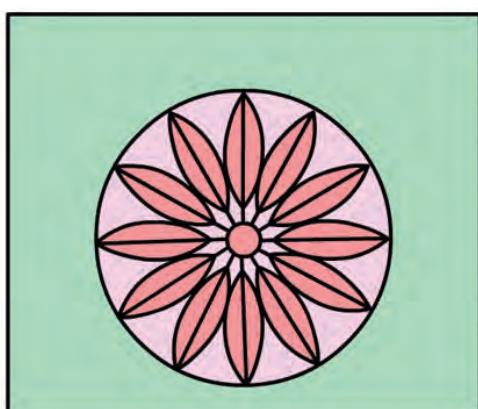


Fig. 7.21 (c) Radiating Lines

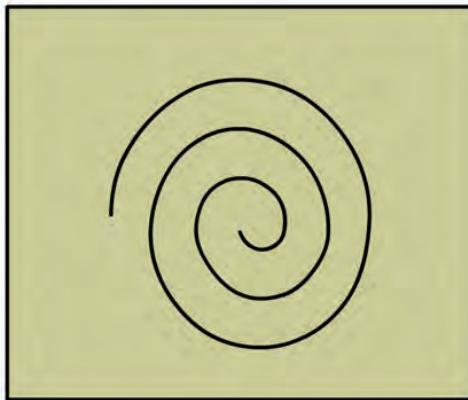


Fig. 7.21 (d) Continuous Line Movement

Fig. 7.21 Ways of Creating Rhythm in Design

In home decoration rhythm is seen in the pleats of curtains and draperies, arrangement of artificial lights, in rangoli design, in flower arrangement etc. It may also be observed in a wall paper or a rug pattern. It is easy to imagine a wall paper or a rug pattern with bold, swinging, rhythmic line which may be very agreeable when seen in a small piece, but repeated over so large an area as the whole wall or floor, it will show too much action and will detract from the objects in the room. In other words, the coverings of walls and floors should either be plain or have a very quiet design so that they create the effect of backgrounds for furnishings and furniture to be seen or placed against them. One can enjoy rhythmic movement in small areas, such as in curtain materials or in posters. In arranging furniture and decorative objects in the room, these should be so arranged as to carry the eye towards the centres of interest where it should remain at rest for a while and then slowly moves through the other objects.



Fig. 7.22 (a) Rhythm in Wallpaper



Fig. 7.22 (b) Rhythm in Flower Arrangement

Fig. 7.22 Rhythm in Interior Design

4. Emphasis : In simple words, emphasis means giving importance to some feature in the design or an object in an arrangement. It helps to create a centre of interest or focal point in a design. It is necessary to understand how to subordinate some elements in order to emphasize specific element in a design or arrangement.

Definition : Emphasis is the art principle by which the eye is carried first to the most important thing in any arrangement, and from that point to every other detail in the order of its importance.

A designer needs to understand the following aspects for creating emphasis:

- What to emphasize :** In each field of decoration, the most important features may vary, but the one that should have the least emphasis is likely to be the same, it is the background against which objects are seen. That means the background should be less conspicuous than the objects to be seen against them.
- How to emphasize :** There are many ways of creating emphasis:
 - by placing or grouping of objects
 - by using contrasts of colour

- iii. by using decoration
- iv. by leaving sufficient space as background around an object
- v. by Contrasting or using unusual lines, shapes or sizes

c. How much to emphasize : The simplest answer to this question is “keep it simple”. There should not be too much decoration in a design.

d. Where to place emphasis : If the object is to be viewed on a horizontal surface, it should be placed at the centre of the space under consideration, with equal margins on all the sides. If it to be viewed in vertical position, the lowest margin at the bottom should be the widest one, with equal margins on all the other sides.

In home decoration, one should keep it in mind that the amount of emphasis suitable varies with the room and with the people who live in it. It is advisable to limit the amount of pattern in a room, so one should decide where it will be enjoyed most and then subordinate the other objects in the room, so that the pattern may be appreciated. It is desirable to have one principal center of interest in every room, but each wall should have its own focal point so that the room may be agreeable to look at from any position.

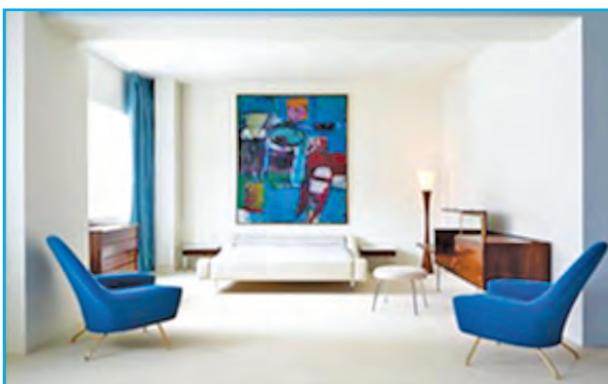


Fig. 7.23 (a) Emphasis - Room Decoration



Fig. 7.23 (b) Emphasis-Party Decoration

Fig. 7.23 Emphasis in Interior Design

5. Proportion : It is the basic principle of design. This principle finds application in all designs, be it dress design, interior design or any other kind of design.

Definition : The principle of proportion is also called the law of relationship.

This principle states that the relations between various parts of the same object, the relationship with the objects in a group and the relationship with the whole area should be pleasing and consistent. For example; the sizes of various parts of furniture should be proportionate to each other, the size of the furniture should be proportionate with the rest of the furniture pieces in the group and size of the complete group should be proportionate with the size of the room.

The ‘Greek oblong’ is a standard for good proportion. It is also called as ‘the golden oblong’. This oblong uses the ratio of 2:3 or 3:5 which are useful in deciding any space division or arrangement, sizes of objects or decorative designs.

The Greek oblong measured approximately two units on the short side and three equal units on the long side. Most people find this more beautiful than a square because the equal sides make the square more obvious because of which

it has no variety. It has more beauty than a very long, narrow oblong, in which there is variety but the breadth and length vary so greatly that they there is variety but do not seem to be related.

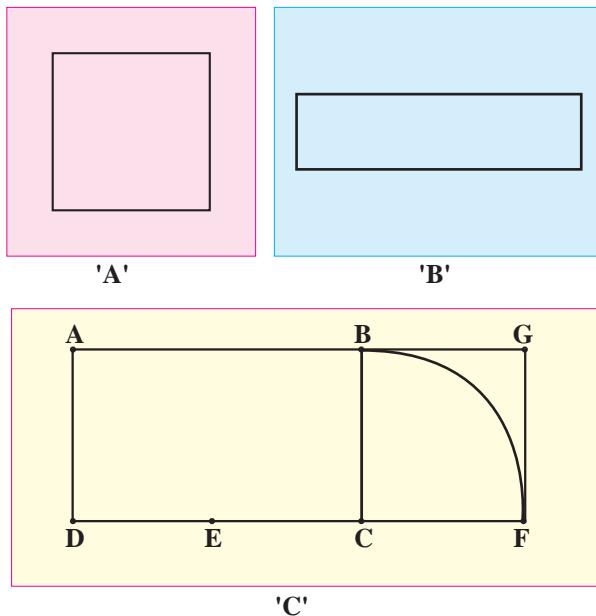


Fig. 7.24 Square, Long Narrow and Golden Oblong

In the above sketch, 'A' depicts a square in which all sides are equal and so there is no variety. 'B' depicts a long narrow oblong having variety but no unity. 'C' is based on the principle of golden ratio where there are two equal parts on the shorter side and three equal parts on the longer side. This oblong has unity as well as variety. Thus, the proportions are found interesting.

In any design if the proportions seem to be incorrect, the correct use of lines helps to alter proportions apparently. It is often said that horizontal lines add width and vertical lines add height.

In Interior Design, this property of lines to alter the apparent sizes becomes very useful.

For example, the room that is too low may have a suggestion of vertical stripes in the design of the wallpaper. Windows that are too short may have long, narrow draperies and no valance. The chair that is too low may have vertically striped cover. The stripes should be arranged to carry the eye up and down. While selecting and arranging the furniture, the person must have knowledge of scale. Scale is an important aspect of proportion. If the room is big the furniture pieces can be big and for a smaller room, the furniture pieces should be small in size.



Fig. 7.25 (a) Proportion in Furniture Arrangement



Fig. 7.25 (b) Wall Paper With Vertical Design

Fig. 7.25 Proportion in Interior Design

Can you recall ?

- Every family wishes to have a well decorated and nicely designed home.
- The knowledge of elements of art and principles of design can provide necessary guidance to the family members for creating beautiful, pleasant and functional spaces.
- The basic elements of art are- light, lines, space, form and shape, texture, pattern and colour.
- Light is the element that makes it possible to produce and appreciate any design. The expression of beauty is incomplete without light.
- Line is the basic element in creative design. Lines add character to a room and also create various psychological effects on human minds.
- Space is an important element in art. For any human activity space provides the facility for movement and experience.
- Form and space are interrelated. Shapes are mostly the flat enclosures of space and form includes a volume surrounded by limiting factors.
- Each and every object whether natural or artificial has its own texture. There are two types of textures- Tactile and Visual.
- In home decoration pattern helps to create liveliness and interest in a room.
- Colour is an important element of art. Colours have a tremendous effect on the emotions of people and are largely responsible for the atmosphere created. Thus, selection of a colour scheme needs to be done carefully.
- Along with the elements of art, basic principles of design namely harmony, balance, rhythm, emphasis and proportion are used by the designer to create design.
- In simple words harmony means unity. Harmony is the art principle which produces an impression of unity through the selection and arrangement of consistent objects and ideas.
- Balance is defined as rest or repose. It is achieved by grouping shapes and colours around a center in such a way that there are equal weights on all sides of the center.
- Rhythm is defined as a kind of movement. In art, rhythm means an easy connected path along which the eye may travel in any arrangement of lines, forms or colours in a design.
- Emphasis is the art principle by which the eye is carried first to the most important thing in any arrangement, and from that point to every other detail in the order of its importance.
- Proportion is the basic principle in art and design. It is also called the law of relationship.

Exercises

• Objective questions :

1) Multiple choice questions :

1. Natural light varies widely in colour and _____ throughout the day.
a) Intensity b) darkness
c) colour value d) lightness

2. The feeling of life and action is indicated through _____ lines.
a) horizontal b) vertical
c) curved d) diagonal
3. The feeling of movement and restlessness is created by _____ type of lines.
a) vertical b) curved
c) diagonal d) horizontal

4. In interior design walls and floor create _____ of a room and enclose the space within.
 a) shape b) form
 c) area d) texture
5. The texture that is understood by touching the object is called _____ texture.
 a) tactile b) visual
 c) rough d) smooth
6. The flat enclosures of space are called as _____.
 a) shapes b) forms
 c) area d) volume
7. The patterns that use pictures of flowers, fruits etc. are called as _____ patterns.
 a) geometric b) stylized
 c) naturalistic d) abstract
8. Out of the following colours _____ is a secondary colour.
 a) Green b) Blue
 c) Pink d) yellow
9. The colours prepared by mixing two primary colours are called _____ colours.
 a) Intermediate b) cool
 c) Secondary d) warm
10. The colour scheme that uses only one colour is called as _____ colour scheme.
 a) complementary b) monochromatic
 c) analogous d) triad

2) Match the following pairs :

A	B
Form	Impression of unity
Pattern	Identical objects
Complementary colour scheme	Repetition of shapes
Symmetrical balance	Surface Enrichment
Harmony	Yellow and Purple
Rhythm	Volume

3) Identify whether the following statements are true or false :

- a) Lines do not create psychological effect on human beings.
- b) The form of a room encloses space.
- c) Texture is realized by touching as well as through vision.
- d) Stylized patterns look like forms observed in the nature.
- e) Intermediate colours are prepared by mixing two primary colours.
- f) Black object reflects all the waves of light and absorbs none.
- g) Analogous colour scheme uses colours that are next to each other on the colour wheel.
- h) Harmony is achieved through the selection and arrangement of consistent objects and ideas.
- i) Symmetrical balance is achieved by arranging unidentical objects around the axis.
- j) In art rhythm is related to movement of the eye.
- k) In creating any design, the background is always kept less conspicuous.
- l) The Golden Oblong uses the proportion of 3:3.

• Short answer questions :

1) Define the following terms :

- a) Harmony
- b) Asymmetrical balance
- c) Rhythm
- d) Emphasis
- e) Proportion

2) Differentiate between the following :

- a) Natural and artificial lighting.
- b) Psychological effects of vertical and horizontal lines.

- c) Shape and form
- d) Tactile and visual texture
- e) Symmetrical and asymmetrical balance

3) Write short notes on the following :

- a) Importance of texture in human life
- b) Monochromatic and analogous colour schemes
- c) Complementary and double complementary colour schemes
- d) Radial balance

4) Answer the following in brief :

- a) What are the various characteristics of lines as an art element?
- b) What is space? What is its importance in Interior Design?
- c) Describe various types of patterns in brief.
- d) What are the various dimensions of colour?
- e) Explain split complementary and triad colour scheme with the help of suitable examples.

• Long answer questions :

- a) What is harmony? Explain its use in interior decoration.
- b) Describe how the principle of balance is useful in interior design.
- c) Explain the term rhythm and describe how it is useful in interior decoration.
- d) What are the various aspects of emphasis? Explain with the help of sketches.
- e) What is emphasis? How is it useful in interior design?

Project / Assignment :

1. Download five pictures from the internet showing furniture arrangements in various rooms and try to identify the use of various elements of art and principles of design.

Practical / Related Activities :

1. Prepare a colour wheel.
2. Draw freehand designs in the squares of $10\text{ cm} \times 10\text{ cm}$ on plain paper and colour them up by using any two colour schemes.



8. HOUSEHOLD ACCESSORIES

- 8.1 Meaning and Definition
- 8.2 Classification of Accessories
- 8.3 Some Important Accessories and their Care
- 8.4 Importance of Accessories
- 8.5 Guidelines in Selection and Placement of Accessories

Introduction :

Accessories play an important role in the furnishing of room and add functional and aesthetic appeal to any room in the house. They are purchased gradually for the purpose of decoration of a house or because they are felt necessary for carrying out certain activities. A house without accessories would be unattractive and uninteresting.

Can you tell the meaning of accessories ?

8.1 Meaning and definition :

In every design, there are certain elements that are of primary importance. There are certain items that support such primary elements and are of secondary importance. However, these items are necessary from the point of view of aesthetics and functionality of that design. These support items are called accessories. For example, items like wall clock, a flower vase, a painting put up on the wall etc. are the supporting secondary items which are termed as accessories.

Definition :

- Accessories are defined as: ‘The elements that bring charm, individuality and vitality to a room’.
- Accessories can be defined as: ‘The objects used to decorate and define the purpose of the room, which also exhibits the taste, individuality and personality of the inmates’.

- ‘Interior design accessories are decorative or functional items that add the finishing touches to a chosen home style’.

Accessories have functional as well as aesthetic value and thus are acquired by the families carefully. These are things, which are acquired by collection or bought for the need of it.

8.2 Classification of accessories :

Accessories are classified into two types: functional accessories and decorative accessories.

1. Functional accessories : As the name suggests, these accessories are the items or objects that are meant for carrying out some function. The process of manufacture of these accessories emphasizes the structural aspects rather than the appearance. This is because the function that they serve is far more important than their appearance. Though the aesthetical appearance is considered as secondary, it should be pleasing and attractive. Such functional accessories should meet certain requirements.

These accessories are used in residential as well as commercial places. The interiors of offices for example, require more functional accessories, than other places. In a typical office, on a desk accessories like a file tray, pen and pencil holder, calendar, telephone etc. are commonly

found. Along with these, a waste basket, a clock, calendar, an umbrella stand etc. are also found necessary. These same accessories may be needed in a number of rooms in a residence also. In residences, the number of functional accessories increases to help in the flow of work. Living rooms and bedrooms need to have accessories such as clocks, flower vases, lamps and trays for holding smaller objects etc.

Use your brain :

Make a list of functional accessories for the following rooms.

Sr. No.	Room	List of accessories
1.	Kitchen	
2.	Dining Room	
3.	Children's Room	
4.	Bathroom	

2. Decorative accessories : The objects, in an interior that cannot be described as having a "real" function and are exclusively used to enhance the beauty of a space are called as decorative accessories. These accessories are used for the purpose of decoration in a room. Some examples of decorative accessories are paintings, wall hangings, flower arrangements, artificial flowers, indoor plants, sculptures etc. Such decorative accessories should have pleasing appearance for enhancing the aesthetic value of interiors. Their decorative as well as structural design should be good. Their selection should be done very carefully so that they harmonize with the furnishings and the theme of the room. That means their number, size, shape and colour should blend with the rest of the furnishing materials used in a room.

Always remember :

Accessories may be decorative only or decorative cum functional : Almost all accessories have some functional as well as aesthetic value. But usually a few articles are selected for their beauty and for the purpose of enhancing the aesthetical value of interior. A decorative accessory may also serve to be a functional accessory for example, a clock in a living room or a decorative lamp on the bed side table. Some accessories can either be purely decorative like art objects, antique implements, paintings and so on, or be functional like lamps, pillows, flower vases and room dividers.

8.3 Some important accessories and their care

- **Some Important Accessories :**

Can you make a list of household accessories ?

There are number of accessories which can be used in a house. The choice depends on individual likes, dislikes and interest. Following are some important accessories that are commonly found in houses.

- **Pictures :** In home decoration, pictures are considered as important decorative accessories. They should be selected carefully by considering their aesthetic appeal and theme of their subject matter. They should be placed at the eye level of a standing person. Pictures should be placed flat against the wall with no strings showing. For hanging pictures and creating attractive design in a room, one requires to use the knowledge of a few art principles. Pictures should harmonize in colour and style with the colour of the room and other furnishing. Along with the room, their size and shape should relate to the wall area and furniture against which they are placed. The outline of the pictures will produce a division of

wall space that should establish pleasing proportions. It is frequently more interesting to group several related pictures rather than have them distributed. Symmetrical or asymmetrical balance may be created in their placement in a group.

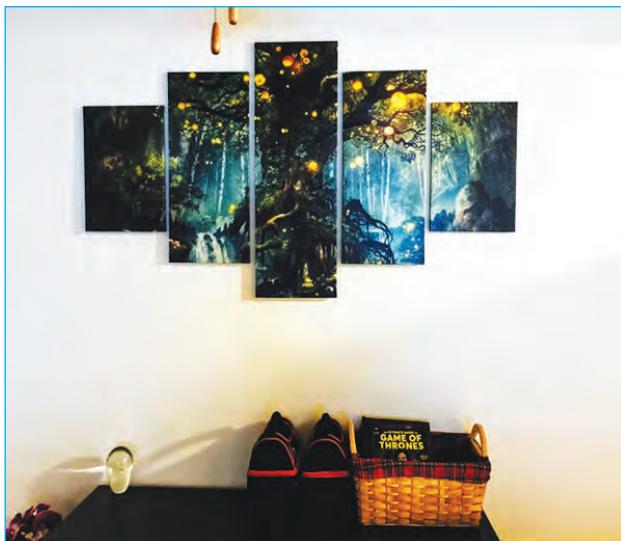


Fig. 8.1 (a) Pictures as Accessories

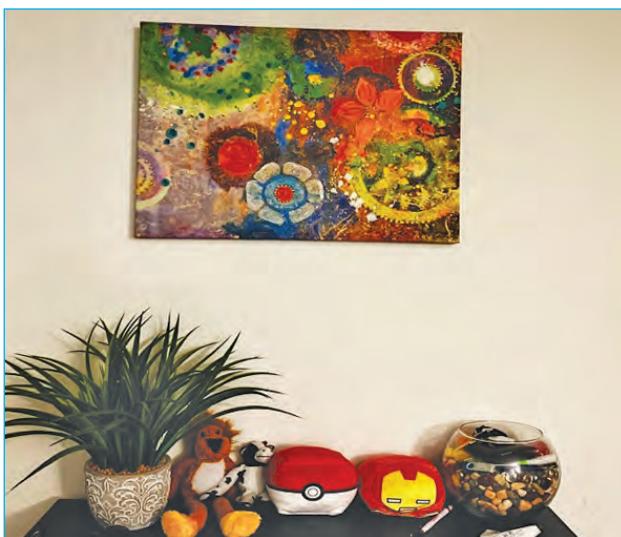


Fig. 8.1 (b) Picture as an Accessories

- **Flowers and foliage :** The fresh flowers and foliage as accessories add liveliness to a room. They can be placed on a center table in the living room, on dining table etc. Such flower arrangements should be large enough to attract attention but not too large to dominate the room. They should be proportionate to the size of the

table and the room. They should be low in height when placed on dining table so that people can see each other and do not interfere in the communication. The colours should harmonize with the colour of the room and other items placed on the table. The arrangement should be balanced in itself. The flower arrangement should be proportionate to the flower vase used.



Fig. 8.2 (a) Flowers and Foliage as Accessory



Fig. 8.2 (b) Flowers and Foliage as Accessory

- **Flower Vases :** Its main function is to hold the flowers and the foliage. It should have capacity to hold sufficient quantity of water so that the flower arrangement done in it remains fresh for hours together. Flower vase should not have too dominant design otherwise the attention of the viewers may be attracted towards it rather than the beautiful arrangement done in it. The size, shape and colour of the vase should harmonize with the room or the place where it is to be placed.



Fig. 8.3 (a) Flower Vases as Accessory



Fig. 8.3 (b) Flower Vases as Accessory

At times vases without flowers are used as accessory in a room. Their graceful lines can themselves add to the beauty of a room. They should harmonize with the colour, size, shape of the room and also be proportionate to the room.

- **Indoor Plants :** Green plants placed in the room become a very attractive decorative accessory and add life and interest to a room. They are not very expensive and are commonly used by many families. Placement of plants depends upon the size of the overall plant, the size, colour and texture of the leaves. Large plants should stand on the floor in the corners of the room, hanging or drooping plants should be placed high on hanging baskets. Plants with small leaves and lot of foliage can be kept at the table level for all round viewing.



Fig. 8.4 (a) Indoor Plant as an Accessory



Fig. 8.4 (b) Indoor Plant as an Accessory

- **Artificial Flowers :** These turn out to be an attractive decorative accessory. They are not very expensive and do not require much attention. They should harmonize with the colour of the room, colour of the other furnishings and the other accessories placed in the room. They should also be

proportionate with the place where it is to be kept. Now days running flower libraries is being taken up as a career by a number of women. It is an asset for working women.



Fig. 8.5 (a) Artificial Flowers as an Accessory



Fig. 8.5 (b) Artificial Flowers as an Accessory

- **Lamps :** A lamp is functional only when it turns out to be a source of good lighting arrangement. Its height, the spread of light, dispersion of light through the lamp shade is of prime importance. Lamps should be 28 to 30 inches tall if they are to be used on low or medium height tables. They should harmonize in colour, size and shape, texture with the rest of objects in the room. The lamp itself should have balanced design so that it stands erect.



Fig. 8.6 (a) Lamps as an Accessory



Fig. 8.6 (b) Lamp as an Accessory

- **Wall Clocks :** As a functional accessory, the first and the foremost important requirement is that it must keep time. The numbers and hands should be bold and clear. As an accessory though it must be beautiful and should harmonize with the colour of the room. Also its size and shape should harmonize with the size and shape of the room.



Fig. 8.7 (a) Wall Clock as an Accessory



Fig. 8.7 (b) Wall Clock as an Accessory

- **Mirrors :** Mirrors are considered as functional as well as decorative accessory. Mirrors are essential in the dressing area of the bedrooms. As a functional accessory it should reflect the image clearly and should be free from distortions. Large mirrors produce a feeling of spaciousness in the area where they are placed. As decorative accessory, mirrors are obtained with beautifully designed frames. In general, they should harmonize with the room space.



Fig. 8.8 (a) Mirrors as an Accessory



Fig. 8.8 (b) Mirrors as an Accessory

• **Wastepaper Basket :** It is an important functional accessory as it is required in every room. Being a functional accessory, it should be large, made of durable material and should be placed at convenient place. It is also considered as a decorative accessory and from that point of view its colour should blend with the room and the shape should harmonize with the other shapes.



Fig. 8.9 (a) Wastepaper Basket as an Accessory



Fig. 8.9 (b) Wastepaper Basket as an Accessory

- Accessories in the form of Handicrafts of India :** Number of beautiful Handicraft materials are manufactured in various states of India, which can be used in a house for increasing the aesthetical appeal. These include metalwork, wood carving, pottery, basketry and Indian Textiles etc. Following table depicts various handcrafted and traditional accessories from various states:

Sr. No.	States/Region	Accessories
1.	Maharashtra, South India and Bengal	Fine Terracotta work articles. Examples: pots in various shapes, lamps, bells, animals figures etc.
2.	Uttar Pradesh (Varanasi, Moradabad), Rajasthan (Jaipur)	Engraved brassware with or without enamel covering. Examples- flower vases, fruit bowls, table tops, bells, candle stands etc.
3.	Karnataka (Bidar), Telangana (Hyderabad)	Bidri work : lustrous silver and gold inlay on striking jet-black oxidized background. Examples : Wall plaques, paper cutters, fruit dishes etc.
4.	South India (Madras, Madurai and Bangalore)	Metal sculptures in fine Chola tradition representing gods and goddesses made in brass, bell metal or oxidised metal.
5.	Punjab, Kashmir and Gujarat	Wood work- Wood carving, new designs in wooden furniture, variegated designs in raised or engraved

Sr. No.	States/Region	Accessories
		patterns in walnut wood, inlay work in wood, sankheda style furniture from Gujarat, rose wood and sandal wood work for decorative articles etc.
6.	Rajasthan, Uttar Pradesh (Khurja, Azamgarh, Aligarh),	Pottery in blue and turquoise glazes (Rajasthan), black pottery (U.P.)
7.	Assam, West Bengal, Orissa, Uttar Pradesh and Tamilnadu	Varied basketry accessories as a folk craft from bamboo, cane, grasses, reeds, leaves of coconut and date palms. Examples- baskets, mats, boxes, trays, toys, dolls, costume jewellery, wall hangings etc.
8.	Uttar Pradesh (Banaras), Gujarat (Saurashtra), Rajasthan (Jaipur), Tamilnadu (Madurai)	Indian Textiles- varied articles and silks like brokades, patolas, kanjivaram, chanderi, kota materials etc. are used for making beautiful and fine accessories along with tie and dye technique articles.
9.	Chhattisgarh	Tribal art of Bastar. Examples- Bamboo art, bell metal (Dhokra), Tatoo motifs on textiles (Gonda), Wrought Iron (Loha Shilpa), Terracotta Tumba, wood carving etc.

Use your brain : Examples of accessories from various categories are given in the table below. Can you state some more examples ?

Sr. No.	Type of Indian Handicraft	Examples
1.	Metal	Sculptures, candle stands,
2.	Wood Carvings	Low stools, flower vases,
3.	Pottery (Terracotta Work)	Lamps, pots,
4.	Basketry	Baskets, wall hangings,
5.	Indian Textiles	Frames, Wall hangings,

- **Care of accessories :** Proper care and maintenance of accessories is an essential aspect in the effective use of both the functional and decorative accessories. The care and maintenance of accessories totally depends on the material used for manufacturing the accessories.

Always remember :

Following are some useful tips for care and maintenance based on material :

- **Brass :** Some families have a love for brass accessories. When brass comes in contact with air, oxidation takes place. Traditional method for cleaning such accessories is using tamarind and salt. After cleaning, brass is generally polished by using a polish available in the market.

➤ **Wood :** Wood is used extensively in interior design for making furniture as well as accessories. For maintenance of the wooden accessories processes like repairing, polishing, varnishing, painting are useful. These processes give a new appearance to the articles and also increase their durability.

➤ **Glass :** Recently glass has become a very popular material for accessories used in residential as well as commercial interiors. Glass can be cleaned with warm soapy water or a tissue paper or simple newspaper which is dipped in soap water.

➤ **Ceramic :** Number of accessories made from ceramic may find place in interiors. Cleaning and maintaining them is very easy. These objects can be cleaned by using water and any mild detergents using soft fabrics or microfiber dusters.

➤ **Aluminium :** This is not a very common material used for accessories. But since it is light in weight and is available in bright colours it may be used in interiors. It can be cleaned with mild detergent.

➤ **Porcelain :** Porcelain again is not a very popular material for accessories. But if used, they can be cleaned easily with soap solution.

➤ **Plastic :** Use of plastic is common for making various objects used in interiors. They can be cleaned with soap solution.

➤ **Cast Iron :** Few years back use of cast iron for manufacturing various objects was very common. However, now days its use for manufacturing objects has reduced. Such objects rust due to humidity in the air. For maintaining them, first the rust needs to be removed and then painting can be done with synthetic enamel.

➤ **Fabric :** Fabric is commonly used for making various accessories. These can

be cleaned and maintained by periodical dusting, washing and ironing. However, this process depends on the nature of the objects. If required dry cleaning can be done.

- **Mirrors :** Mirrors can be effectively cleaned by using a tissue paper or a newspaper by dipping it in soap water. The decorative frames of the mirrors can be polished or varnished to give a fresh look.
- **Small Rugs :** Normally, these are cleaned by using a vacuum cleaner. Drying in sun after removing the dust or soil is also suggested. If they are washable, they can be washed and dried in sun.

8.4 Importance of accessories :

Can you tell the importance of accessories ?

- Accessories define the purpose of the room, complete and highlight an aspect of the decoration.
- Accessories create a visual center of interest in a room. For example, by arranging a group of pictures or an antique rug.
- Without accessories, a room is sterile. An interior needs to be more than just walls, floor and ceiling. The accessories, in addition to their basic function make the interior finished and liveable.
- Accessories make the interior spaces come alive as they add texture, colour, pattern and form.
- Accessories pull the design scheme of a room together and increase the aesthetic value of a room.
- Accessories are aesthetically pleasing and bring in a stimulating or restful environment.
- A good collection and arrangement of accessories adds status, a personal character and reflects the personality of the individual or that of the family members.
- Accessories can be used to create a focal point or it can be the center of emphasis.

8.5 Guidelines for selection and placement of accessories : The selection of accessories totally depends on personal likes, dislikes and interests because of which the selection of accessories varies from individual to individual. Thus, it is difficult to formulate rules about them. Everyone is entitled to his or her own views on aesthetics but there are certain accepted standards, which have been put forth by people with trained eyes. The object should be aesthetically beautiful. It should have a good structural and decorative design.

Consider this :

There are certain well-accepted norms that should be followed in the selection and arrangement of accessories. They are as follows :

- The accessories should be kept to the minimum. Placement of too many accessories may create confusion of the eye.
- Accessories need to be placed with space between individual items, so that they can be enjoyed separately while still forming part of a unit.
- The accessories should be placed at important points in the room and should create focal point in the room. By choosing the same colours or shapes, the decorator can use the accessories to create unity in a room.
- The accessories should follow the theme of the room and should be related to the furniture and furniture groupings.
- Accessories should have some personal significance and importance for the family members.
- Accessories should be related to the function and the use of the room. The living room accessories should be of general interest and appeal.
- All accessories should have decorative or functional values or they should have both the values.

- Accessories should have variety in colour, texture, size, shape etc.
- Accessories should be rotated or changed frequently for variety and freshness.
- The functional accessories should first of all be suitable for the purpose it should serve rather than just being beautiful.
- Both functional and decorative accessories should be well proportioned, harmonious and balanced in appearance.
- Groups of accessories are more interesting if the shapes and the heights are varied. Too many items of one shape may seem monotonous. However, if accessories are grouped together, each must have something in common with the next. It may be the size, shape, material or colour.
- Accessories that are figured or decorated can be enjoyed best if they are placed against a plain background.

Can you recall ?

- Accessories play an important role in the furnishing of a room and add functional and aesthetic appeal to any room in the house.
- Accessories are defined as: ‘The elements that bring charm, individuality and vitality to a room’.
- Accessories can be defined as: ‘The objects used to decorate and define the purpose of the room, which also exhibits the taste, individuality and personality of the inmates’.
- ‘Interior design accessories are decorative or functional items that add the finishing touches to a chosen home style’.
- Accessories are classified as functional and decorative.
- Functional accessories are required for carrying out some function and decorative

accessories are required for increasing the aesthetic value of a design or house.

- Some accessories can be purely decorative. But sometimes a decorative accessory may also serve to be a functional accessory.
- There are number of accessories which can be used in a house. The choice depends on individual likes, dislikes and interest.
- The care and maintenance of accessories depends on the material used for manufacturing the accessories.
- Accessories are important in a house for various reasons.
- There are no rules for the selection and placements of accessories, but there are certain well accepted norms that should be followed in the selection and arrangement of accessories.

Exercises

• Objective questions :

1) Multiple choice questions :

1. The accessories meant for carrying out some function are called as _____ accessories.
 a) decorative b) useful
 c) functional d) aesthetic

2. A wall hanging is a _____ type of accessory.
 a) decorative b) useful
 c) functional d) utilitarian
3. The height of the lamps to be used on low or medium height tables should be _____ to _____ inches.
 a) 20" to 25" b) 30" to 32"
 c) 28" to 30" d) 18" to 20"

2) Identify whether the following statements are true or false :

1. Flower arrangements are functional accessories.
2. A decorative accessory may also serve to be a functional accessory.
3. Pictures should be placed at the eye level of a standing person.
4. Plants with small leaves and lot of foliage can be used as hanging plants.
5. Accessories help to create focal point in a room.

• Short answer Questions :

1) Define the following terms :

- a) Accessories
- b) Functional accessories
- c) Decorative accessories

2) Answer the following questions :

- a) Describe the classification of accessories.
- b) How will you take care of brass, glass and fabric accessories?

3) Write short notes on the following :

- a) Pictures and flower vases as accessories.
- b) Lamps, wall clocks and mirrors as accessories.
- c) Care to be taken of wooden, cast iron and ceramic accessories.

• Long answer questions :

- a) Why is use of accessories considered important in interior design?
- b) What points should be kept in mind in selection and arrangement of accessories in a room ?

Projects / Assignment :

1. List out the accessories used in any one of the rooms in your house and identify the same as functional, decorative or functional cum decorative accessory.
2. Collect pictures of various accessories from newspapers, magazines or pamphlets and prepare a scrap book.
3. Collect pictures of handicraft accessories from various sources available, stick them in a scrap book.

Practical / Related Activities :

1. Click pictures of any five accessories used in the living room of your house, take printouts, stick them on blank paper and explain the points considered in their selection and arrangement by your family.
2. Prepare an accessory using the technique of best out of waste.



9. FLOOR DECORATION

- 9.1 Introduction
- 9.2 Importance of Rangoli Decoration
- 9.3 Materials Used
- 9.4 Types of Rangoli

In India traditional floor decoration is well known as Rangoli in various forms.

9.1 Introduction :

Rangoli is an age old traditional and one of the most popular arts among India. It is a traditional folk art kept alive by the rural and urban women of India by passing the expertise down through the generations. The term RANGOLI is derived from 'Rang' (meaning colour) + avalli (meaning coloured creepers) or 'Rang' + 'avalli' (meaning row of colours). The term rangoli refers to designs made with coloured powders on the ground in front of the house. The designs vary in different parts of India, but the basic methodology remains the same in all the areas. The designs are mostly geometric and symmetrical, while some natural elements like flowers, birds etc. may be included.

In a traditional household, the lady of the house starts her daily chores after purifying herself, drawing some Rangoli lines in front of the pooja room and the tulsi. Her regular routine begins after this ritual. With this, her entire day remains fresh and lively. Traditionally, such floor decorations were done only on auspicious occasions or festivals. But today they are done on any occasions like; wedding, birthday parties, opening ceremonies etc. irrespective of any caste, creed, religion, region (urban, rural) for enhancing the beauty of the occasion.

Traditionally, rangolis are done by putting dots on the floor in specific number and manner depending on the requirement of a design to be

created. Such dots are connected by straight or curved lines to create desired patterns. Lines are drawn by taking rangoli powder in the fingers and letting it drop on the floor by slowly moving the thumb over the fore finger. Smooth movement of fingers in releasing the powder is very important for creation of fine design. The designs may be kept in white colour or they may be coloured by using coloured powder. The colours may be used in pure form or by adding some white powder to it. A person needs to have some skill for doing good rangoli. It is also possible to acquire the skill through practice. Rangolis can be of any size, they can be pretty small or even as big as to cover an entire room.

Do you know?

Different Indian states have different ways of Rangoli-painting and also have different names in their regional or local languages.

Name of the State	Name of the Rangoli
Maharashtra	Rangoli
Karnataka	Hase
Tamil Nadu	Kolam
Rajasthan	Mandana
Utter Pradesh	Chowkpurna
Bengal and Assam	Alpana
Andhra Pradesh	Mugullu
Gujrath	Sathy
Kerala	Aniyal

Pay attention to :

9.2 Importance of Rangoli Decoration : The reasons for doing rangoli and the motifs and patterns used in it are all symbolic in the context of philosophic, religious or ritualistic beliefs of the area.

- There are parts of India where rangoli is freshly done every day on the threshold of homes before sunrise. Such rangoli is done by using traditional motifs, graphic motifs, geometric motifs. It is done as a thanksgiving for a good harvest, for the children of the household to grow strong and Lakshmi, the goddess of wealth and fortune to smile upon the family.
- Rangoli is considered auspicious as it signifies showering of good luck and prosperity on the house and in the family.
- These floor decorations originated as a form of thanksgiving and an adornment of the earth that nurtures us.
- These floor decorations are auspicious symbols. There are special motifs for different occasions like weddings, festivals, departures. During Diwali festival for example, the feet of Goddess Lakshmi, the Goddess of wealth are drawn by the door signifying her visit. The whole object of making rangoli in Diwali is to welcome Goddess Laxmi, the Goddess of wealth, to individual homes. Thus, small footprints coming into the home, representing the footprints of the Goddess, are also made.
- During festivals, the essence of the auspicious day is represented by a special design.
- On days of fasting, the symbolic motifs are drawn to ward away evil spirits and bad omens.
- As an art form, the creations are decorative and embellish the courtyards and floors of homes. Some of the Rangoli designs are simple and others complex and intricate.

- It has become a new field of entrepreneurship. One can earn handsome income and at the same peruse their hobby.

9.3 Material used :

Can you make a list ?

The materials used are easily found everywhere. Therefore, this art is prevalent in all homes, rich or poor.

- **Rice :** The traditional material used for making rangoli is rice flour. It may be used as the base material to which natural colours may be added. Use of chemical colours is a modern variation. The purpose behind using rice is to offer food to the ants, the birds and the squirrels. Even coloured whole rice can be used for the purpose. It is pretty simple to get rice coloured with food colours readily available in the market.
- **Stone powder :** The use of white stone powder for making rangoli has become very common now days.
- **Red brick powder :** Red brick powder may be used where red colour is required in rangoli design.
- **Saw dust :** Saw dust can also be used to make rangoli patterns. Saw dust has an advantage that it floats on water so it can be utilized to create Floating Rangoli patterns.
- **Other mediums :** Many other materials like whole grain, pebbles, pulses, brightly coloured dyes, flowers and petals etc. can be used effectively.
- **Mixed materials :** The patterns are made with rice powder, crushed limestone, or coloured chalk. They may be topped with grains, pulses, beads or flowers.

9.4 Types of Rangoli :

Do you know ?

The types of rangoli made vary in different parts of India. The difference is usually in the

type of designs, method of drawing the designs, materials used and symbolic motifs.

i. Traditional Rangoli : In the state of Maharashtra, traditional Rangoli involves putting variable numbers of Rangoli-dots in rows and columns on the floor. They are joined together to depict cultural symbols. These white rangoli dots are cast with pinched fingers and the symbolic structures thus drawn are filled with vivid colours.

Traditional designs use symbolic motifs to a great extent. Designs usually include Laxmi's feet, ceremonial lamps, shells, moon, flowers and leaves, mango, birds-peacock, parrot, fish, tortoise, pictures of God and Goddess etc. Along with these, geometrical figures such as round, square, triangle etc. are also used. The lines are usually curved with no sharp angles.



Fig. 9.1 Traditional Rangoli for Home Decoration

ii. Free Hand Rangoli : Free hand Rangoli drawing is a comparatively contemporary form of Rangoli. In contrast with the traditional form of rangoli, free hand rangoli does not involve casting of dots but involves free strokes of hands and abstract designs with sheer stylized beauty. The designs do not have any metaphorical symbolic representations, the patterns are just creative waves that have pleasing appearance.



Fig. 9.2 (a) Free Hand Rangoli



Fig. 9.2 (b) Free Hand Rangoli

iii. Sanskar Bharati : It is an advanced type of rangoli which is modified from traditional symbols and is used merely for the purpose of decoration. They are generally huge in size and are done with bold, thick and curved lines. Such lines and prominent dots are the special features of this type. The colours used are normally dark and bright with white borders. This Rangoli uses the special technique of using all five fingers and rangoli powder is allowed to flow through them smoothly. It requires special training

and practice to master this art. A sieve is mostly used for the even spread of colours that creates very attractive designs. Designs used may be natural designs, portraits, idols of god and goddess etc. It uses traditional symbols in the design like “go-padma”, “shankh”, “chakra” etc.



Fig. 9.3 Sanskar Bharati Rangoli

The use of this Rangoli is becoming quite popular day by day for a number of occasions for example; national and community-oriented ceremonies, and also ceremonies like a naming ceremony, an opening ceremony of a shop or clinic, housewarming ceremony etc. and for various festivals as well. The functions held in the schools and colleges give an opportunity to the students to exhibit their skills in doing this Rangoli.



Fig. 9.4 Sanskar Bharati Rangoli

iv. Alpana : It is believed that the word alpana is derived from the Sanskrit word meaning **alimpan**. It is quite popular in Bengal and Assam. Traditionally, it is done with rice flour using traditional symbols. In Alpana,

the borders are done with Vallari design. Shantiniketan Alpana is a stylized modern art form of Alpana with unconventional designs and colours. The people of Bengal have expertise in this form of Rangoli.

Method of doing Alpana : Rice is soaked overnight and grind it to a fine paste of liquid consistency. Dip a wad of cotton wool in this liquid and gently squeeze out the liquid on the floor to create elaborate patterns of lines and curves. The use of cotton wad gives a continuous supply of liquid. The traditional way of drawing these patterns is by letting the rice flour slip from between the fingers onto a freshly swept surface.

Lines used in creating alpana designs must be of same width. Normally used designs are- Laxmi's feet, ceremonial lamps, shells, moon, flowers and leaves, mango, birds, peacock, parrot, fish, tortoise, pictures of God and Goddess etc. Besides these, geometrical figures such as round, square, triangle shapes are also used. Alpana may be white in colour or it may be coloured using various colours. Sources of colour are burnt grass, geru or red sand, turmeric or yellow earth and extract of leaves for black, red, yellow and green colours respectively.



Fig. 9.5 (a) Alpana



Fig. 9.5 (b) Alpana

v. Other forms of Rangoli :

a. Painted Rangoli : Now Rangoli has become an art form. It uses paints and the application is usually with a paint brush. The creations are decorative and embellish the courtyards and floors of

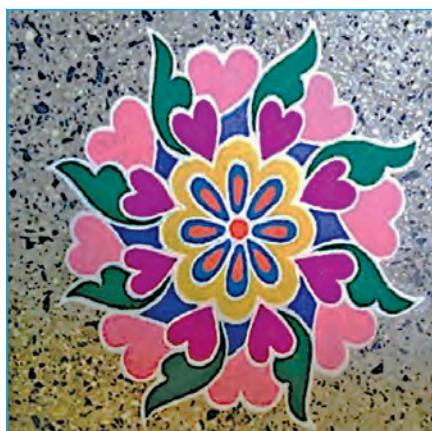


Fig. 9.6 (a) Painted Rangoli



Fig. 9.6 (b) Painted Rangoli

houses. Some are simple and others are complex and intricate. These rangolis can be of any size, from the size of a doormat to covering an entire room. These are used as decorations for any occasions like weddings, birthday parties, naming ceremony, housewarming ceremony etc.

b. Plywood Rangoli : A recent technique adopted by many people is doing rangoli on attractive pieces of plywood, either by cold ceramic technique or by painting with attractive colours. It is not a traditional form, but it gives a similar effect. The biggest advantage is that it can be preserved for a number of months and not just a couple of days like a regular rangoli, which gets spoiled easily. It saves time and the pieces can be conveniently carried and arranged at the place of an occasion.



Fig. 9.7 Plywood Rangoli

c. Acrylic Rangoli : Use of acrylic pieces for making rangoli designs is becoming popular now days. These are light in



Fig. 9.8 Acrylic Rangoli

weight and can be used easily anywhere anytime. Other advantages are similar to plywood rangoli.

d. Flower Rangoli : On many occasions rangoli designs may be created by using fresh flowers. The combination of varied colours make such Rangoli very attractive. Some times petals of flowers are used which are combined with variety of leaves available in varied shades of green.



Fig. 9.9 (a) Flower Rangoli



Fig. 9.9 (b) Flower Rangoli

e. Rangoli on Water : Water rangoli, as the name suggests is a technique of doing rangoli on water. This rangoli is also called as ‘Floating rangoli’ or ‘Under Water Rangoli’ Creation of this rangoli requires lot of concentration along with skill. There are various methods of doing this rangoli :

i. Charcoal powder method : As the name suggests the method uses charcoal. Following are the steps for doing this rangoli :

- Fill a shallow vessel with water.
- Spread charcoal powder slowly and evenly on the surface of water.
- Create a desired rangoli on it by using rangoli powder and colour. The design can be done by hand or it can be spread by means of a thin cloth.

ii. Wax method : This method uses wax as one of the main materials. The steps for doing this rangoli are as follows:

- Heat the plate to be used for doing rangoli.
- When it is hot, rub a candle so that a thin layer of wax settles on it. Instead of this one can pour molten wax onto the plate.
- Leave the plate at rest until the wax dries.
- Once the wax is dry, a rangoli pattern of one’s choice can be done on the layer of wax.
- After the rangoli pattern is completed, the plate is reheated and the rangoli pattern is allowed to settle down.
- Keep the plate aside. And after it cools down, pour water in the plate.

iii. Oil method : The steps for making water rangoli using oil are as follows :

- Take a bowl and apply a thin layer of oil on its inner surface.
- Pour some cold water into the bowl up to its edges.
- Sprinkle some white distemper powder on the surface of the water in the bowl.
- Draw a rangoli design on the surface of the water and fill in the colours as required.
- Sprinkle glitter on the surface of the rangoli for aesthetic appeal.



Fig. 9.10 Rangoli on Water

f. Stencil Rangoli : This is a ready-made design with perforations. The rangoli powder penetrates through the perforations to create a design. Such



Fig. 9.11 (a) Stencil Rangoli



Fig. 9.11 (b) Stencil Rangoli

stencils are useful for beginners and for those who do not have skill in doing rangoli but have love for rangoli.

g. Sticker Rangoli : These are simply available in the form of stickers. These are ready made rangoli patterns. Those



Fig. 9.12 (a) Sticker Rangoli



Fig. 9.12 (b) Sticker Rangoli

who do not have the skill in making rangoli or those who do not have lot of time to make rangoli designs, may use

this type of rangoli. These are becoming popular day by day as they help to create detailed and precise designs.

Symbols used in traditional Rangoli and Alpana

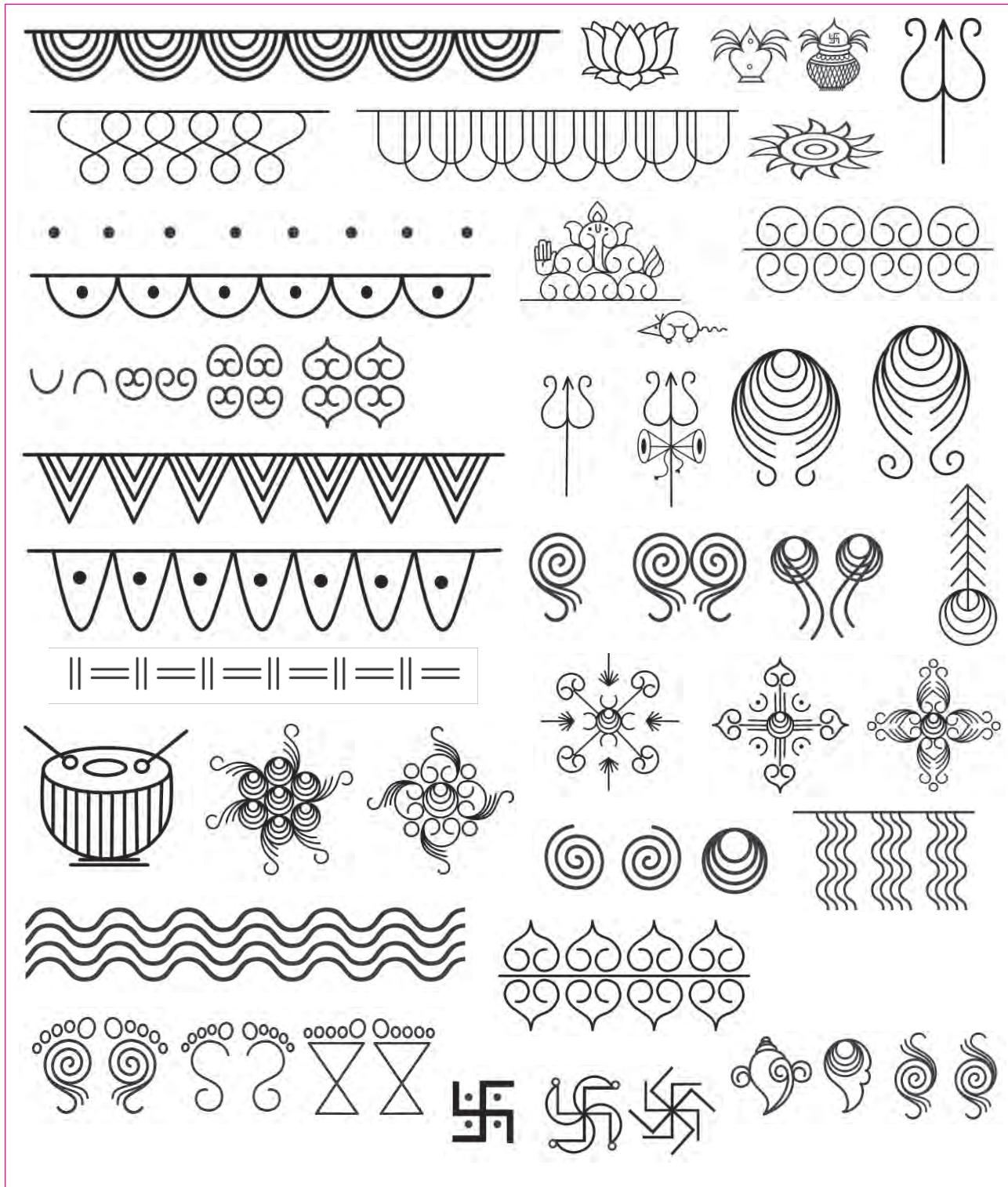


Fig. 9.13 Symbols used in traditional Rangoli and Alpana

Can you recall ?

- Rangoli is an age old traditional and one of the most popular arts among Indian women.
- The term rangoli refers to designs made with coloured powders on the ground in front of the house.
- Different Indian states have different ways of Rangoli-painting and also have different names in their regional or local languages.
- The reasons for doing rangoli and the motifs and patterns used in it are all symbolic in the context of philosophic, religious or ritualistic beliefs of the area.
- Various materials that are easily available everywhere are used for making rangoli.
- Traditional Rangoli involves putting variable number of dots in rows and columns on the floor which are joined together to depict cultural symbols.
- Free hand rangoli involves free strokes of hands and abstract designs with sheer stylized beauty.
- Sanskar Bharati is an advanced type of rangoli which is modified from traditional symbols and is used merely for the purpose of decoration.
- Alpana is a form of floor decoration which is popular in Bengal and Assam. Traditionally, it is done with rice flour using traditional symbols.
- Painted rangoli has become a very popular art form. It uses paints and the application is usually done with a paint brush.
- Plywood rangoli is a technique of doing rangoli on attractive pieces of plywood, either by cold ceramic technique or by painting with attractive colours.
- Acrylic rangoli uses acrylic pieces for making rangoli designs. These are light in weight and can be used easily anywhere anytime.
- Flower rangoli is done on many occasions by using fresh flowers of varied types and leaves.
- Rangoli on water is done in a shallow vessel filled with water. Creation of this rangoli requires lot of skill and great concentration.
- Stencil and sticker rangoli can be easily used by anyone for doing floor decorations.

Exercises

• **Objective questions :**

1) Multiple choice questions :

1. Rangoli decoration from Bengal and Assam is called _____.
 a) alpana b) mandana
 c) Sathyra d) mugullu
2. The type of rangoli that involves free strokes of hands and abstract designs is _____ rangoli.
 a) traditional b) sanskarbharati
 c) freehand d) alpana

3. The type of rangoli that is modified from traditional motifs is called as _____ rangoli.

- a) sanskarbharti b) freehand
 c) plywood d) shantiniketan

2) Match the following pairs :

A	B
Karnataka	Mandana
Tamil Nadu	Chowkpurna
Rajasthan	Hase
Utter Pradesh	Mugullu
Andhra Pradesh	Kolam

- **Short answer Questions :**

1) Differentiate between the following :

- a) Traditional and sanskarbharati rangoli
- b) Traditional and freehand rangoli

2) Write short notes on the following :

- a) Importance of rangoli
- b) Alpana
- c) Plywood and acrylic rangoli
- d) Flower rangoli and rangoli on water

3) Answer the following in brief :

- a) List out the material that can be used for making a rangoli in front of a house.
- b) Describe the method used for making alpana.
- c) Describe the method used for making any type of rangoli.
- d) What are the various methods of creating water rangolis?
- e) Write in brief about stencil and sticker rangolis.

Projects / Assignment :

Observe various types of rangoli done in your nearby areas, click photographs, take print outs, stick them on blank papers and maintain a file.

Practical / Related Activities :

1. Draw rangoli designs on plain paper and colour them up by using any two colour schemes.
2. Demonstration and practice of various types of rangoli. Try out various colour schemes to colour them up.
3. Try making acrylic, wooden rangoli. Also try out rangoli using other materials like flowers and leaves.
4. Try creating water rangoli by using any one method.



10. HOUSEHOLD LIGHTING

- 10.1 Concept of Lighting
- 10.2 Sources of Lighting
- 10.3 Principles of Lighting
- 10.4 Types and Methods of Lighting

Let's Discuss :

10.1 Concept of Lighting :

Light is the basic requirement of house. Light is necessary to create visibility, brightness, beauty and aesthetics in interior. It helps to create cheerful atmosphere. Light can enhance the colour, design, textures of material and various surfaces in the interior of a home. The quantity of light within a room depends on two factors- colour and texture. The colour scheme and the texture of walls, ceilings and objects determine the quantity of light being reflected and thus decide the illumination level in the room. A dull, dark or black colour and coarse texture will absorb more light. Another basic factor of lighting involves the colour of the light itself. Natural light appears to be bright, warm and has yellowish glow. The colour of daylight varies throughout the day. Artificial light is available in various colour.

10.2 Sources of Lighting :

Do you know ?

Natural and artificial lighting are the two main and commonly used sources of lighting.

1. Natural lighting : Natural light is available naturally. The most common source of natural light on earth is the sun. Natural light or day light is an important factor in the appearance of a room. The amount of light that enters a room depends on the number, size and location of doors and windows of

the house. The area occupied by the doors and windows should be equivalent to one-seventh to one-tenth of the total floor area of the room. Natural light helps a person to perform household tasks easily, without having any strain on the eyes and helps to save electricity.



Fig. 10.1 (a) Natural lighting in the room



Fig. 10.1 (b) Natural lighting in the room

2. Artificial lighting : When day light or natural light is inadequate, artificial lighting becomes essential. Artificial light can be provided with the help of non-electrical and electrical lighting devices. Non-electrical lighting devices are candles,

oil lamps and gas lamps. Commonly used electrical lighting devices are incandescent bulbs, fluorescent tubes and bulbs, CFLs (Compact Fluorescent lamps), LED (Light Emitting Diode) and solar lighting. Now days artificial lights are available in various colour, size and shape and are becoming more popular day by day.

Always remember : The incandescent lamp or bulb was invented by Thomas Edison in 1879.

Sources of Artificial Lighting : Most common sources of artificial light are Incandescent Lighting, Fluorescent Lighting, CFLs, LED and solar lighting.

- **Incandescent Lighting :** Incandescent bulbs are available in the market. Incandescent bulbs produce light by heating a filament. The filaments are made of double coils of tungsten metal. It has high electrical resistance. It can sustain high temperature upto 2300°C at which it glows and becomes incandescent and emits white light. The bulb is sealed glass tube which is filled with Argon gas. When the electric current flows through the bulbs and lamps, it results in heating of filament tungsten and giving out the visible light. The incandescent bulb lasts for 750 to 1000 hours.

Advantages :

1. The installation cost is less in comparison to other lighting sources.
2. The cost of the bulbs is less than other fixtures of lighting.
3. There is no flicker in incandescent lighting.

Disadvantages :

1. It has warm and bright glow.
2. It produces more heat and less light.
3. It increases the temperature of a room.
4. It creates shadow, making it difficult to work.



Fig. 10.2 Incandescent Bulb

- **Fluorescent Lighting :** Fluorescent tubes and bulbs are available in the market in different shapes like linear, circline and u-bend etc. The standard length of fluorescent tubes is 48 to 84 inches.

It is a glass tube sealed at both the ends which is coated with phosphorus from inside and is filled with very small amount of mercury mixed and an inert gas Argon. When electric current flows through the gas between the electrodes, the gas is ionized and emits ultraviolet radiation, which cause the phosphorus substance to produce visible light. The colour of the light depends on the colour of the fluorescent phosphor powder coated inside the tube.

Advantages :

1. It gives soft and shadow free light.
2. It is economical and easy to use.
3. There is no stress on eyes and makes it easy to complete task.
4. It produces less heat in comparison to incandescent lamps.
5. It produces more light in less electric current, thus turns out to be cheaper.
6. The life of tubes is generally 7500 hours

Disadvantages :

1. It gives more flicker than incandescent bulbs.
2. Initial cost of installation is more as compared to incandescent bulb.

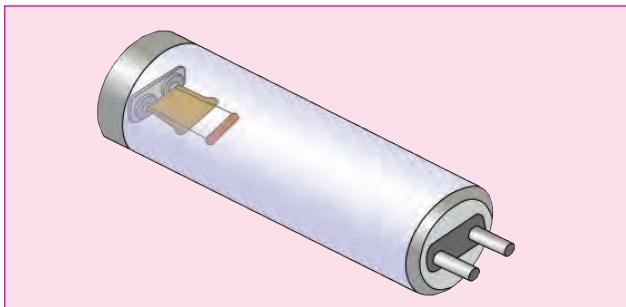


Fig. 10.3 Fluorescent Tube

- **CFL Lighting :** These are available in the market and are becoming more popular day by day than fluorescent tubes. The standard shapes of CFLs are single turn, double turn, triple turn, quad turn, circular and butterfly. The full form of CFL is “**Compact Fluorescent Lamps**”. These lamps are much smaller than other sources of lighting and are used for household and commercial lighting. They are designed to replace incandescent bulbs. They have 25% less energy consumption. They are more efficient and longer lasting as compared to incandescent bulbs. The average life of these lamps is 750 hours. CFL is a tube containing Argon gas and small amount of mercury vapor. When an electric current passes through it, invisible ultraviolet light is generated inside the tube. The tube is coated with phosphors that emit visible light. It has 75% less energy than incandescent bulbs. CFL produces 1170 lumens and uses only 20-21 watts of electricity.

Advantages :

1. CFL lamps and tubes consume 20 to 33% less electricity than Incandescent bulbs.
2. Filaments are not used in CFL.
3. CFLs are safe as they do not emit UV radiation.
4. They produce 70% less heat than Incandescent bulbs. The risk of home fire is less and hence they are safer to use.

- 5. The cost of these lamps is less than LED bulbs.

Disadvantages :

1. They produce full brightness of light.
2. The cost of CFL lamps is more than standard Incandescent bulbs.
3. These lamps don't work with dimmer switches.
4. CFL lamps contain a small amount of mercury, which is toxic.



Fig. 10.4 CFLs

- **LED Lighting :** LED bulbs are available in different sizes and shapes in market. LED stand for “**Light Emitting Diode**”. A diode is an electrical device or component with two electrodes. One is Anode and the other one is Cathode, through which electricity flows in one direction only. Diodes are made from semi-conductor material such as Silicon or Selenium. When current passes through the semi-conductor material the device emits visible light.

Advantages :

1. LED bulb is more durable than other lighting fixtures. It lasts up to 50,000 to 1,00,000 hours or more.
2. It has more energy efficiency than other lighting fixtures.
3. The light received from these bulbs has good quality.
4. It has low maintenance cost.

5. The size of LED bulb is very small than other lighting fixtures.
6. It starts very fast like Incandescent bulbs.
7. It does not increase the temperature of the room.
8. The average life of LED is five times more than CFLs.
9. It is environmentally friendly as it does not contain mercury or other hazardous substances.

Disadvantages :

1. LED fixtures are costlier than other lighting fixtures.
2. It cannot give a point source of light and hence it is not suitable where spherical light field is required.
3. Some LED lamps start with dimmer switch.



Fig. 10.5 LED Lamps

- **Solar Lighting :** Home lighting system is powered by solar energy using solar cells that convert solar energy (sunlight) directly to electricity. The electricity is stored in battery and used for the purpose of lighting whenever required.

The solar home lighting system is also known as photovoltaic system or solar power system. It is generally a fixed installation designed for domestic application. It can be installed virtually in any place.



Fig. 10.6 (a) Solar Lighting Panels



Fig. 10.6 (b) Solar Lighting Panels



Fig. 10.6 (c) Solar Lighting System

The Solar Lighting system consists of the following :

1. Solar photovoltaic panel or solar cells
2. Solar Inverter
3. Battery
4. Fixtures like lamp, fan, etc.

The solar photovoltaic panel is installed on the roof or terrace and it is exposed to sunlight. The solar inverter and battery are kept inside and in a protected place of the house. The solar photovoltaic panel requires periodic cleaning for effective performance.

Solar panels absorb the solar energy which is then converted into electricity. The solar inverter converts this electricity from direct to alternating current. Light is received through the lighting fixture. The solar energy collected, is usually stored in chargeable battery and used later on when there is no sunlight to produce lighting.

Advantages :

1. Solar power is available every day.
2. Solar light is free from pollution and there is no emission of greenhouse gases.
3. It saves use of conventional energy sources.
4. Saves payment of utility bills and generates funds by selling the extra energy to the power company.
5. The maintenance cost is minimal.
6. It is safe to use than traditional lighting methods.

Disadvantages :

1. The initial cost of material and installation is very high.
2. This lighting system needs lot of space for installation.
3. Since there is no solar power available at night, the battery should have more capacity for storage of energy.
4. On cloudy and winter days less energy is produced.

Always Remember :

10.3 Principles of Lighting :

There are some principles to be considered while adopting light in a home.

1. **Intensity of light :** The intensity of light must be considered while performing any household task. Right amount of intensity is required to do household tasks. If the intensity of light is in excess amount, it is harmful to eyesight or inconvenient to do proper work.

2. **Steady or steadiness :** Steady or steadiness of light is essential in-home lighting. Household tasks can be performed easily, quickly and properly and without any stress on eyes if the light is steady.

3. **Glare :** Glare is a condition of vision in which there is discomfort or a reduction in the ability to see the significant objects. Excessive contrast or large changes in brightness produce the effect of glare. When glare is present the efficiency of the vision is reduced and small details or subtle changes in tone cannot be perceived.

4. **Light colour and colour rendering :** Lamps are assigned a colour temperature based on their “coolness” or “warmness”. Cool light is preferred for visual tasks because it produces higher contrast than warm light. Warm light is preferred for living spaces because it is more flattering to skin tones. Tubes or white glow light are used for daily household activities. Coloured bulbs are used for decorative purpose.

5. **Safety :** Light is required in the interiors for safe movement and work by making the traffic lanes visible. To avoid accidents, adopt good lighting system in the home. Good lighting is helpful to increase beauty, and attractiveness that would enhance the aesthetic appeal of the room.

6. **Architectural framework :** Construction of each house may be different according to needs of the family. While constructing home, first decide the placement of windows and doors. Natural light is helpful to do household tasks and also helpful for arrangement of artificial light.

7. **Improvement of decoration :** Home decoration will get affected or enhanced due to proper lighting. Light is one of the essential elements of art. It enhances the beauty of the room, textured walls, furniture, furnishings and different decorative articles.

10.4 Types and methods of Lighting :

Know this :

• Types of Lighting :

This is an important aspect to be considered in construction of a house. The experts have given the three types of lighting based on purpose and the effect produced.

1. General or Ambient lighting
2. Task or Local or Specific lighting
3. Accent or Decorative lighting

1. General or Ambient lighting : General lighting is equivalent to day light or sunlight. It is an overall illumination which lights up the entire room evenly and allows people to see objects and surfaces. It produces safety for people to move in a room. It produces comfortable brightness; one can do work properly and quickly. General lighting can be direct, when the light shines directly on objects to be illuminated or indirect when the light is thrown against a surface usually the ceiling, from which some of the light is reflected. General lighting is also called as Ambient Lighting.

2. Task Lighting : Task lighting is used for specific area or specific task. It is necessary to remember that it is used along with general lighting. Task lighting provides more pleasant illumination, helps to avoid harsh lights and troublesome shadows. It helps to increase productivity by visual comfort and decrease stress level. It is also called as local or specific or directional lighting. Some of the simple examples of task lighting commonly found in household lighting methods are table or desk lamps, lamps at the dressing table etc.

3. Decorative Lighting : Decorative lighting is used to emphasize objects or areas. Decorative lighting is used to enhance the beauty of the room and to create different focal points to create different effect for giving attractiveness to the room. It is more frequently used to highlight decorative objects in a room. It can act as a decorative device. It is also called as “Accent” or “Architectural” lighting. Commonly observed examples are lighting above Sculpture, Painting, textured wall, outdoor landscapes etc.



Fig. 10.7 Types of Lighting

List out various types of lighting observed in various areas of the house. Take a note of one example given below :

Area of the house	Type of lighting
Study table	Task lighting-Table lamp

• Methods of Lighting :

There are five lighting methods used in every home. Lighting methods are classified according to the direction of light, activity carried in a room and selection of fixture.

1. Direct lighting.
2. Indirect lighting.
3. Semi direct lighting.

4. Semi indirect lighting.

5. Diffused lighting.

1. Direct Lighting : In direct lighting system, 90 to 100% of light is projected downwards or towards the working area. This is the most common type of lighting and is used for many types of tasks. Direct lighting spreads light evenly all over the area. It tends to create glare, shadow and reflect light harshly. It is generally used in all the room in a house

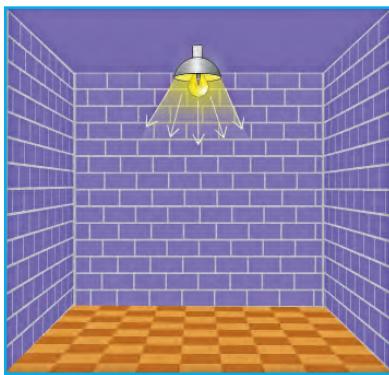


Fig. 10.8 Direct Lighting

2. Indirect Lighting : In indirect lighting system, 90 to 100% of light is directed towards ceiling and or walls from where it is reflected back towards the object or in the working area. For effectiveness of this lighting method, the surface finishes of walls and ceiling in the room should be light or have cool colours and they should be highly reflective and must be kept clean. This method of lighting, minimizes glare, shadow and reflection. It is generally used in bedrooms.

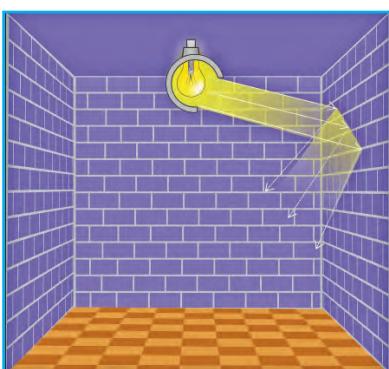


Fig. 10.9 (a) Indirect Lighting

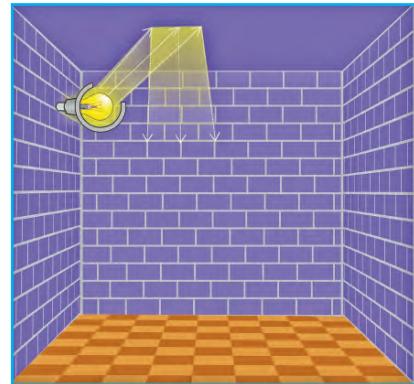


Fig. 10.9 (b) Indirect Lighting

3. Semi direct Lighting : In semi direct lighting system, 60 to 90% of the light is directed downwards; in the working area or object and remaining light upwards i.e. towards ceiling and walls is reflected back in the working area or on the object. This lighting system softens shadows and produces even lighting all over the room. It is generally used in kitchen room.

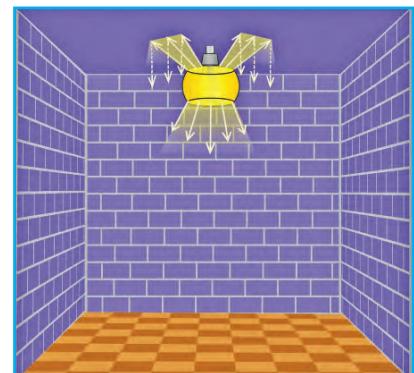


Fig. 10.10 Semi direct Lighting

4. Semi indirect Lighting : In semi indirect lighting system, 60 to 90% of light from the luminaires reflects towards the ceiling and walls from where it is reflected back in the working area. The remaining 10 to 40% of the light is received directly by the working area or the object. This method of lighting produces pleasant atmosphere in the room. It is generally used in dining room.



Fig. 10.11 Semi indirect Lighting

5. Diffused Lighting : In diffused lighting system, light is distributed equally in both upward and downward areas of the room. That means 50% of light is directed upwards that is, towards ceiling and walls and from there it is reflected back in the working area or on the object. Remaining 50% of light is directed downwards in the working area or on the object. It produces pleasing effect to the eye. It is generally used in all the room.

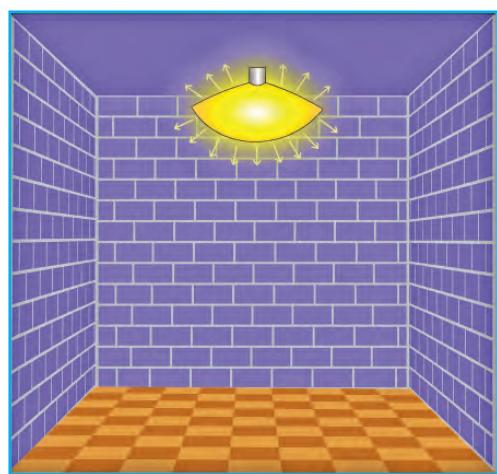


Fig. 10.12 Diffused Lighting

Can you recall ?

- Light is the basic requirement of house. Light is necessary to create visibility, brightness, beauty and aesthetics in interior.
- The purpose of lighting in a house is to provide visibility, create cheerful atmosphere and also give light to carry out various tasks in a room.
- Natural and artificial lighting are the sources of lighting.
- Nonelectrical lighting devices are candles, oil lamps and gas lamps.
- Electrical lighting devices are incandescent bulbs, fluorescent tubes and bulbs, CFLs lamps (Compact Fluorescent lamps), LED (Light Emitting Diode) and solar lighting.
- The incandescent lamp or bulb was invented by Thomas Edison in 1879.
- Intensity of light, steadiness, glare, light colour and colour rendering, safety, architectural framework and improvement of decoration are the principles of lighting.
- General lighting, Task lighting, and decorative lighting are the three types of lighting.
- Direct lighting, indirect lighting, semi direct lighting, semi indirect lighting and diffused lighting are the methods of lighting.

Exercises

- **Objective questions :**

1) Multiple choice questions :

1. The incandescent bulb was invented by _____ in 1879.
a) Thomas Edison b) James Maxwell
c) Michael Faraday d) Benjamin Franklin
2. Incandescent bulbs use _____ filament to produce light.
a) copper b) brass
c) tungsten d) steel
3. The standard size of fluorescent tube is _____ inches.
a) 28-38 b) 38-48
c) 48-84 d) 84 to 90
4. The full form of CFL is _____.
a) Common fluorescent lamps
b) Compact fluorescent lamps
c) Compound fluorescent lamps
d) Common filament lamps
5. Bulbs create _____ and makes it difficult to work.
a) shadow b) light
c) rays d) reflection

2) Match the following pairs :

A	B
i) General lighting	a) For specific ask
ii) Task lighting	b) To enhance the objects
iii) Decorative lighting	c) Light up the entire room

3) Identify whether the following statements are true or false :

- a) Filament tungsten metal is used in CFLs bulbs.
- b) LED stands for Light Emitting Diode.

- c) CFL bulbs are more durable than incandescent bulbs.
- d) The life of LED lamps is five times more than CFL.
- e) LED has more energy efficiency than other lighting sources.

- **Short answer Questions :**

1) Define the following terms :

- a) Natural lighting
- b) Task lighting
- c) Diffused lighting

2) Differentiate between the following :

- a) Incandescent lighting and Fluorescent lighting
- b) CFL and LED
- c) Direct lighting and Indirect lighting

3) Write short notes on the following :

- a) Incandescent bulbs
- b) Fluorescent tubes
- c) CFL
- d) LED
- e) Solar lighting

- **Long answer Questions :**

- a) Explain any two types of artificial lighting sources.
- b) Write general, task and decorative lighting.
- c) Describe the methods of lighting.
- d) Write about the principles of lighting.

Projects / Assignment :

- a. Observe the methods of lighting used in your home and analyze.
- b. Observe the types of lighting used in your college and list them out.
- c. Identify houses with solar lighting system in your locality and collect pictures.



Related Activities

1. Observe and classify various ways of supplementing family income.

Procedure :

- Observe all the ways
- Classify them
- Note down in the following table
- Draw conclusion

Sr. No.	By increasing family Income	By Cutting down Expenditure

2. Visit to a Bank.

Procedure :

- Visit various banks available in your locality.
- Write down the facilities provided by them.
- Draw conclusion

Sr. No.	Name of the Bank	Facilities

3. Prepare a "To Do List" for a week.

Procedure :

- Think about the tasks to be completed in a week.
- Prioritise them
- Allocate required time
- Prepare a final "To Do List"
- Draw conclusion

4. Prepare a time plan for study.

Procedure :

- Set a goal for coming examination.
- List out the Subjects.
- Calculate the available time for study.
- Prioritise the subjects according to your difficulty level.
- Prepare an urgent important matrix.
- Allocate the required time for specific subjects.
- Prepare a time plan for actual utilization
- Note down your remarks

5. Write down the reasons of fatigue after performing the activities in a day by you.

Procedure :

- List out all the activities carried out in a day.
- Think about the fatigue experienced by you on the following aspects
 - Working conditions
 - Likes and dislikes in work
 - Posture during work
 - Duration of work
 - Type of work - Light, moderate, heavy
 - Success in work
 - Appreciation received
- Write down the conclusions

6. Prepare 'Pathway chart' of any household activity.

Procedure :

- Select any activity
- Draw a floor plan of work place in scale
- Place it on a soft board
- Select work centers and fix pins accordingly

- e) Ask the worker to perform an activity
- f) Observe the path taken and wind the thread around the specific pins.
- g) After completion of task, remove the pins and measure the length of the thread and note it down and convert the thread length into distance travelled.
- h) Give suggestions for improvement of path travelled during the activity.
- i) Prepare a fresh plan according to suggestions and follow the previous procedure for the modified activity.
- j) Compare the length of the thread to know the distance travelled in original and modified plan.
- k) Write down the conclusions.

7. Collection and analysis of labels.

Procedure :

- a) Collect minimum one label from the following -**
 - Agricultural Products : Sugar, jaggery, cereals, pulses, oils, fats, etc.
 - Preserved foods : Pickles, jams, jellies, squash, mineral water, juices, canned food etc.
 - Ready to eat products : Various masala gravies, baby foods, ready to eat vegetables, poha, upama and other products.
 - Milk products : Paneer, cheese, ghee, curd, yogurt, lassi, ice-creams, shrikhand, basundi, burfee, etc.
 - Clothes : Fabrics, readymade garments, woolen clothes, hosiery garments, furnishing materials like sofa covers, bed sheets etc.
 - Cosmetics : Hair oils, body lotions, creams, soaps, shampoo, nail paint, lipsticks, talcum powder etc.

- Medicines - Tablets, injections, creams, sprays, drops, syrups, etc.
- Electrical and electronic products : Mixer, food processor, iron, water heaters, plug pins, electric wire, television, micro oven, refrigerator, mobiles etc.
- Tools and utensils - kitchenware, nonstick utensils, water filters, containers etc.
- Others - Toys, stationery items, mosquito coils, match sticks, etc.

b) Analyse the collected labels on the basis of the following points.

- Informative labels : weight, date of manufacturing, date of expiry, content, price, nutritional value, care and storage, information regarding use, barcode, mail address, website, address of the manufacturer.
- Brand labels : Identify the brand name and brand logo of the product.
- Certification labels : Identify the certification mark such as ISI mark, Agmark, Vegetarian and Non -vegetarian marks, FSSAI, BEE star label mark, Handloom mark, Wool mark, Silk mark, Eco mark.

c) Paste the collected labels and write the analysis in the journals.

8. Prepare a colour wheel.

Procedure :

- a) Draw a circle and devide it in 12 equal parts.
- b) Locate the places of primary colours first by placing yellow at top centre of the circle
- c) Locate the places of secondary colours and then intermediate colours.
- d) Apply the primary colours in the respective places and let them dry.

- e) Prepare secondary colours and apply them in the respective places. Allow them to dry.
- f) Now prepare intermediate colours and apply them in proper places. Let them dry.

Note : Refer the colour wheel given in figure 7.14 for accurate locations of colour and colour hue.

9. Prepare freehand design.

Procedure :

- a) Draw square of 10×10 cms. on a plain paper.
- b) Draw freehand design of your imagination and choice
- c) Select a colour scheme and choose appropriate colours.
- d) Use the specified colour scheme for colouring the design.
- e) Apply the colours carefully and smoothly to make the design attractive.

10. Prepare an accessory.

Procedure :

- a) Think about the waste material available in your house.
- b) Apply your imagination to create a useful and decorative accessory for example a wall hanging, flower vase, lamp shades, penstand, cushion covers, floor mats, table mats, table covers and such accessory.
- c) Write down the material used and the procedure used for making the accessory.

11. Demonstrate and practice various types of rangoli.

Procedure :

- a) Demonstrate the following types of rangoli by using proper material and method.

- Traditional - With dots and traditional symbols.
 - Sanskarbharti - by using appropriate symbols and their variations given in the unit.
 - Aplana - with traditional material and symbols.
 - Freehand rangoli
 - Water rangoli using any one method given in the unit.
- b) Write down the material used and the method.
 - c) Click a picture and paste it in practical book.

12. Observe the types of lighting used in different rooms in your house.

Procedure :

- a) Note down the observation in the following table and draw conclusion.

Sr. No.	Name of the room	Type of lighting

13. Collect Pictures of solar lighting for the following :

House, educational institutions, hospitals, social place, farms or farm house etc.

Procedure :

- a) Collect pictures from various sources including internet.
- b) Identify the various parts.
- c) Label and describe them.
- d) Prepare a file.



Glossary

- **Accessories** : Are the elements that bring charm, individuality and vitality to a room.
- **Alpana** : It is a kind of floor decoration which is quite popular in Bengal and Assam.
- **A.T.M.** : Automatic Teller Machine.
- **Balance** : Balance is a restful effect created in a design or arrangement.
- **Biological Time** : A pattern of repeated, routine, biological bodily activities.
- **Body Alignment** : Keeping head, shoulders, spine, hips, knees and ankles line up with each other.
- **Budget** : Budget is a plan for future expenditure.
- **CFLs** : Compact Fluorescent Lamps.
- **CGS System** : Fundamental system of measurement of length, mass and time.
- **Clock Time** : The time of the day as shown in clock.
- **Colour Value** : Colour value indicates the lightness or darkness of any colour.
- **Consumer** : A consumer is one who buys or acquires goods or services. It does not include a person who obtains such goods for resale or for any commercial purpose.
- **Decorative Accessories** : The objects that are exclusively used to enhance the beauty of a space are called as decorative accessories.
- **Delegation** : The act of process of entrusting task to another person.
- **Direct income** : Direct income refers to material goods and services available to the family without the use of money.
- **Discretionary Time** : Time spends for own sake and creative activities.
- **Effort** : Effort means earnest and conscientious activities intended to or accomplish something.
- **Emphasis** : In simple words, emphasis is giving importance to some particular element in a design or arrangement.
- **Energy** : Energy is defined as capacity to do the work.
- **Energy Cost** : The energy required to perform any task.
- **Energy Management** : It is the process of monitoring, controlling and conserving energy for doing a particular activity.
- **Fatigue** : Fatigue is tiredness or boredom experienced after performing a particular task.
- **Functional Accessories** : These are the items or objects that are meant for carrying out some function in a room.
- **Goal Setting** : First step of time management.
- **Golden oblong** : It is a standard for good proportion.
- **Harmony** : The art principle which produces an impression of unity in a design or arrangement.
- **Hue** : In simple words hue is the name given to a colour. It also tells the warmth or coolness of a colour.
- **Income** : The flow of money, goods and services received or created and the satisfaction received during a specific time period.
- **Indirect income** : Indirect income refers to the goods and services available to the family only after the use of some means of exchange.
- **Intensity or Chroma** : Intensity refers to the brightness or dullness of a colour. It is the strength or weakness of a colour.
- **Investment** : Saving money for getting more profit.

- **Labels** : Paper, plastic or fabric attached to a product, giving written information about the product.
- **LED** : Light Emitting Diode.
- **Leisure Time** : Free time or non work time.
- **Light** : Light is an art element as well as utilitarian element that makes everything visible.
- **Line** : Line is a basic element of art. It is a chain of dots joined together.
- **Money Income** : The income in specific form of currency of the country.
- **Pattern** : Any enrichment done on a surface of an object is called as pattern.
- **Planning** : Picture of future action and activities.
- **Posture** : The way a person positions his body at work.
- **Prioritizing** : Treat as more important than other task.
- **Proportion** : In simple words it refers to the law of relationships.
- **Psychological Time** : Awareness of passage of time.
- **Rangoli** : It a traditional form of floor decoration in India.
- **Real income** : Flow of commodities and services available for satisfaction of human wants and needs over a given period.
- **Resting/Basal Metabolism** : Energy required for natural body processes such as respiration, circulation, secretion, excretion etc
- **Rest Period** : Time needed for taking rest after completion of activity.
- **Sanskari Bharati Rangoli** : It is an advanced type of rangoli which is modified from traditional symbols and is used merely for the purpose of decoration.
- **Saving** : Keeping aside some money from present consumption for future use.
- **Services** : A system supplying a public need such as transport, communications, or utilities such as water supply, drainage, electricity.
- **Setting Deadlines** : Setting time limits for completion of task.
- **Shape and form** : Shape and form enclose space. Shape is two-dimensional and form is three dimensional.
- **SMART Goals** : Specific, Measurable, Attainable, Relevant and Time bound goals.
- **Space** : Space is defined as emptiness, void or interval between things.
- **Sustainable consumption** : The use of products or services to fulfill basic needs and for better quality life with minimum use of natural resources and toxic materials without harming the environment and society.
- **Texture** : Texture is the surface quality of a material which is understood through the sense of touch or vision.
- **Time** : Continuum in which event succeeds one after another from past through present to future.
- **Time Allocation** : Distribution of time for various activities.
- **Time Management** : A system of controlling and using time as efficient as possible.
- **To Do List** : preparing list of various tasks on the basis of urgency, importance, priority and spending time.
- **U.T.I.** : Unit Trust of India.
- **Work Simplification** : Accomplishing more work in given amount of time and energy by making work easier.
- **Work Time** : Time spent for the performance of work.



Bibliography

- Bhargava Bela, Family Resource Management and Interior Decoration (2003), University Book House Pvt. Ltd., Jaipur.
- Craig Hazel Thompson and Ola Day Rush, Homes with Character (1969), Universal Book Stall, Delhi.
- Faulkner, Ray and Sarah Faulkner, Inside Today's Home (1968), Halt, Rinehart and Wilson, Inc. New York.
- Gandotra Veena, Jaiswal Neerja Management of Work in Home (2008), RBSA Publishers, Jaipur.
- Gruhvyavsthapan(Marathi).(2012), Maharashtra State Board of Secondary and Higher Secondary Education, Pune.
- Gupta Shushma, Garg Neeru, Agrawal Amita, Kaur Jaspreet, Text book of Family Resources Mgt. Hygiene and Physiology, Kalyani Publishers. Gohati Kochi.
- Home management, The educational planning (2005), Arya publishing house group Delhi.
- Home Management-Standard Eleven .(2012), Maharashtra State Board of Secondary and Higher Secondary Education, Pune.
- Kasu, Ahmed A, Interior Design (1995), Iqura Publications Pvt Ltd., Bombay.
- Kaur H. and MacNeil C., Theory and Practice of Home Management (1994), Surjeet Publications. New Delhi.
- Kukade S., Ratnaparkhi M., Sundaresh G. Gruhvyavsthapan(Marathi) (2006), Sheth Publishers, Mumbai.
- Kukade S., Ratnaparkhi M., Sundaresh G.,Home Management (2006), Sheth Publishers, Mumbai.
- Morton, Ruth, The Home and its Furnishings (1953), McGraw-Hill Book Company, Inc., New York.
- Nabi M. Kamalun, Nabi M. Irshadun, Raut Kishore.C., Consumer Rights and Protectionin India (2015), New Century Publications. New Delhi.
- Nickell Paulena, Dorsey Jean Muir, Management in Family Living (1991), Wiley Eastern Limited, New Delhi.
- Obst., Frances Melanie, Art and Design in Home Living (1970), The Macmillan Company Collier Macmillan Ltd., London.

- Puri G.K., Interior Decoration for All (1986), IIMS Publications, New Delhi.
- Ratnaparkhi Madhuri, Design and Aesthetics-(2016), Reference Material, Pune.
- Rutt, Anna Hong, Home Furnishing. (1967), Wiley Eastern Private Limited, New Delhi.
- Singh Anju, Bhardwas Kalpana, Home Management (2014), Vista International Publishing House, Delhi-110053.
- Sinha Poonam, Chopra Bhavna, Home Management (2014), Crescent Publishing Corporation, New Delhi- 110002
- Stepat-De Van, Dorothy, Introduction to Home Furnishings (1971), The Macmillan Company, New York.
- Vairagade Ujjwala K., Lathkar Priyanwada S., Mule-Kulkarni Vidyullata P., Aadunik Gruhavyvsthan(Marathi)(2010), Vidya Books Publishers, Aurangabad.
- Varghese. M. A. and et-al, Home Management (2005), Wiley Easter Limited, Bombay.



Websites

- <https://www.brg.in/news/bhim-to-add-support-for-7-regional-languages-by-the-end-of-this-week-report>
- www.consumer.tn.gov.in
- <https://www.epsom-sthelier.nhs.uk>
- <https://www.consumer-voice.org/food/know-your-quality-marks/>
- <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=27206>
- <https://www.egazette.nic.in/Write Read Data/2019/210422.pdf>
- www.energy.com
- <https://en.wikipedia.org/index.php?title=BHIM&oldid=923600112>
- <http://www.fcamin.nic.in>
- <https://www.hgtv.com>
- <https://hmhub.me/accessories-interior-decoration/>
- <http://www.habbitgrowth.com/time-management-matrix/>
- <https://www.impressiveinteriordesign.com/home-interior-design-accessories-style/>
- <https://theinterioreditor.com/accessories/the-importance-of-accessories-the-dos-donts/>
- <https://www.kullabs.com/classes/subjects/units/lessons/notes/note-detail/6820>
- [https://www.ledwatcher.com.](https://www.ledwatcher.com)
- <https://www.linkedin.com/company/nipponindiamf/>
- www.Lumans.com
- wikipedia.org/wiki/Time
- <https://www.speco.solarlighting.com>
- www.thoughtco.com>science
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- <https://www.youtube.com/c/NipponIndiaMutualFund>



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