

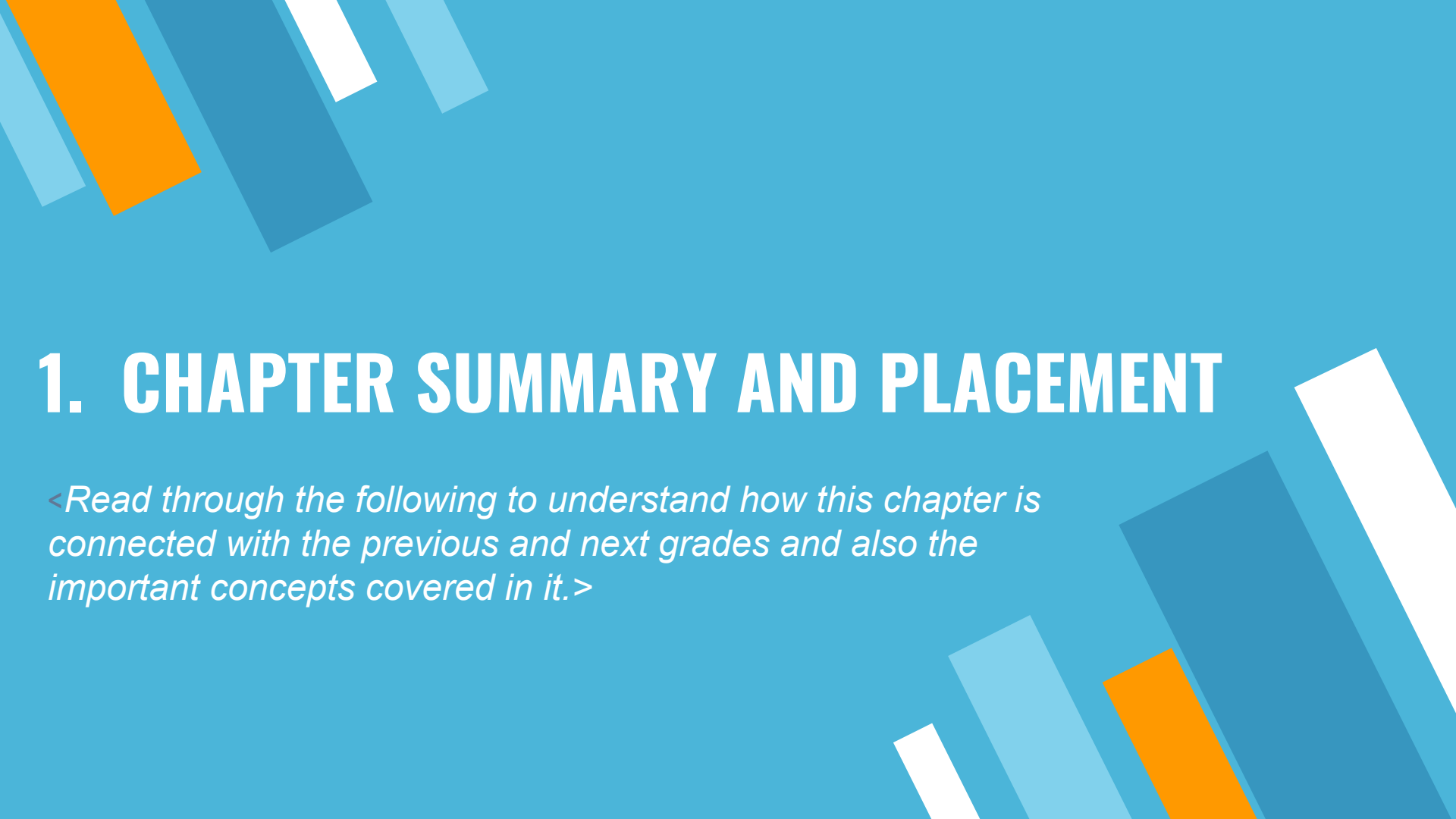


CHAPTER: COMPONENTS OF FOOD

Grade: 6

Board: **CBSE**

Book: **NCERT**



1. CHAPTER SUMMARY AND PLACEMENT

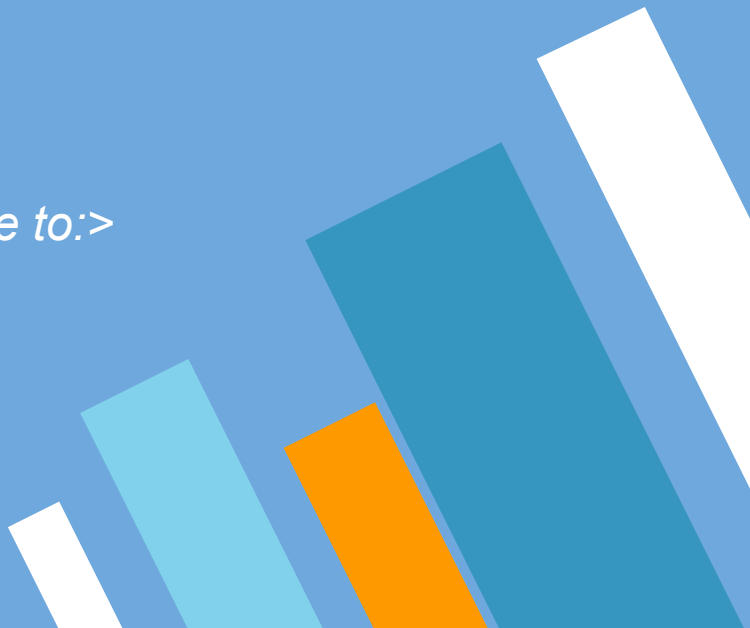
<Read through the following to understand how this chapter is connected with the previous and next grades and also the important concepts covered in it.>

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1. A wide variety of food that we eat has been discussed in the previous chapter, Food: where does it come from. Also basic components of food and introduction to balanced diet has been done in the previous class. This chapter extends that learning.
 2. In this chapter the student shall be introduced to the various nutrients present in food, their sources, roles, tests and deficiency symptoms. Importance of balanced diet shall be introduced and how body requirements for nutrients evolve as per our age and work.
 3. Since the chapter is almost wholly based on food that we consume, picking local examples of regional food and basing explanation on that would be most helpful.



2. LEARNING OUTCOMES

<On completion of the chapter, students will be able to:>



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1. Recall wide variety of food that we eat.
 2. Define nutrients and the various types of nutrients present in food
 3. Test main components of food in a given sample
 4. Describe the role and exemplify sources for various nutrients in our diet
 5. Explain the importance of water and dietary fibre in our diet
 6. Define balanced diet and relate it to the variety of food which we consume
 7. Spell healthy eating and cooking practices
 8. Recall deficiency symptoms caused by various nutrients
 9. Formulate balanced diet from locally available inexpensive sources of food (Higher level)



3. KEYWORDS

Definitions of some terms used in the chapter:





Nutrients: Components present in food which are needed by our body

Balanced Diet: The diet which contains all essential nutrients in the right proportion





4. TEACHING PLAN

Follow this section for getting ideas on teaching the content covered in the chapter. The subtopic given in the first column with the matching learning outcome can be explained using instructions and resources listed subsequently



Subtopic and Learning Objective #1

Introduction

1. Recall wide variety of food that we eat.
2. Define nutrients and the various types of nutrients present in food

Teacher Activity

1. Recall the activity done in previous chapter about various types of food eaten in different parts of the country. Emphasize on the wide variety of food that we consume
2. Draw a rough image of car on the blackboard and ask what makes it run?
3. Now draw a stick human figure and ask if this also needs fuel to work.
4. Introduce students to food, its purpose and how it helps the body to survive (energy, growth and health)
5. Define nutrients and name the major nutrients present in food (Resource 1)

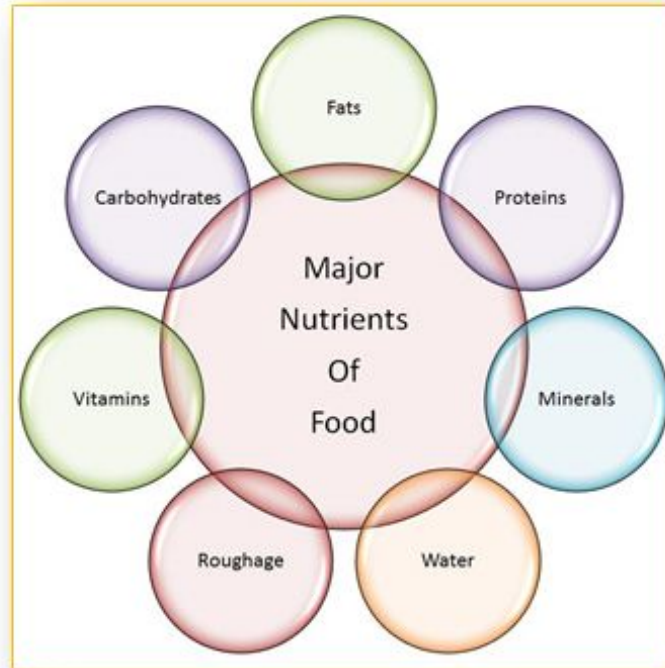
Check your Understanding

- a. Why do we need food?
- b. What are the major nutrients present in our food?

Resources Suggested

Blackboard, Resource 1

Resource 1:



Subtopic and Learning Objective #2

What do different food items contain and Food Tests

1. Define nutrients and the various types of nutrients present in food
2. Test main components of food in a given sample

Teacher Activity

1. Convey that all food items may not contain all nutrients. They may contain one nutrient in more quantity than the other. Like rice is said to be rich in carbohydrates as it contains more quantity of carbohydrates than any other nutrient
2. Introduce food tests by carrying out Activity 1.
3. Conclude the activity by recalling that the main nutrients needed for the body are carbohydrates, fats and proteins. Other nutrients like minerals, vitamins, water and fibre are also needed for smooth functioning of the body.
4. ***Check your Understanding***
 - a. What color does presence of starch show in an iodine solution?
 - b. How will you test for proteins in a given food sample?

Resources Suggested

Blackboard, Activity 1

Activity 1

Activity 1:

Name of the activity – What does your food contain?

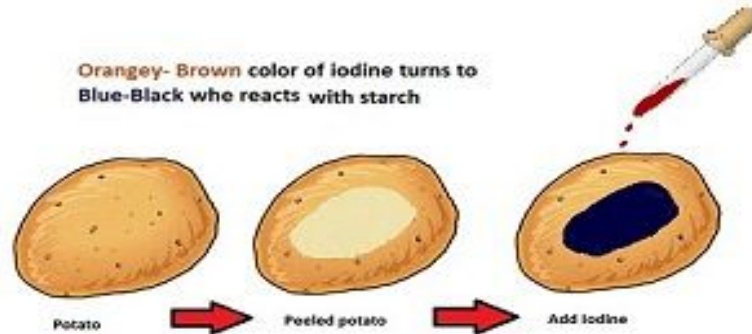
Type of activity – Group/ Demonstration

Use it for – Introducing food tests. Give a demonstration if resources are limited

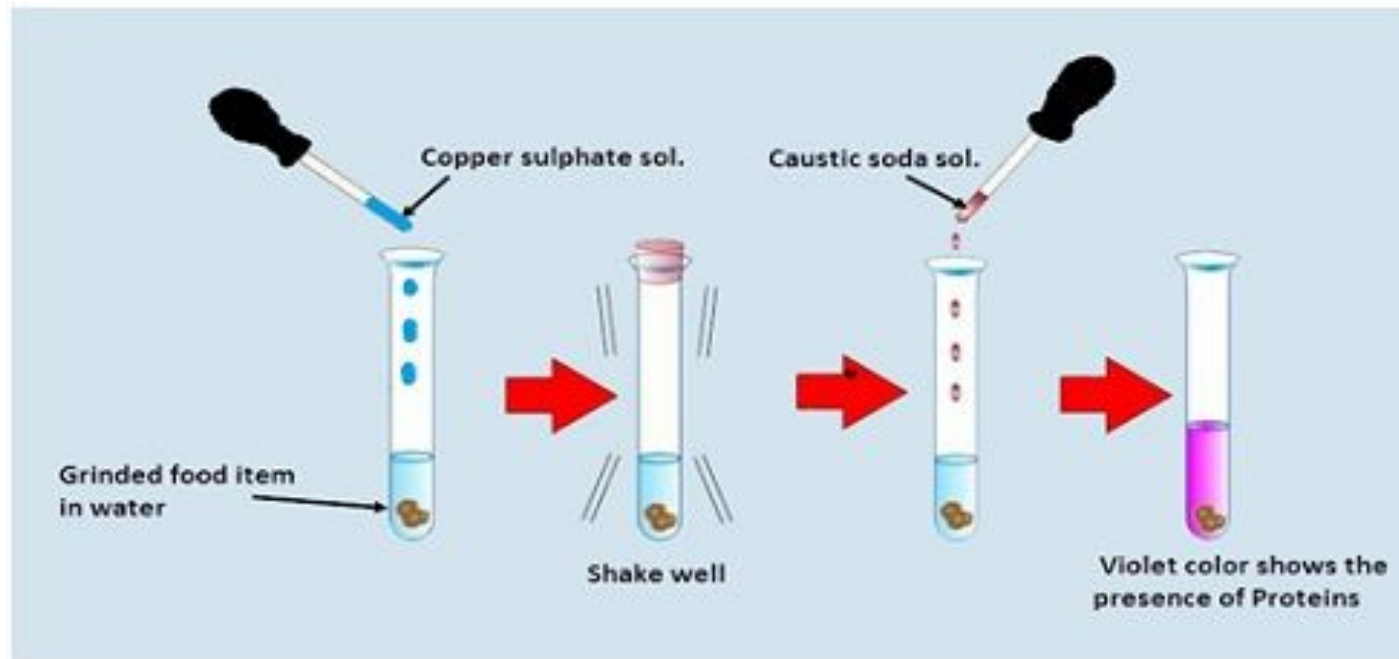
Materials – Starchy food (potato/ cooked rice), Protein rich food (uncooked egg), Fatty food (chips/ butter), iodine solution, filter paper, copper sulphate solution, caustic soda solution, test tubes

Procedure –

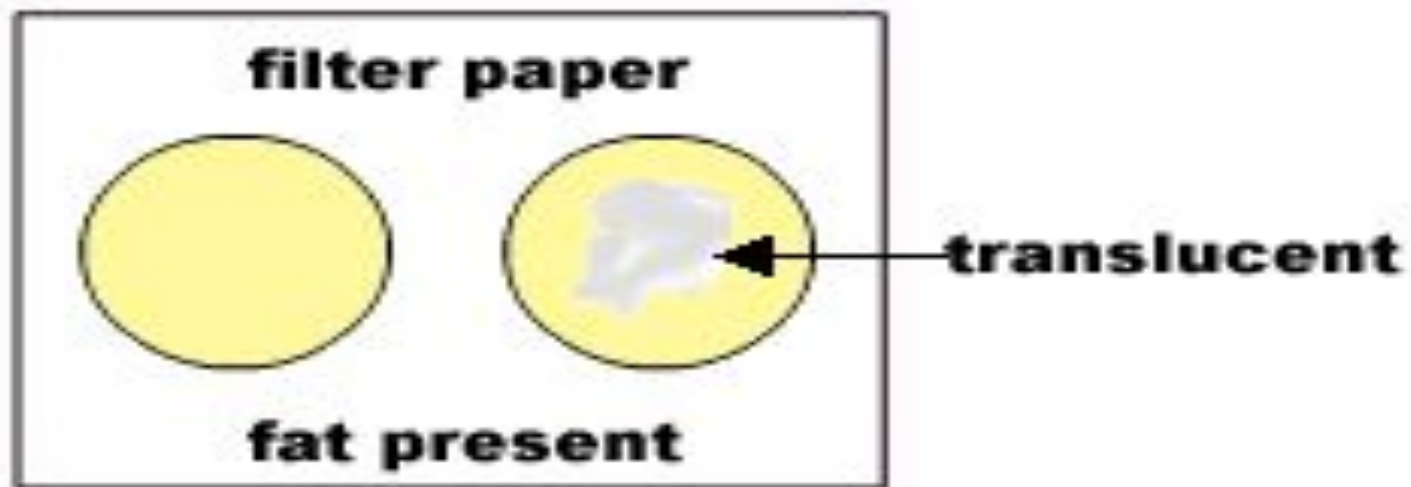
1. Test for carbohydrates:



2. Test for proteins:



3. Test for fats:



Subtopic and Learning Objective #3

Role of nutrients in our body

1. Describe the role and exemplify sources for various nutrients in our diet
2. Explain the importance of water and dietary fibre in our diet

Teacher Activity

1. Draw a chart similar to Resource 2 on the blackboard or print Resource 2 and display in the class
2. Classify nutrients into three categories: Energy giving food (carbohydrates and fats), Bodybuilding food (proteins) and Protective food (Vitamins and minerals)
3. Using the chart exemplify the various sources of the above nutrients and explain their role in the body
4. Conduct Activity 2 and help students to identify key nutrients in locally consumed food
5. Highlight the importance of water in the diet: absorption of nutrients, transport of substances, excretion of unwanted products from the body
6. Explain the role of dietary fibre: add bulk to food helping bowel movement.

Check your Understanding

- a. Why are vitamins and minerals essential in our diet?
- b. Which gives us more energy: fat or carbohydrate
- c. Does water provide energy to the body?

Resources Suggested

Blackboard, Resource 2

Resource 2:

TYPES OF NUTRIENTS ..

BODY BUILDING FOOD

- proteins

ENERGY GIVING FOOD

- carbohydrates
- fats

PROTECTIVE FOOD

- vitamins
- minerals



Activity 2

Name of the activity – What's in your thali?

Type of activity – Group

Use it for – Identifying key nutrients in locally available food/ Formulate balanced diet from locally available inexpensive sources of food

Materials – paper and pen

Procedure –

1. Depending on the class size, divide the students in groups of three or four
2. Ask students to pick a state of their choice, where they live or where they belong. Sketch a regular thali of food of the state (staple food served)
3. List the key ingredient of each dish on the thali and list the nutrient group to which it belongs
4. Debate if the thali is wholesome or not
5. If time permits thalis of different groups can be compared

Components of thali (name of the dish)	Key ingredient	Nutrient group it belongs to

Subtopic and Learning Objective #4

Balanced diet

1. Formulate balanced diet and relate it to the variety of food which we consume
2. Spell healthy eating and cooking practices

Teacher Activity

1. Define balanced diet. Explain how it varies from person to person as per age and level of activity. Resource 3 can be shown as a reference image.
2. Compare the food that might be needed by a rickshaw puller versus an office going man who sits on computer and works
3. Carry out Activity 3
4. Conclude the activity by differentiating between healthy and junk food
5. Talk about healthy eating and cooking practices which help to utilise nutrients to the maximum. Refer to Resource 4.

Resources Suggested

Blackboard, Resource 3,4

Activity 3

Name of the activity – What's in your name?

Type of activity – Individual

Use it for – Follow up for healthy eating/ balanced diet

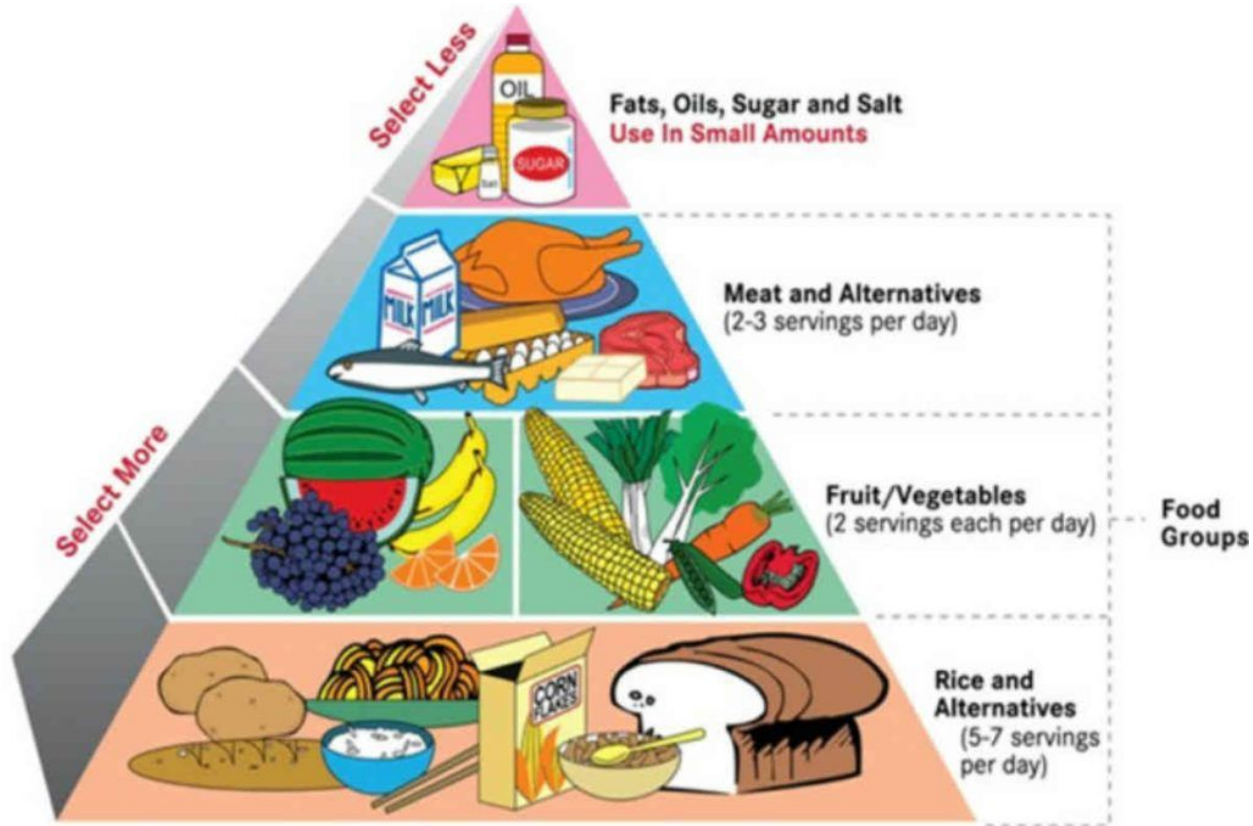
Materials – paper and pen

Procedure –

1. Ask students to write their name vertically on a sheet of paper.
2. Challenge them to come up with a food item, that starts with each letter in their names.
3. Ask them to rearrange/ modify the food items and make a balanced meal



Resource 3:



Resource 4:

GOOD COOKING HABITS

- Wash the fruits or vegetables before eating or cutting.
- Don't wash the pieces of vegetables after cutting.
- No over-cooking.
- No re-heating.

GOOD EATING HABITS

- Avoid over eating
- Avoid junk foods.
- Eat to be healthy, not to be unhealthy.

Subtopic and Learning Objective #5

Deficiency diseases

1. Recall deficiency symptoms caused by various nutrients

Teacher Activity

1. Explain that excess and lack of nutrients can bring about symptoms in the body
2. Procure deficiency diseases chart from any local hospital or print the one provided in resource 5 for circulation
3. Use NCERT table to explain symptoms of deficiency diseases caused by different nutrients.

Resources Suggested

Blackboard, Resource 5

Resource 5:

DEFICIENCY DISEASES हीनताजनित रोग

Kwashiorkor क्वाशियोरकोर (SYMPTOMS/लक्षण) 1. Swollen abdomen बुलबुल पेट 2. Hair changes colour बालों का रंग बदलना 3. Weight loss वजन कम होना (CAUSES/कारण) 1. Insufficient protein intake असufficient प्रोटीन सेवन		Marasmus मारसमस (SYMPTOMS/लक्षण) 1. Extreme loss and muscle wasting अत्यधिक वजन व मांसपेशियों का कम होना 2. Vascular ridges रक्तवाहिकाएं 3. Dry skin सूखी त्वचा 4. Skeletal loss of adipose tissue हड्डी के चर्बी के तissue का कम होना (CAUSES/कारण) 1. Severe protein-energy malnutrition अत्यधिक तीव्र रक्त-ऊर्जा	
Osteomalacia (in adults) Rickets (in children) अस्थिदुर्बल (वयस्क में) रिकेट्स (बच्चों में) (SYMPTOMS/लक्षण) 1. Softening of the bones in children बच्चों में हड्डी का नरम होना 2. Fragments and deformity अस्थि टूटना व विकृति (CAUSES/कारण) 1. Vitamin D deficiency विटामिन डी का कम होना		Beri-Beri बेरी-बेरी (SYMPTOMS/लक्षण) 1. Weight loss वजन कम होना 2. Impaired sensory perception अपभ्रमण की क्षमता 3. Swelling and pain in the limbs स्वर्धन व दर्द 4. Wasting and partial paralysis वजन व अंशिक अपभ्रमण (CAUSES/कारण) 1. Lack of thiamine (Vitamin B1) थैमिन (विटामिन बी 1) की कमी	
Goitre ग्रेटा (SYMPTOMS/लक्षण) 1. Enlarged thyroid gland अधिकृत अस्थि ग्रंथि 2. Emotional stress भावनात्मक तनाव 3. Depression अस्थि-अपभ्रमण 4. Loss of weight वजन कम होना (CAUSES/कारण) 1. Iodine deficiency आयोडीन की कमी		Anaemia अनामिया (SYMPTOMS/लक्षण) 1. Weakness or fatigue कमजोरी या थकान 2. Pale skin, mucosal tingings and nail beds सफेद त्वचा, अस्थि-रक्त व नाखून (CAUSES/कारण) 1. Iron deficiency आयरन की कमी	
Night Blindness रातोंधी (SYMPTOMS/लक्षण) 1. Difficulty or inability to see in low light or darkness कम प्रकाश में देखने में कठिनाई 2. Dry eyes सूखे आँखें 3. Swollen vision दुबली दृष्टि (CAUSES/कारण) 1. Lack of vitamin A विटामिन ए की कमी		Scurvy स्कर्वी (SYMPTOMS/लक्षण) 1. Gums painful, swollen or bleed गुमों में दर्द, सूजन व रक्तस्राव 2. Bleeding from all mucous membranes सभी अस्थि-तृणिकाओं से रक्तस्राव 3. Bleeding gums सूजन 4. Broken skin टूटी त्वचा (CAUSES/कारण) 1. Insufficient intake of vitamin C विटामिन सी का कम होना	
Pellagra पेल्लेग्रा (SYMPTOMS/लक्षण) 1. Dermatitis, stomatitis, arthritis त्वचा, अस्थि-रक्त, अस्थि-रक्त 2. Red skin lesions लाल त्वचा-रक्त 3. Weakness कमजोरी 4. Diarrhoea दस्त 5. Eventually dementia अस्थि-अपभ्रमण (CAUSES/कारण) 1. Lack of niacin (Vitamin B3) नायसिन (विटामिन बी 3) की कमी		Dental Caries दंत क्षरण (SYMPTOMS/लक्षण) 1. Enamel loss अस्थि-रक्त 2. Worsening effect on bone अस्थि-रक्त का अपभ्रमण 3. Discoloration of teeth रक्त का रक्त व रक्त (CAUSES/कारण) 1. A fluoride deficiency अस्थि-रक्त की कमी	



5. WORKSHEETS

Print or copy the worksheet questions on the blackboard and ask the students to attempt them. They can be given as homework or a class test as well.



Worksheet 1

Use it like: test after the chapter is complete, homework

Answer the following questions in brief:

1. Name an essential component of food, which an obese person should not consume.
2. How will you test fats in food?
3. Which is healthier: boiled potato or fried potato chips?
4. Why is it important to eat fruits?
5. Water is an important component of food. In what ways do we consume it?
6. Why does a growing child need more proteins?

Worksheet 2

Use it like: checking students understanding in class, oral test

Multiple choice questions:

1. Goitre is caused by deficiency of:

- a) Phosphorus
- b) Iodine
- c) Potassium
- d) Vitamin A

2. Goitre is caused by deficiency of:

- a. Starch
- b. Carbohydrates
- c. Fats
- d. Roughage

3. The chemical used for testing proteins is:
 - a. Caustic soda
 - b. Potassium permanganate
 - c. Iodine
 - d. Ammonium chloride

4. Rice, wheat and maize are rich source of:
 - a. Fats
 - b. Proteins
 - c. Vitamins
 - d. Carbohydrates

5. Obesity is caused due to:
 - a. Deficiency of carbohydrates
 - b. Overconsumption of carbohydrates and fats
 - c. Healthy eating habits
 - d. Watching TV while eating food

6. Which of the following is NOT a healthy cooking practice:

- a. Frying
- b. Steaming
- c. Washing vegetables well
- d. Keeping cooked food in fridge

7. Which vitamin is called the sunshine vitamin?

- a. Vitamin A
- b. Vitamin B
- c. Vitamin C
- d. Vitamin D

8. All deficiency diseases can be prevented by eating:

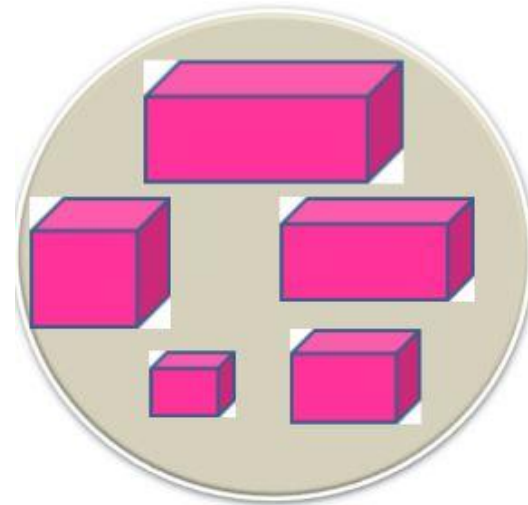
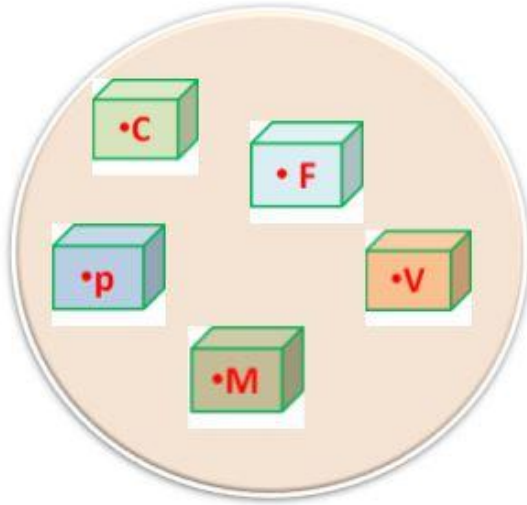
- a. Protein rich food
- b. Carbohydrate rich food
- c. Vitamin rich food
- d. Balanced diet

9. Which of the following are body building foods?
- a) Carbohydrates and fats
 - b) Carbohydrates and proteins
 - c) Carbohydrates and vitamins
 - d) Proteins
10. Identify the group of food items which are rich in Vitamin C.
- a. Carrot, Pomegranate, papaya
 - b. Orange, lemon, strawberry
 - c. Rice, wheat, maize
 - d. Apple, mango, banana

Worksheet 3

Use it like: after Activity 2, classwork

We all need all nutrients for being healthy. Are all the nutrients best consumed in similar quantities or varied proportions? Label the boxes in second diagram with the nutrient name proportionate to the quantity in which they should be consumed.





6. SOLUTIONS

This section gives you sample answers for activities and questions listed above.



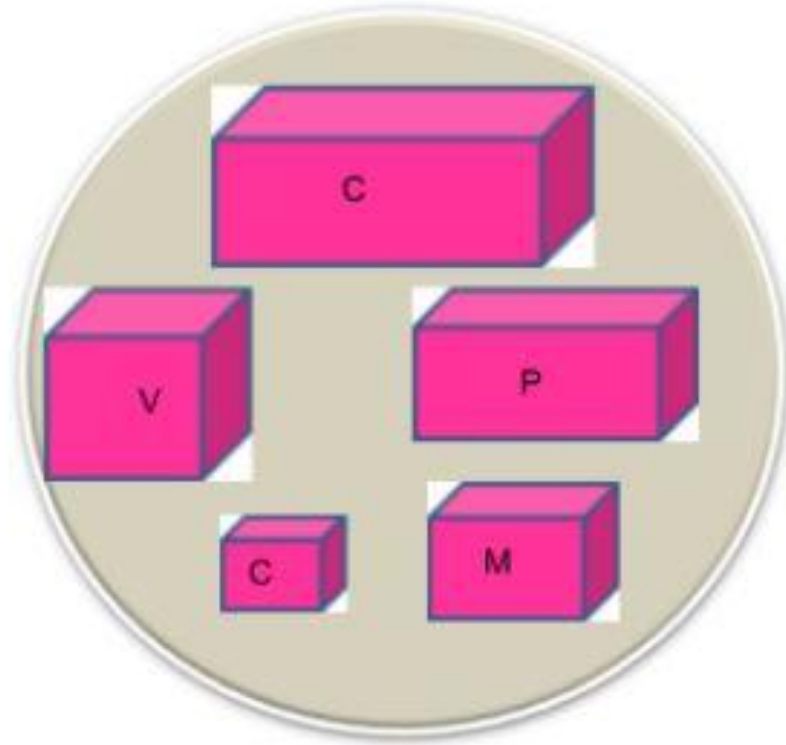
Worksheet 1

1. Fats
2. By pressing the food item against filter paper, the filter paper should turn translucent due to fats
3. Boiled potato, fried potato has excess fats
4. Fruits contain vitamins and minerals which act as protective food
5. Drink water, use it in cooking, fruits and vegetables contain water
6. Growing child needs more proteins as proteins are body building food and help in formation of new muscles

Worksheet 2

1. B - iodine
2. D - roughage
3. A- caustic soda
4. D- carbohydrates
5. B- overconsumption of carbohydrates and fats
6. A- frying
7. D- Vitamin d
8. D- balanced diet
9. D- proteins
10. B - orange, lemon and strawberry

Worksheet 3





7. EXTRA RESOURCES

Carry out the following suggested activities/ tasks if you have the time and resources to do them



Video Links:

1. Show the following videos to the students on computer/ tablet/ screen:
 - a) Balanced Diet
<https://youtu.be/YimuldEZSNY>
 - b) Healthy eating habits
<https://youtu.be/F0EaEagvUvc>

2. Extension Activity:

Purpose: Design a balanced meal with costing

Students can be asked to prepare a balanced one time meal. They should find out the cost of the major ingredients and state how expensive the meal is. Encourage them to use locally sourced ingredients and reduce costs. Meal plans can be compared and learning can be derived that only expensive food is not nutritious.