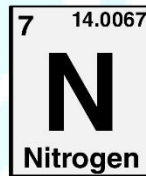
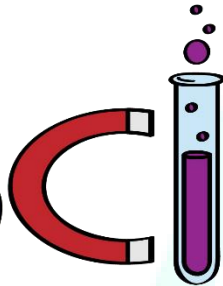
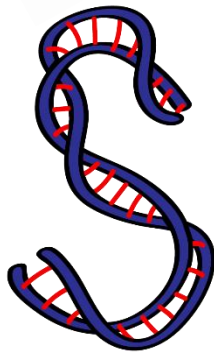




ASPIRE
INTERNATIONAL SCHOOL



Science Department

2023/2024

Year 8

Term 1

Summary sheets on Unit 4

ASPIRE

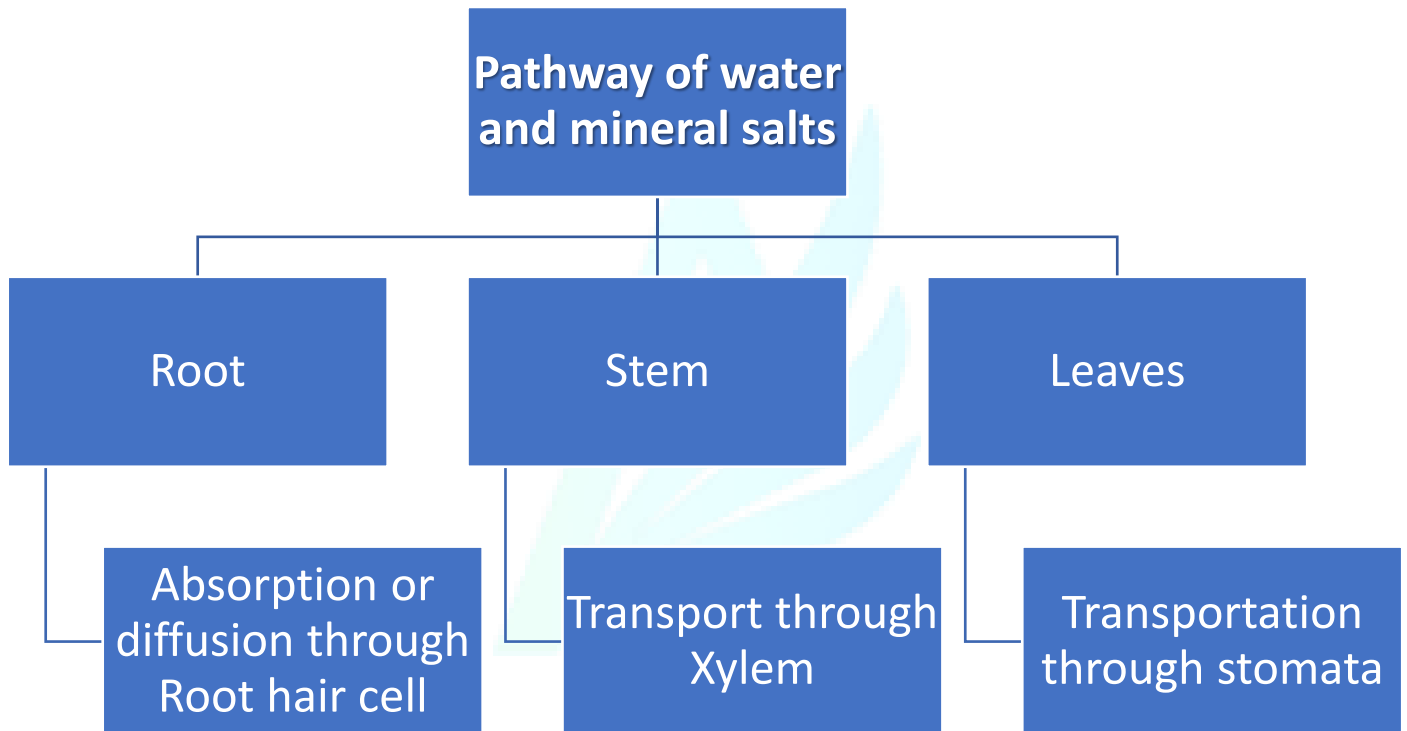
INTERNATIONAL SCHOOL

Name:

Class:

Lesson 4.1: plants and water

Pathway of water and mineral salts from the roots to the leaves, including absorption in root hair cells, transport through xylem and transpiration from the surface of leaves.



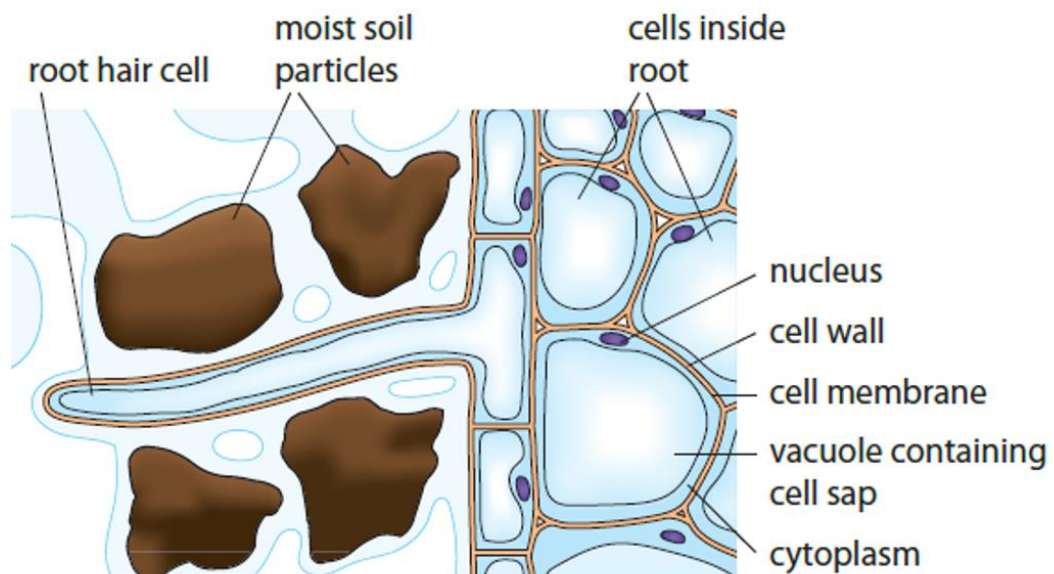
ASPIRE

INTERNATIONAL SCHOOL

Root hair cell VS Xylem

Points of comparison	Root Hair cell	Xylem
Structure	It has long extension with big surface area	Hollow tube with no organelles. No end walls Rigid walls Waterproof
Function	Absorb water and minerals from the soil by diffusion and absorption process.	Transport water and minerals through stem and different parts of plants

Label the following Diagram:

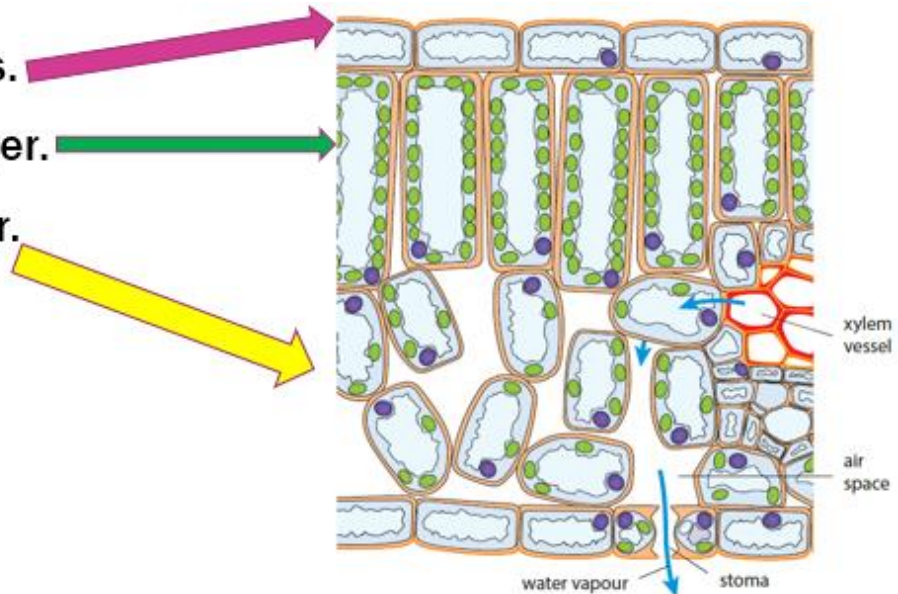


4.2 transpiration

Describe the structure of the human excretory (renal) system and its function (limited to kidneys filtering blood to remove urea, which is excreted in urine).

-The loss of water vapor from leaves is called transpiration through stomata.

- Upper epidermis.
- The palisade layer.
- The spongy layer.



2- MOST TRANSPIRATION HAPPENS FROM THE UNDERSIDE OF A LEAF, NOT THE TOP. WHY IS THIS?

The upper surface is covered with a layer of wax that stops water passing through.

The underside has stomata, which are openings leading to the air spaces inside a leaf.

Water vapor can diffuse out from the air spaces, through the stomata.

Why plants need water

1- water support

- **It helps them to stand upright.**
- Plant cells contain a lot of water, especially inside their vacuoles. A plant cell that has plenty of water is strong and firm which make the whole plant firm and well supported.
- When a plant cell doesn't contain enough water, it becomes soft and floppy.
- When all the cells in a plant are like this, the plant collapses. We say that it has **wilted**.



Given plenty of water



Not watered for several days

WHY PLANTS NEED WATER ?

2- WATER FOR TRANSPORT

- As water moves through the xylem vessels, it carries dissolved mineral salts .
- This is how these mineral salts are transported from the roots to all the other parts of the plant.

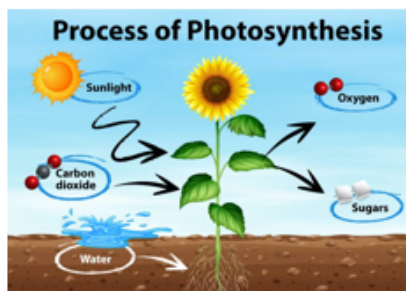
3- WATER FOR COOLING

- When water evaporates, it takes heat away with it. So when water evaporates from the cell wall of a cell in a leaf, it cools the cell.
- This is important for plants that live in very hot places.

WHY PLANTS NEED WATER ?

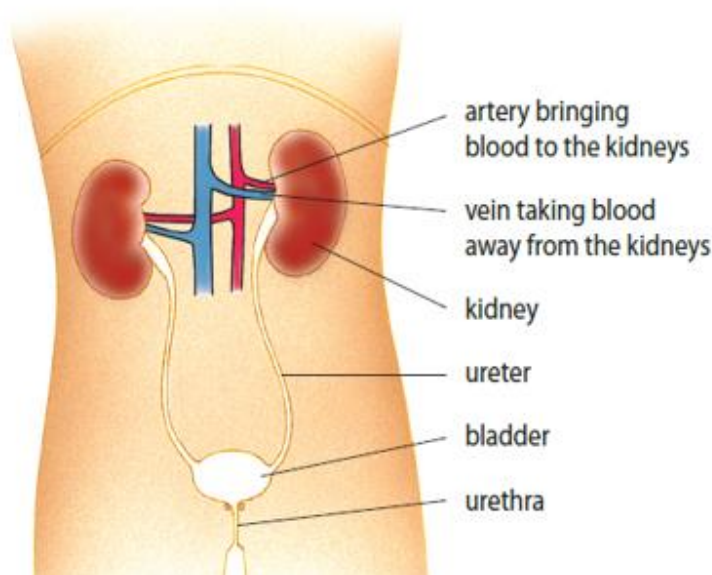
4- WATER FOR PHOTOSYNTHESIS

- Water is one of the reactants in photosynthesis.
- In photosynthesis, plants change water and carbon dioxide to glucose and oxygen



4.3 EXCRETION IN HUMANS

Parts of the excretory system



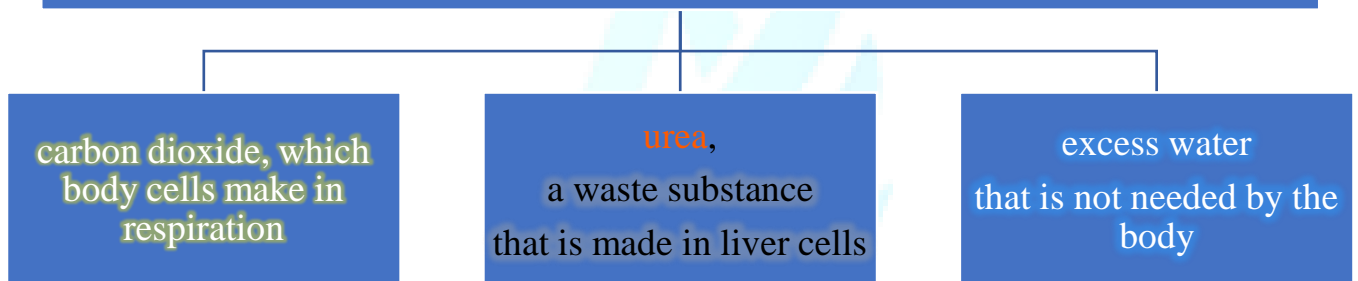


Renal artery	Renal Vein	Kidney	Ureter	Bladder	Urethra
Bringing blood to the kidney	Taking blood away from the kidney	a pair of organs in the upper abdomen, which filter the blood from wastes as urea	a tube that carries urine from the kidneys to the bladder	an organ in which urine is stored before removal from the body	a tube that carries urine from the bladder to the outside of the body

The **kidneys** are part of the excretory system. This is also known as the **renal** system. In the excretory system, a waste substance called **urea** is filtered out of the blood. It dissolves in **water**, forming a liquid called **urine**.

Excretion: getting rid of waste materials from the body; specifically, these waste materials have been inside the body (so do not include the egestion of faeces)

Types of Excretions



Important note: Waste from digestive system, which animal (including humans) get rid of as faeces , does not count as excretion.

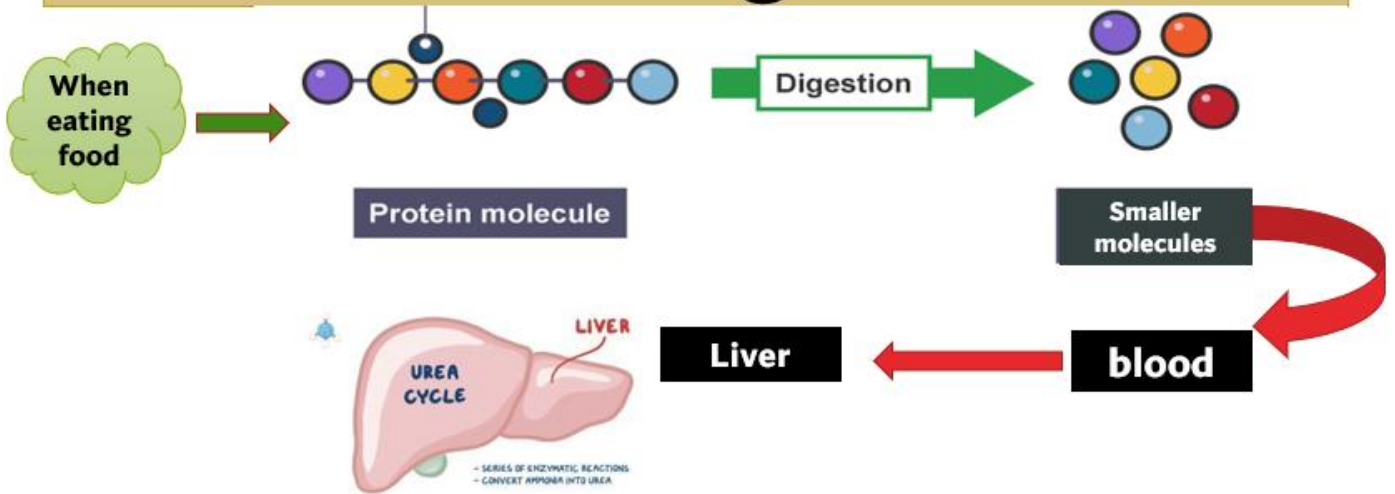
- Excretion includes all the waste substances that organisms make in their cells



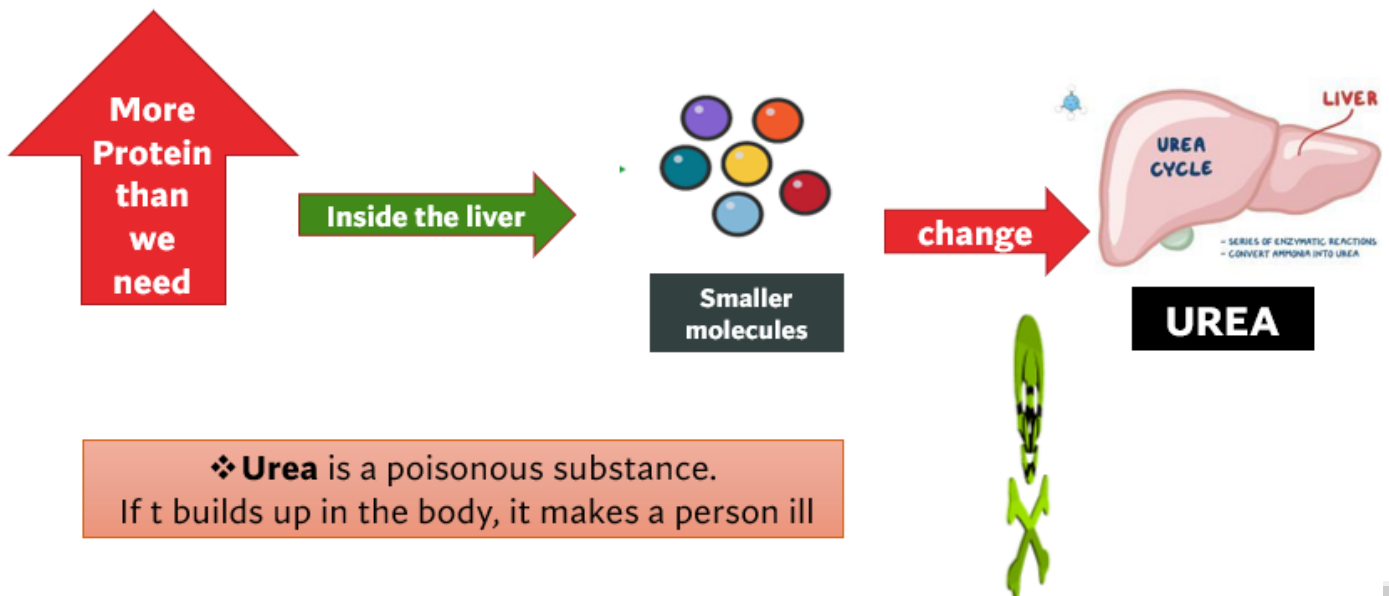
- any substances that they have too much of, that have been part of their body.

INTERNATIONAL SCHOOL

Excreting urea



Excreting urea



❖ **Urea** is a poisonous substance. If it builds up in the body, it makes a person ill

- When we eat food, any proteins in food are broken down to smaller molecules inside the digestive system.
- These small molecules go into the blood.
- The blood transports them to the liver.
- If we have more protein than we need, the liver changes the smaller molecules into urea.



- Urea is a poisonous substance. If it builds up in the body, it makes a person ill.
- As soon as urea is made in a liver cell, it is taken away from the liver in the blood.
- The urea is removed from the blood by the kidneys in the excretory system.
- This system is also known as the renal system. ‘Renal’ means ‘to do with kidneys’.

As the blood flows through the kidneys, the kidneys filter the blood. They remove all of the urea from it.



The kidneys also remove excess water from the blood. The urea dissolves in the excess water. The solution made of urea dissolved in water is called **urine**.



The urine made in each kidney flows down a tube called a **ureter**. This carries it to the **bladder**, which can store it for a while.



The urine can flow out of the bladder to the outside world through another tube, called **the urethra**.

4.4 Keeping a fetus healthy

Discuss how fetal development is affected by the health of the mother, including the effect of diet, smoking and drugs.

How fetal development is affected by the health of mother including:

Effect of diet	Effect of smoking	Effect of Drugs
<ul style="list-style-type: none"> A pregnant women need to eat a balanced diet. 	<ul style="list-style-type: none"> When a pregnant woman smokes, carbon monoxide and nicotine diffuse from her blood into the fetus's blood. It is as though the fetus is smoking, too. 	<ul style="list-style-type: none"> A drug is something that is taken into the body, and that affects the way the body works.

Pregnant balanced diet should includes:

Protein	Carbohydrates	Vitamins and Minerals
----------------	----------------------	------------------------------

The importance of Protein for

Health of mother

To keep the mother muscles strong and working well.
to make extra hemoglobin

Health of baby

To produce new cells and grow.
to make extra hemoglobin

✓ she needs more, **because** her blood has to transport oxygen to give to her fetus, as well as enough for herself. Of course, her fetus also needs

- **Fetus** is a developing child while still within the uterus.
- **Embryo** is used for the first few weeks, and fetus from about 11 weeks onwards

Pregnant balanced diet:

2- Carbohydrates

- Both mother and fetus need enough carbohydrates to make sure they both have enough **supply of energy**.

HOW?

➤ Glucose is a carbohydrate, and cells get their energy by combining glucose with oxygen, in respiration.

BUT

- ❖ the extra could be changed to fat and make her put on too much weight,
- ❖ which is not healthy.

Pregnant balanced diet:

3- Vitamins and Minerals

Very Important

Iron

- needed **to make haemoglobin**, so the mother needs to eat plenty of foods containing iron.
- Sometimes, it can help if the mother takes iron pills during pregnancy, if she cannot get enough in her diet.

Calcium

- helping **the baby** to grow strong bones, and to keep **the mother's** bones and teeth in good health



- ❖ Make sure she gets plenty of **vitamins** in her diet.



Components of cigarette

Carbon monoxide	Nicotine
<ul style="list-style-type: none"> • Carbon monoxide in the blood reduces the amount of oxygen that haemoglobin can transport. • This means that the fetus's cells get less oxygen, so they <i>cannot respire</i> as much and they cannot release as much energy as they normally would. • tend to be smaller than babies born to non-smoking mothers. 	<ul style="list-style-type: none"> • Is an addictive drug. It can damage blood vessels, so it is not good for a developing fetus to have nicotine in its blood. • And another component which is tar.

3- Drugs:

- Some drugs are good for health. **Antibiotics** are drugs that kill bacteria in the body. They are used to cure the infections caused by bacteria. Antibiotics are an example of a medicinal drug.
- **Some painkillers**, such as aspirin, are also medicinal drugs. Without medicinal drugs, many more people would die or suffer pain from illnesses that we can now cure.

1. **Two** substances that the fetus excretes, which are removed by the mother's blood: carbon dioxide and urea.