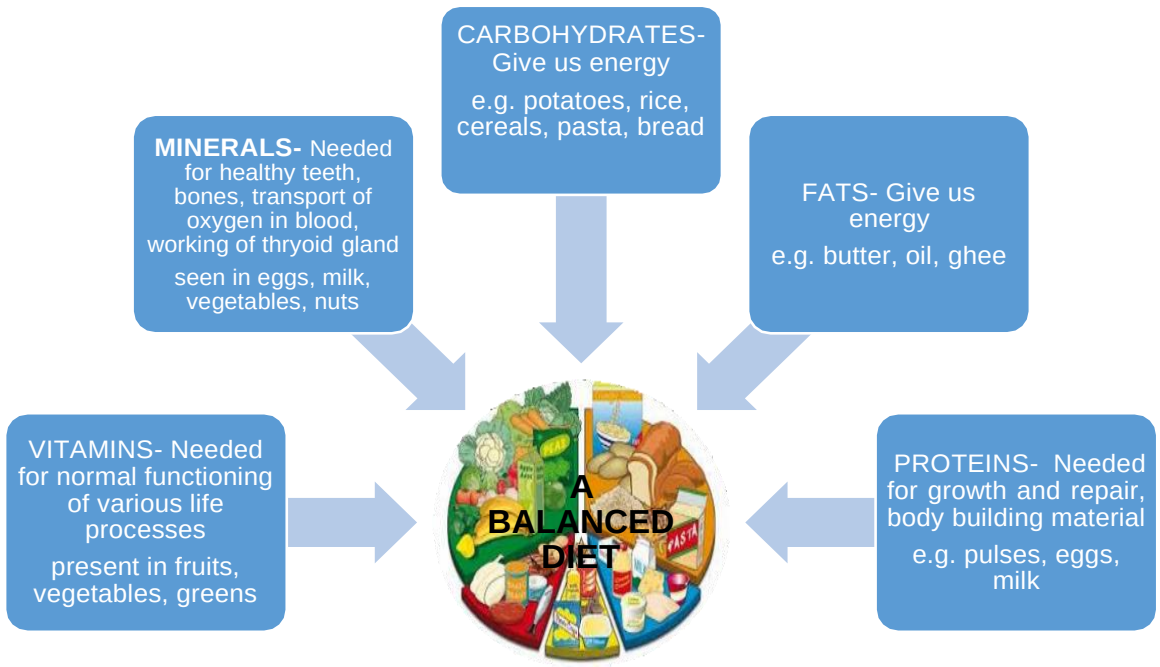
ICSE CLASS 7 BIOLOGY

NUTRITION IN ANIMALS AND PLANTS

NUTRIENTS- Substances present in food needed for energy, growth and repair in our body
We need to include all these in order to remain active and healthy. A diet which gives us the correct amount of all the nutrients we need is called a balanced diet



Daily requirement of calories is dependent on age and occupation
Due to the biological changes in the body, adolescents' caloric requirements are high.
Pregnant women require 300 calories extra per day.
Growing children need to include more protein
Athletes and people involved in hard physical work need more energy rich food
People with desk jobs need fewer number of calories than people who are active
Fast foods like burgers and pizzas and fried foods do not give us all the nutrients we need.
They are high in fat and sodium content and may lead to **obesity**
Substances which are added to food to enhance flavor are called additives
Sometimes, additives may be harmful, in which case they are called adulterants

Apart from these, we need:
WATER

- Medium for chemical changes in our body
- Transports nutrients and other materials

ROUGHAGE

- Fibrous material seen in cereals, vegetables and fruits
- Mainly consists of complex carbohydrate called cellulose
- Adds bulk to our food and prevents constipation

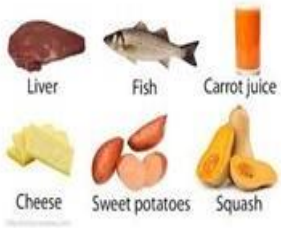
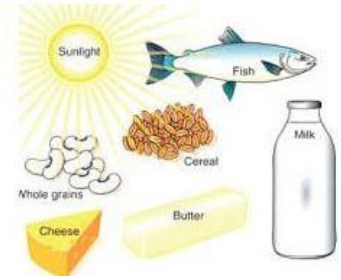
REMEMBER!
All foods contain varying amounts of all nutrients. We need to know what foods to include in our daily diet in order to get all the nutrients for a balanced diet
Energy obtained from food is measured in **calories**
For instance, here is the break-up of nutrient levels in one loaf of white bread

Nutrition

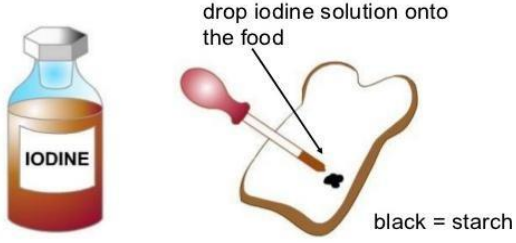
Typical values	100g contains	Each slice (typically 44g) contains	% RI*	RI* for an average adult
Energy	985kJ 235kcal	435kJ 105kcal	5%	8400kJ 2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	45.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

This pack contains 16 servings
*Reference intake of an average adult (8400kJ / 2000kcal)

IMPORTANCE OF VITAMINS AND MINERALS AND WHAT THEIR DEFICIENCY CAUSES

VITAMIN A Healthy bones and teeth Skin and hair Causes night blindness, dryness of cornea 	VITAMIN B COMPLEX Healthy nervous system, healthy skin, memory, good digestion Causes Beri-beri, memory loss, diarrhea 	VITAMIN C Healthy bones and teeth Causes Scurvy, bleeding gums, joint pain 	VITAMIN D Healthy bones and teeth Causes Rickets, osteomalacia 	VITAMIN E Fertility, healthy muscles and skin. Causes abnormal functioning of reproductive system 
IRON Haemoglobin formation Causes anemia, weight loss, tiredness, shortness of breath	CALCIUM Healthy bones and teeth, nerve impulse transmission Causes softening of bones, loss of teeth enamel	PHOSPHORUS Strong bones and teeth, formation of cell and ATP Causes softening of bones, bow-legs	IODINE Production of thyroxin hormone Causes Goitre, scaly skin, mental retardation	
Green leafy vegetables, milk, nuts, broccoli, eggs, dates, jaggery are rich sources of minerals				

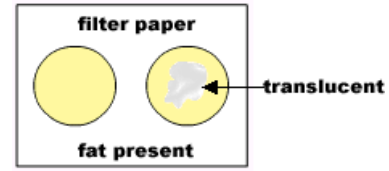
We can test foods to find what nutrients they contain



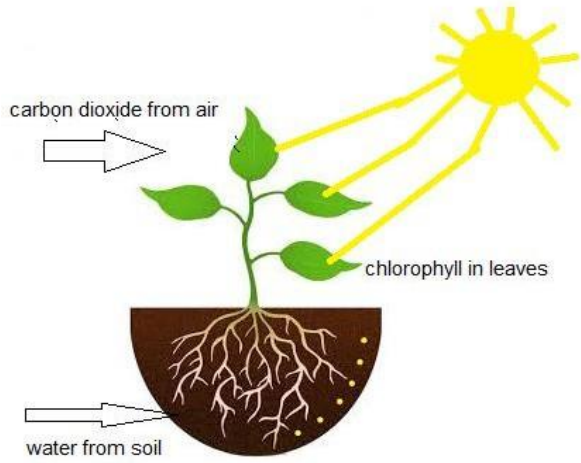
Dals will also test positive for starch but will give a lighter colour because starch content is lower in them

TEST FOR FAT

Rub a small portion of the food to be tested on filter paper



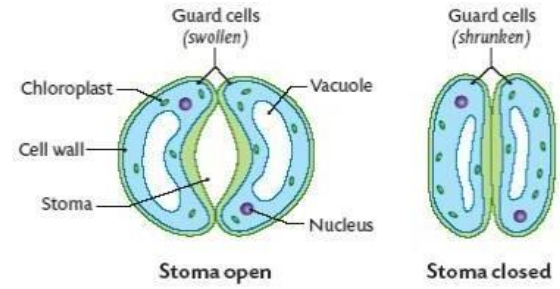
NUTRITION IN PLANTS



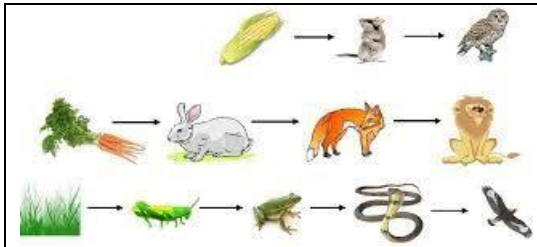
Food made in the leaves is taken by phloem cells to all other parts of the plant

Carbon dioxide + water → glucose + oxygen
This process takes place in the presence of sunlight and chlorophyll
It is called photosynthesis
Plants need nitrogen, phosphorus, potassium, carbon and hydrogen in large quantities. These are called macronutrients. Deficiency cause yellowing of leaves, spots on leaves and poor growth
Plants need micronutrients in small quantities. E.g. Iron, manganese, Zinc. Deficiency causes shrunken, yellow leaves and stunted growth

Tiny pores on the leaf surface called stomata allow carbon dioxide to enter
Stomata open and close by the action of guard cells

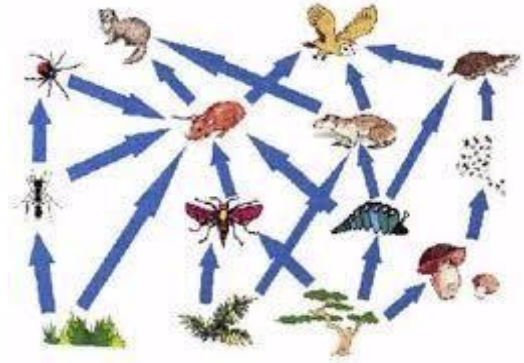


FOOD CHAIN



All animals depend on plants for their food. Animals that eat only plants are called **herbivores. Carnivores** are animals that eat herbivores. **Omnivores** eat both plant and animal food. They are all linked to each other by a food chain

All food chains start with plants. Animals can be part of 2 or more food chains. This forms a food web



Plants are called **autotrophic** because they make their own food
Herbivores, carnivores and omnivores are called **heterotrophic** because they cannot make their own food
Organisms which totally depend on other animals to get their food are called **parasites**
Decomposers feed on the dead and decaying remains of animals and again release nutrients back into the environment for plants to use