



Primary 6 Integrated Science

Term 1

Theme: Human Body

Topic 3/4 – Circulatory System

Learning Outcomes

The learner;

- appreciates the importance of blood in the body.
- develops further understanding of how blood circulates in the body.

Blood Circulation

The **blood circulation system** (also called the circulatory system) is the system in the body that moves blood around so that every part of the body gets what it needs to stay alive and healthy.

Main Functions

1. **Carries oxygen and food:** Blood takes oxygen from the lungs and nutrients from food to all body cells.
2. **Removes waste:** Blood carries away carbon dioxide and other waste products to be removed from the body.
3. **Protects the body:** White blood cells in the blood fight infections.
4. **Controls body temperature:** Blood helps keep the body warm or cool by spreading heat.

Exercise 1

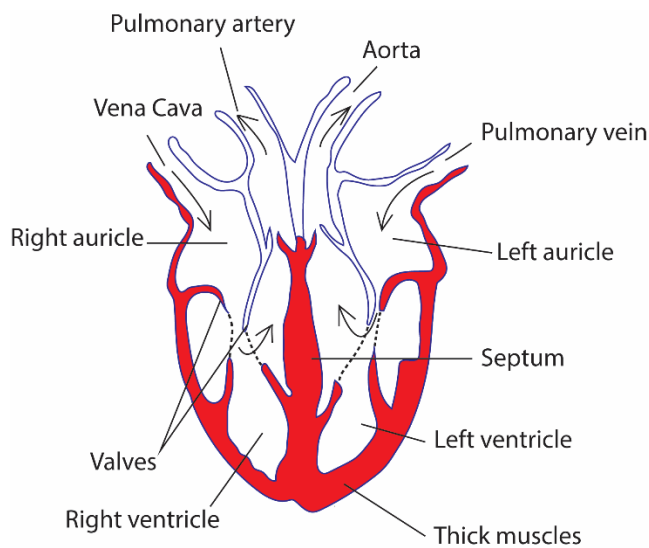
Mention any four function of the circulatory system

Main Parts

The circulatory system consists of three independent systems that work together:

- the heart (cardiovascular),
- lungs (pulmonary),
- and arteries, veins, coronary and portal vessels (systemic).

The heart



Structure of the Heart

The heart is a **muscular organ** about the size of a fist.

It has **four chambers**:

- Right atrium** – receives blood from the body (without oxygen).
- Right ventricle** – pumps blood to the lungs to get oxygen.
- Left atrium** – receives oxygen-rich blood from the lungs.

- (iv) **Left ventricle** – pumps oxygen-rich blood to the whole body. Note that the wall of the left ventricle is thicker than that of the right ventricle because the left ventricle requires higher force to pump blood a longer distance around the body while the right ventricle pumps blood a shorter distance to the lungs.

Other important parts:

- (v) **Valves** – act like doors, making sure blood flows in one direction.
- (vi) **Septum** – a wall that separates the left and right sides of the heart.
- (vii) **Blood vessels** – arteries carry blood away from the heart, veins bring blood back.

Exercise 2

- (i) The part of the heart that receives deoxygenated blood.
- (ii) Name the blood vessel that carry deoxygenated blood to the lungs from the heart.
- (iii) Name the part of the heart that separates deoxygenated blood from oxygenated blood.
- (iv) Why is the wall of left ventricle is thicker than that of right ventricle.

Function of the Heart

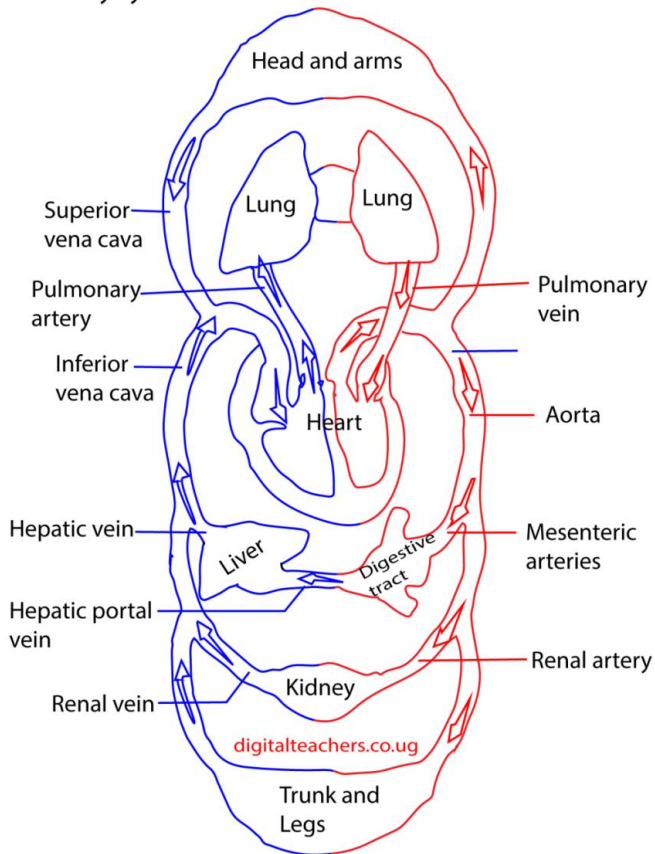
The heart works like a **pump**:

- (i) It **receives blood** from the body.
- (ii) It **sends blood to the lungs** to collect oxygen.
- (iii) It then **pumps oxygen-rich blood** to all parts of the body.
- (iv) This process repeats continuously to keep us alive.

Blood vessels

The figure below shows the main blood vessels in the human Circulatory system

Circulatory system in man



Blood vessels are tubes which carry blood around the body. Blood flows in the blood vessels.

These vessels are:

- arteries,
- veins and
- capillaries.

Exercise 3

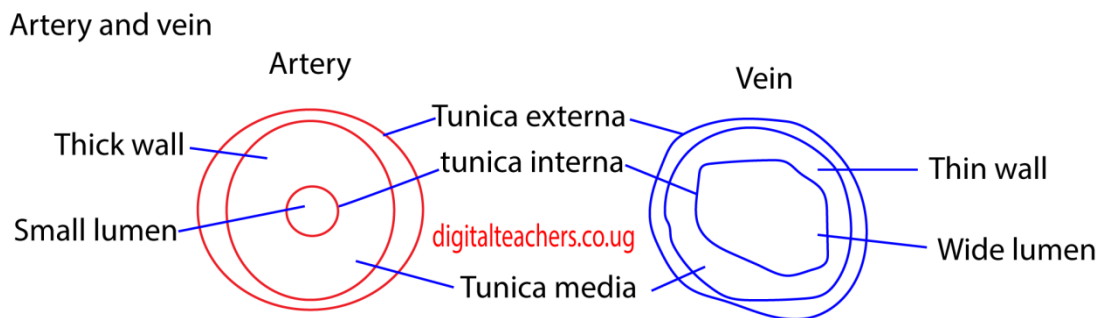
- (i) Name a blood vessel that carry nutrient rich blood to the liver.
- (ii) Name the blood vessel that contain blood with least waste products
- (iii) Name the major vein and artery.

Arteries

Arteries are the blood vessels which carry blood away from the heart to the rest of the body. All arteries except the pulmonary artery carry blood which is rich in oxygen. This blood is called **oxygenated blood**. However, the **pulmonary artery** carries blood which is rich in carbon dioxide from the heart to the lungs.

Veins

Veins are the blood vessels that carry blood from other parts of the body to the heart. All veins carry **deoxygenated blood**, which has a lot of carbon dioxide and less oxygen, apart from the **pulmonary vein**. The pulmonary vein carries blood rich in oxygen from the lungs to the heart.



Differences between arteries and veins

	Arteries	veins
1	Thick wall	Thin walls
2.	Narrow lumen	Broad lumen
3.	Have no valves except pulmonary artery and aorta	Have valves
4.	Carry oxygenated blood except pulmonary artery	Carry deoxygenated blood except pulmonary vein

Adaptation of the artery

- (i) **Thick muscular walls:** The walls of arteries are thick and strong, which prevents them from bursting when blood is pumped at high pressure.
- (ii) **Elastic fibres:** Arteries contain elastic tissue that allows them to stretch when blood is forced in and then return to their normal size. This helps maintain smooth blood flow.
- (iii) **Small lumen (inner space):** The narrow passage inside arteries helps keep blood moving quickly under pressure.

Adaptation of veins

- wide lumen to lower resistance to blood flow
- valves allow blood to flow in one direction

Capillaries

Capillaries are small thin-walled blood vessels which connect arteries to veins.

Exercise 4

- (i) List two structural differences between veins and arteries.
- (ii) State any one adaptation for arteries and one adaptation for veins

Functions of Capillaries

1. **Exchange of oxygen and carbon dioxide:** Oxygen moves from blood into body cells. Carbon dioxide moves from body cells into blood.
2. **Supply of nutrients:** Food nutrients (like glucose) pass from blood into cells.
3. **Removal of waste:** Waste products from cells move into blood for removal.
4. **Link between arteries and veins:** Capillaries connect the two systems, completing the circulation.

Adaptation of capillaries

- thin walls for fast diffusion
- Ramify the body to increase surface area for exchange

Blood

This is the red fluid that flows around the body. An adult human being has about five litres

Composition of blood

Blood is composed of blood cells, plasma and platelets.

Blood cells

There are two types of blood cells namely:

1. The red blood cells



Red blood cells

Functions of red blood cells

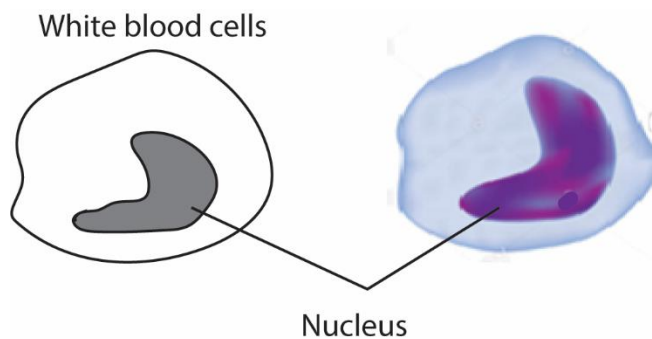
Red blood cells carry oxygen from lungs to the body.

Adaptations

Adaptations of red blood cells are features that make red blood cell efficient at their function.

- (i) **Biconcave shape:** They are shaped like a disc with a dip in the middle. This increases the surface area for absorbing and releasing oxygen.
- (ii) **No nucleus:** They do not have a nucleus, which gives more space to carry oxygen.
- (iii) **Flexible membrane:** Their outer covering is flexible, allowing them to squeeze through very narrow blood capillaries.
- (iv) **Packed with haemoglobin:** Haemoglobin is a red protein that binds with oxygen. It allows RBCs to carry oxygen from the lungs to the body and carbon dioxide back to the lungs.
- (v) **Small size:** Their tiny size makes it easy for them to move through all parts of the body quickly.

2. The white blood cells



The **white blood cells** are fewer than red blood cells and are colorless.

They have a nucleus

They are larger than the red blood cells

Functions of white blood cells

They fight diseases causing germs. They are the soldiers that defend our bodies against diseases causing germs

3. Plasma

Plasma is the liquid part of blood, which is pale yellow in color. It is mainly made up of water and contains digested food, salts and proteins. Plasma helps in holding the other components of blood.

Functions of plasma

- (i) Transports waste products to excretory organs
- (ii) Distribute digested food
- (iii) Transports other components of blood

4. Platelets

These are small pieces (fragments) of cells whose function is to help blood to clot when a blood vessel is cut or injured.

Exercise 5

- (a) State the components of blood that perform the following functions
 - (i) Carry oxygen
 - (ii) Fight disease causing organisms
 - (iii) Carry nutrients

- (b) List any two adaptations of the red blood cells.

Ways the Body Adjusts Blood Volume

- (i) **By the Heart**
 - The heart can pump faster or slower.
 - When it beats faster, more blood is pushed around the body.
- (ii) **By Blood Vessels**
 - Blood vessels can become **narrower (constrict)** or **wider (dilate)**.
 - Narrow vessels reduce blood flow, while wider vessels increase blood flow.
- (iii) **By the Kidneys**
 - Kidneys control how much water is kept in the blood.
 - If more water is kept, blood volume increases.
 - If water is removed, blood volume decreases.
- (iv) **By Body Activity**
 - During exercise, the heart pumps harder and faster, increasing blood volume in circulation.
 - At rest, the heart slows down, reducing blood flow.

Dehydration

Dehydration happens when the body loses too much water and does not have enough to work properly.

Causes of Dehydration

- (i) Not drinking enough water.
- (ii) Sweating a lot (especially in hot weather or during exercise).
- (iii) Diarrhoea or vomiting.
- (iv) Too much urination.

Signs of Dehydration

- Feeling very thirsty.
- Dry mouth and lips.
- Dark yellow urine or passing little urine.
- Feeling weak, dizzy, or tired.

- Headache.

Signs of dehydration in babies



- (i) **Dry mouth and tongue** – lips may look cracked.
- (ii) **Few wet diapers** – passing little or no urine for several hours.
- (iii) **Dark yellow urine** – instead of clear or light-colored.
- (iv) **Sunken eyes or soft spot (fontanelle)** – the soft area on top of the baby's head may look sunken.
- (v) **No tears when crying** – crying without producing tears.
- (vi) **Unusual sleepiness or irritability** – baby may be very tired, weak, or fussy.
- (vii) **Cool hands and feet** – poor circulation due to low fluid levels.

Effects of Dehydration

- (i) The body cannot cool itself properly.
- (ii) Cells do not get enough water to function.
- (iii) Can lead to serious illness if not corrected.

Prevention of dehydration

- Drink plenty of clean water every day.
- Drink more when it is hot or when exercising.
- Replace fluids lost during sickness.

Treatment of dehydration

- (i) Taking Oral rehydration solution (ORS)
- (ii) Intravenous fluids
- (iii) Drinking a lot of juice or water

Components of ORS and Their Uses

1. **Water**
 - Replaces the fluid lost from the body through diarrhoea, vomiting, or sweating.
 - Keeps the body hydrated.
2. **Sugar (Glucose)**
 - Provides energy to the body.
 - Helps the intestine absorb water and salts more effectively.
3. **Salt (Sodium chloride)**
 - Replaces the salts lost from the body.
 - Helps maintain the balance of fluids in the body.

How to Prepare Oral Rehydration Salts (ORS) at Home

Oral Rehydration Salts are used to replace water and salts lost from the body during **diarrhoea, vomiting, or dehydration**.

Ingredients

- **1 litre of clean water** (boiled and cooled if necessary)
- **6 level teaspoons of sugar**
- **½ level teaspoon of salt**

Preparation Steps

- (i) Wash your hands and use clean utensils.
- (ii) Measure **1 litre of clean water** into a clean container.
- (iii) Add **6 level teaspoons of sugar**.
- (iv) Add **½ level teaspoon of salt**.
- (v) Stir well until everything dissolves completely.

Important Notes

- (i) The solution should taste **like tears** (not too salty, not too sweet).
- (ii) Prepare fresh ORS each day; do not keep it for more than 24 hours.
- (iii) Give the solution in small sips frequently to the sick person.
- (iv) The sick person should take as much ORS solution as possible. It has no overdose.

Exercise 6

- (i) State two signs of dehydration in babies.
- (ii) Give two ways of treating dehydration in babies.
- (iii) Explain steps of dissolving Oral Rehydration Salts (ORS)

Fainting

Fainting is when a person suddenly becomes unconscious (loses awareness) for a short time. It usually happens because the brain does not get enough blood and oxygen for a few moments.

Causes of Fainting

- (i) Standing for too long without moving.
- (ii) Sudden shock, fear, or pain.
- (iii) Lack of food or low blood sugar.
- (iv) Dehydration (not enough water in the body).
- (v) Illness or weakness.

Signs before Fainting

- (i) Feeling dizzy or light-headed.
- (ii) Blurred vision.
- (iii) Weakness in the body.
- (iv) Sweating.
- (v) Nausea (feeling like vomiting).

What to Do When Someone Faints



- (i) Lay the person flat on the ground.
- (ii) Raise their legs slightly to help blood flow to the brain.
- (iii) Loosen tight clothing around the neck and chest.
- (iv) Make sure there is fresh air.
- (v) If they do not wake up quickly, seek medical help.

Exercise 7

- (a) List **one** cause of fainting.
- (b) Why a person who fainted should be kept in a cool and calm place.

Diseases and Disorders of the Circulatory System

The circulatory system can sometimes develop problems that affect how blood moves around the body.

Examples

- (i) **High blood pressure (Hypertension)**
 - When blood pushes too strongly against the walls of blood vessels.
 - Can damage the heart and vessels over time.
- (ii) **Heart attack**
 - Happens when blood flow to part of the heart is blocked.
 - The heart muscle does not get enough oxygen.
- (iii) **Stroke**
 - Occurs when blood supply to part of the brain is cut off.
 - Can cause weakness or loss of speech.
- (iv) **Anaemia**
 - When the blood does not have enough red blood cells or haemoglobin.
 - Causes tiredness and weakness because less oxygen is carried.
- (v) **Leukaemia**
 - A disease where the body makes abnormal white blood cells.
 - Affects the blood's ability to fight infections.
- (vi) **Varicose veins**
 - Veins become swollen and twisted because blood does not flow properly.

HIV/AIDS

- HIV means *Human Immunodeficiency Virus*.
- AIDS means *Acquired Immune Deficiency Syndrome*.
- HIV weakens the body's immune system, making it hard to fight diseases.
- AIDS is the advanced stage of HIV infection.

How HIV Spreads

- Through unprotected sexual contact.
- By sharing sharp objects like needles or razor blades.
- Through transfusion of infected blood.

Ways through which HIV/AIDS is transmitted from the mother to child

- (i) During pregnancy:** The virus can cross from the mother's blood into the baby through the placenta.
- (ii) During childbirth:** The baby may be exposed to the mother's blood and body fluids while being born.
- (iii) Through breastfeeding** (*extra point for clarity*): HIV can be passed to the baby through breast milk if the mother is infected.

Ways in which an HIV positive pregnant woman can protect her unborn baby from getting HIV/AIDS

- (i) Taking antiretroviral (ARV) medicines**
 - These medicines lower the amount of HIV in the mother's blood.
 - This greatly reduces the risk of the virus crossing to the baby during pregnancy or birth.
- (ii) Delivering the baby safely under medical care**
 - Giving birth in a hospital or health centre allows doctors to use safe delivery methods.
 - This reduces the baby's exposure to the mother's blood and body fluids.

How HIV Does NOT Spread

- Not by hugging, shaking hands, or sharing food.
- Not by mosquito bites.
- Not by playing together or touching.

Effects of HIV and AIDS

HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immune Deficiency Syndrome) affect not only the person who is sick but also their family and the wider community.

Effects HIV/AIDS on the Individual

- (i) Weakens the immune system, making the person easily sick.
- (ii) Causes tiredness, weight loss, and frequent infections.
- (iii) May lead to emotional stress, sadness, or fear.
- (iv) Limits ability to work or study.

Reasons why a person with HIV/AIDS easily gets infections

- (i) **Destroys white blood cells (CD4 cells):** These cells fight germs and infections. HIV reduces their number, making the body weak.
- (ii) **Weak immune system:** With fewer defender cells, the body cannot fight off bacteria, viruses, or fungi effectively.
- (iii) **Opportunistic infections:** Germs that normally do not cause sickness in healthy people can easily make someone with HIV sick. Examples: tuberculosis, pneumonia, skin infections.

Effects of HIV/AIDS on the Family

- (i) Family members may spend a lot of time caring for the sick person.
- (ii) Money is used for medicine and hospital visits, reducing family income.
- (iii) Emotional pain and worry affect everyone.
- (iv) Children may lose support if parents are sick.

Effects of HIV/AIDS on the Community

- (i) Fewer people able to work, reducing productivity.
- (ii) Increased medical costs for the community and government.
- (iii) Stigma and discrimination may isolate affected people.
- (iv) Orphans may increase if parents die from AIDS, creating social challenges.

Care given to an individual with HIV/AIDS

Care for the Individual

- (i) **Medical care:** Regular check-ups and medicines to help control the virus.
- (ii) **Good nutrition:** Eating balanced meals to keep the body strong.
- (iii) **Clean water and hygiene:** Prevents other infections.
- (iv) **Rest and exercise:** Helps the body stay healthy.
- (v) **Emotional support:** Showing love, kindness, and encouragement.
- (vi) **Avoiding stigma:** Treating them with respect and dignity.

Care from the Family

- (i) Helping with daily needs like food and medicine.
- (ii) Providing emotional comfort and companionship.
- (iii) Protecting them from discrimination.
- (iv) Encouraging them to follow medical advice.

Care from the Community

- (i) Offering support groups and counseling.
- (ii) Educating people to stop stigma and discrimination.
- (iii) Providing health services and medicines.
- (iv) Helping families affected by HIV/AIDS with social and financial support.

Exercise 8

- (a) State two effects of HIV on an individual.
- (b) Give two reasons why an HIV victim is most likely to get infections

The PIASY programme

The **PIASY programme** (Presidential Initiative on AIDS Strategy for Youth) is designed to protect young people from HIV/AIDS by giving them knowledge, skills, and support.

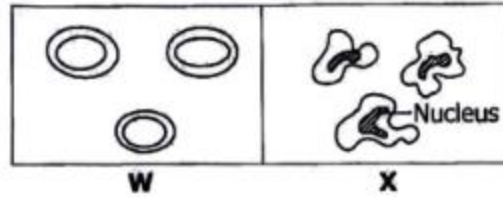
Benefits for School Children

- (i) **Education and Awareness:** Teaches children what HIV/AIDS is and how it spreads. Explains safe practices to avoid infection.
- (ii) **Life Skills Training:** Helps children learn self-control, decision-making, and confidence. Encourages them to say “no” to risky behaviors.
- (iii) **Promotes Abstinence and Good Behavior:** Guides children to delay sexual activity until they are older and responsible. Encourages respect for themselves and others.
- (iv) **Peer Support:** Children are trained to educate and support each other. Builds a culture of care and responsibility among youth.
- (v) **Community Involvement:** Involves teachers, parents, and leaders in protecting children. Creates a safe environment for learning and growing.

Revision exercise

1. (a) State the reason why a person suffering from HIV/AIDS is easily attacked by other diseases
Due to reduced immunity from destruction of white blood cells
- (c) Mention any one effect of HIV/AIDS on a community.
 - (i) Fewer people able to work, reducing productivity.
 - (ii) Increased medical costs for the community and government.
 - (iii) Stigma and discrimination may isolate affected people.
 - (iv) Orphans may increase if parents die from AIDS, creating social challenges.
- (d) Give any two ways of caring for individual with HIV/AIDS.
 - (i) **Medical care:** Regular check-ups and medicines to help control the virus.
 - (ii) **Good nutrition:** Eating balanced meals to keep the body strong.
 - (iii) **Clean water and hygiene:** Prevents other infections.
 - (iv) **Rest and exercise:** Helps the body stay healthy.

2. The diagram below show the structure of different blood cells in the human body. Study and use them to answer the question that follow.



- (a) Name the blood cell marked X.
White blood cell
- (b) Give the function of the blood cells Marked
- W: transport oxygen in blood
 - X: fight against disease causing germs
- (c) Name one disease that destroys W
HIV
3. (a) Write down any two causes of nose bleeding
- Injury to the nose (e.g., being hit or falling).
 - Very dry air or picking the nose, which can damage small blood vessels.
- (b) Why is a person whose nose is bleeding advised to;
- Lean back his/her head?
 - This helps reduce blood flow from the nose by keeping the head raised.
 - It also prevents too much blood from rushing forward.
 - Pinch the soft part of his/her nose?
 - Pressing the soft part of the nose helps close the small blood vessels.
 - This stops or slows down the bleeding.
4. How are arteries able to withstand pressure of blood pumped from the heart?

- (iv) **Thick muscular walls:** The walls of arteries are thick and strong, which prevents them from bursting when blood is pumped at high pressure.
 - (v) **Elastic fibres:** Arteries contain elastic tissue that allows them to stretch when blood is forced in and then return to their normal size. This helps maintain smooth blood flow.
 - (vi) **Small lumen (inner space):** The narrow passage inside arteries helps keep blood moving quickly under pressure.
5. (a) Name the largest vein in the body
Vena cava
- (b) Name the type of blood that is transported by the pulmonary artery.
Deoxygenated blood
- (c) State one characteristic of arteries that enable them to carry blood at high pressure
Has strong muscles
Has narrow lumen
- (d) Give one way in which the structure of capillaries enables them to exchange body materials.
Have thin walls to facilitate diffusion
They are numerous to increase the surface area for exchange
6. Name the component of blood affected by sickle cell disease.
Red blood cells
7. The table below shows human body organs, the system to which they belong and the organ function. Study and complete it correctly

Organ	system	Organ function
Heart	circulatory	<u>Pumps blood</u>
<u>Kidney</u>	Excretory	Formation of urine
Pancreas	<u>digestive</u>	Produce pancreatic juice
Epididymis	reproduce	Store sperms

8. How does the PIASY programme help school children to avoid being infected with HIV/AIDS?

The **PIASY programme** (Presidential Initiative on AIDS Strategy for Youth) is designed to protect young people from HIV/AIDS by giving them knowledge, skills, and support.

Benefits for School Children

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 - (iv) **Peer Support:** Children are trained to educate and support each other. Builds a culture of care and responsibility among youth.
 - (v) **Community Involvement:** Involves teachers, parents, and leaders in protecting children. Creates a safe environment for learning and growing.
9. (a) Give the importance of each of the following components of Oral Rehydration solution (ORS) to patient
- (i) Sugar; supplies energy and promotes absorption of salts and hence water
 - (ii) Water: replaces water in the blood.
- (b) Apart from using ORS, give two other ways of replacing lost fluid in a patient.
- (i) Drinking juice
 - (ii) Drinking water
 - (iii) Using IVs (Intravenous Fluids)
10. (a) Give any two possible ways through which a baby can get HIV/AIDS from a mother.
- (iv) **During pregnancy:** The virus can cross from the mother’s blood into the baby through the placenta.
 - (v) **During childbirth:** The baby may be exposed to the mother’s blood and body fluids while being born.

- (vi) **Through breastfeeding** (*extra point for clarity*): HIV can be passed to the baby through breast milk if the mother is infected.
- (b) State any two ways in which an HIV positive pregnant woman can protect her unborn baby from getting HIV/AIDS

(iii) **Taking antiretroviral (ARV) medicines**

- These medicines lower the amount of HIV in the mother's blood.
- This greatly reduces the risk of the virus crossing to the baby during pregnancy or birth.

(iv) **Delivering the baby safely under medical care**

- Giving birth in a hospital or health centre allows doctors to use safe delivery methods.
- This reduces the baby's exposure to the mother's blood and body fluids.

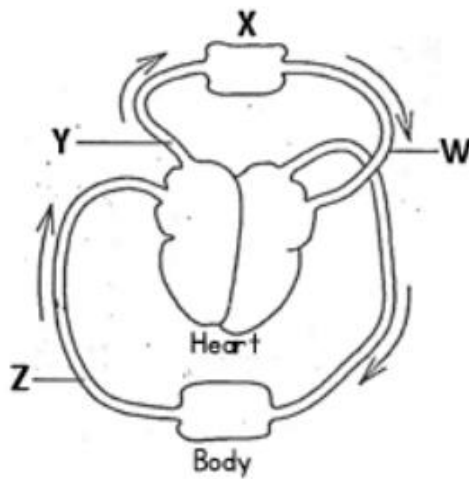
11. (a) Give any two signs which show that a baby is dehydrated.

- (i) **Sunken eyes or soft spot (fontanelle)** – the soft area on top of the baby's head may look sunken.
- (ii) **Dry mouth and tongue** – lips may look cracked.
- (iii) **Few wet diapers** – passing little or no urine for several hours.
- (iv) **Dark yellow urine** – instead of clear or light-colored.
- (v) **No tears when crying** – crying without producing tears.
- (vi) **Unusual sleepiness or irritability** – baby may be very tired, weak, or fussy.
- (vii) **Cool hands and feet** – showing poor circulation.

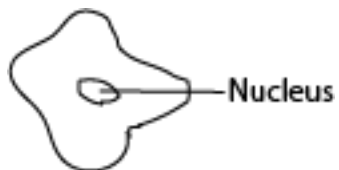
(c) Stat any two pieces of advice you would give to a mother whose baby is dehydrated.

- (i) **Give fluids often** – Offer small sips of clean water or oral rehydration solution (ORS) if the baby is old enough.
- (ii) **Continue breastfeeding** – If the baby is breastfeeding, feed more frequently to replace lost fluids.
- (iii) **Monitor urine** – Check diapers; if the baby is not urinating, dehydration may be severe.

12. The diagram below shows the circulation of blood in human body. Study and use it to answer the questions that follow.



- (a) Name the organ marked X
Lungs
- (b) Which blood vessels is marked by letter W?
Pulmonary vein
- (c) State the similarity between blood vessel Y and blood vessel Z.
Both carry deoxygenated blood
- (d) Why does blood vessel W brings back blood to the heart.
In order that the oxygenated blood is pumped to the body.
13. The diagram is of a blood cell. Use it to answer questions that follow



- (a) What type of blood cell is shown in the diagram?
White blood cells
- (b) What is the main function of the cell above?
Fights disease causing germs

14. What is the main cause of fainting?

.....

15. Which blood cell is responsible for defense of the body?

.....

16. How is the chamber of the heart which pumps blood throughout the body adapted to its function?

.....

17. A boy bleeding from the nose is made to lie down or sit on a chair with his nose upwards. What should be done next to stop bleeding?

.....

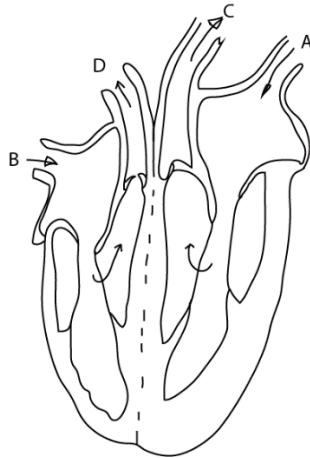
18. What causes anemia?

.....

19. Why does a heart of a person who is running beat faster than normal?

.....

20. The diagram below is of a human heart. Use it to answer the questions which follow.



(a) What is the function of the valves in the heart?

.....

(b) What is the difference between the blood which enters the heart through A and that through B?

.....

(c) After leaving the heart at C and D where does the blood go?

C:

D:

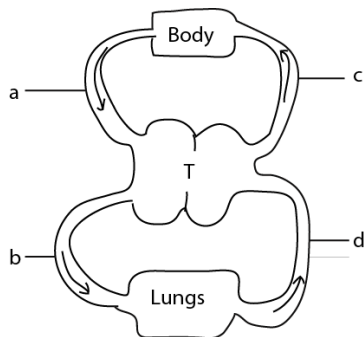
21. What is the importance of red blood cells in human body?

.....

22. Which condition is caused by shortage of red blood cells in the body?

.....

23. The diagram below is an illustration of a blood circulation system in a mammal. Study it carefully and use it to answer questions (a) and (b) below.



(a) What body organ does part T represent?

.....

(b) What is the difference in the blood carried by blood vessels marked b and c.

.....

(c) Give the difference between an artery and a vein.

.....

24. 47. Match items of group A with those of group B by completing the table below

A	B
Heart	Sensory organ
Kidney	memory
Skin	carbon dioxide
Lungs	circulation
Brain	urine

Complete the table below

A	B
(a) heart	Circulation
(b) Skin	Sensory organ
(c) Brain	Memory
(d) Lung	Carbon dioxide

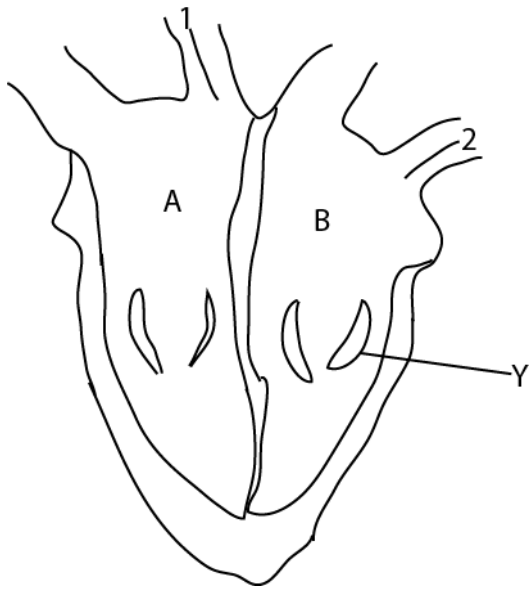
25. Give the general name of blood vessels which carry blood away from the heart to various parts of the body.

.....

26. Why does blood go to the kidneys during circulation?

.....

27. The diagram shows a human heart.
Use to answer the questions that follow.



(a) What is the function of the part marked with letter **Y**?

.....

(b) Give the difference between the blood in the regions marked with letters **A** and **B**

.....

(c) Put arrows on the short lines marked with numbers 1 and 2 to show the direction of the movement of blood.

28. (a) Why does blood move from the heart to the lungs before it moves round the body?

.....

(b) Give ant one function of each of the following

(i) White blood cells

.....

(ii) Red blood cells

.....

(ii) Platelets

.....

29. Match the items in list A with their function in list B

List A	List B
Red blood cells	Stop bleeding when the skin is cut.
Arteries	Carry oxygen around the body
Valves	Carry blood away from the heart
platelets	Prevent back flow of blood in veins

(a) Red blood cells:

(b) Arteries:

(c) Platelets:

(d) Valves:

30. (a) Name the human body organ where each of the following takes place:

(i) Filtration of blood

.....

(ii) Blood gets oxygen while carbon dioxide is removed.

.....

(b) Give the use of the following components of blood in the body

(i) White blood cells

.....

(ii) Blood platelets

.....

31. How is the function of the pulmonary vein different from that of other veins?

.....

32. Name the blood vessel which takes blood from the heart to the lung.

.....

33. (a) Apart from the respiratory gases and body wastes, name any other two materials carried in blood.

(i)

(ii)

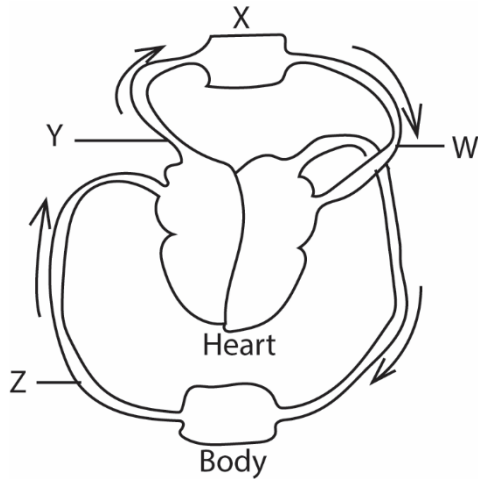
(b) Name the component of blood which transport oxygen in the human body.

.....

(c) Which disease-causing germ attacks the white blood cells in humans?

.....

34. The diagram below shows circulation of blood in the human body
Study and use it to answer the question that follow



(a) Name the organ marked with letter X.

.....

(b) Which blood vessel is marked with letter W?

.....

(c) State the similarity between blood vessel Y and blood vessel Z.

.....

(d) Why does blood W bring back to the heart.

.....

35. (a) State two causes of diarrhea.

.....

(b) How can diarrhea be prevented?

.....

36. Matata came back from school and found a piece of left over boiled potato which was not covered. Because he was very hungry, he began to eat it at once.

(a) State two good healthy practice which Matata did not follow.

.....
.....

(b) Name a disease Matata could suffer from

.....
.....

(c) Give a reason for your answer in (b) above?

.....
.....

37. When does a person become dehydrated?

.....
.....

38. Why are the legs of a person who has fainted raised higher than the head as a way of giving first aid?

.....
.....

39. (a) Which type of blood vessels return blood to the heart?

.....

(b) What is the function of valves in the blood vessels during blood circulation?

.....

(c) What type of blood is carried by most blood vessels with valves?

.....

(d) Give any one waste materials carried by blood.

.....

40. Which condition in babies is shown by sunken spot on the head?

.....

41. How is the function of the pulmonary vein different from that of other veins?

.....

42. State the injury causes by steam to a human body

.....

43. In which one way does tooth paste promote oral health?

.....

44. (a) Give any two signs which show that a baby is dehydrated

(i)

(ii)

(b) State any two pieces of advice you would give to a mother whose baby is dehydrated

(i)

(ii)

45. (a) What causes fainting?

.....

.....

(b) State any two conditions that can lead to fainting

.....

.....

(c) Why are the legs of a person who has fainted raised higher than the head when giving First Aids

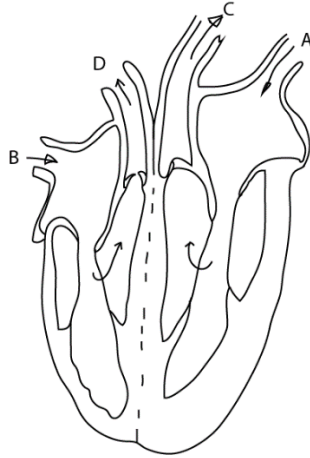
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Revision questions

The diagram is of a blood cell. Use it to answer questions 1 and 2



1. What type of blood cell is shown in the diagram?
White blood cell
2. What is the main function of the cell above?
Fight against disease causing germs
3. 13. What is the main cause of fainting?
Shortage of blood supply to the brain
4. Which blood cell is responsible for defense of the body?
White blood cells
5. How is the chamber of the heart which pumps blood throughout the body adapted to its function?
Has thick walls which contract with strong force to push blood to the body.
6. A boy bleeding from the nose is made to lie down or sit on a chair with his nose upwards. What should be done next to stop bleeding?
Pitch the nose for some time to stop bleeding
7. What causes anemia?
Lack of enough iron in blood
8. Why does a heart of a person who is running beat faster than normal?
In order to supply enough oxygen and food nutrients to the muscles.
9. The diagram below is of a human heart. Use it to answer the questions which follow.



(d) What is the function of the valves in the heart?

Prevent backflow of blood in the heart

(e) What is the difference between the blood which enters the heart through A and that through B?

Blood through A is oxygenated while blood through B is deoxygenated

(f) After leaving the heart at C and D where does the blood go?

C: to other parts of the body

D: to the lungs

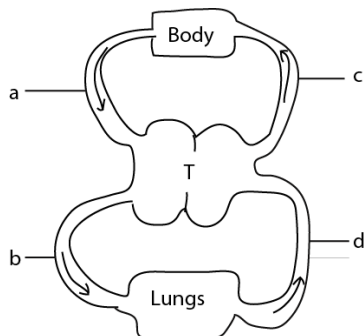
10. What is the importance of red blood cells in human body?

Transport oxygen in blood

11. Which condition is caused by shortage of red blood cells in the body?

Anemia

12. The diagram below is an illustration of a blood circulation system in a mammal. Study it carefully and use it to answer questions (a) and (b) below.



(d) What body organ does part T represent?

Heart

(e) What is the difference in the blood carried by blood vessels marked b and c.

b carries deoxygenated blood whereas c carries oxygenated blood

(f) Give the difference between an artery and a vein.

- **Artery have thick walls whereas veins have thin walls.**
- **Arteries carry blood from the heart to the body whereas veins carry blood from the body to the heart**
- **Most veins have valves whereas arteries do not.**

13. 47. Match items of group A with those of group B by completing the table below

A	B
Heart	Sensory organ
Kidney	memory
Skin	carbon dioxide
Lungs	circulation
Brain	urine

Complete the table below

A	B
(e) heart	Circulation
(f) Skin	Sensory organ
(g) Brain	Memory
(h) Lung	Carbon dioxide

14. Give the general name of blood vessels which carry blood away from the heart to various parts of the body.

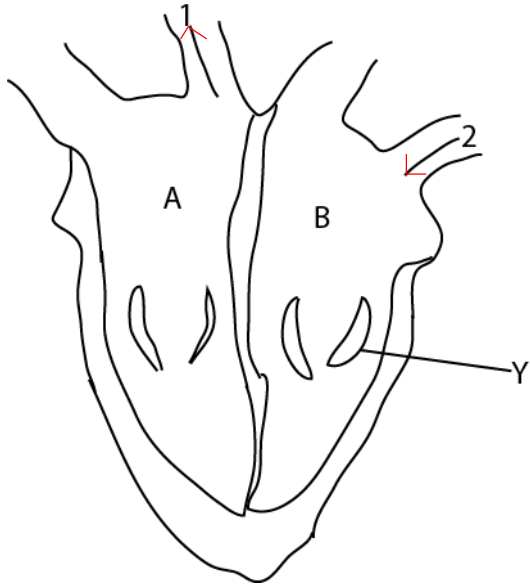
Arteries

15. Why does blood go to the kidneys during circulation?

To remove metabolic wastes and excess water

16. The diagram shows a human heart.

Use to answer the questions that follow.



(a) What is the function of the part marked with letter Y?

Prevent backflow of blood

(b) Give the difference between the blood in the regions marked with letters A and B

Blood in A is deoxygenated while that in B contains oxygenated blood

(c) Put arrows on the short lines marked with numbers 1 and 2 to show the direction of the movement of blood.

17. (a) Why does blood move from the heart to the lungs before it moves round the body?

Blood goes to the lungs to acquire oxygen and carbon dioxide is removed

(b) Give ant one function of each of the following

(i) White blood cells

Fight disease causing germs

(ii) Red blood cells

Transport oxygen in blood

(ii) Platelets

Used for blood clotting

18. Match the items in list A with their function in list B

List A	List B
Red blood cells	Stop bleeding when the skin is cut.
Arteries	Carry oxygen around the body
Valves	Carry blood away from the heart
platelets	Prevent back flow of blood in veins

(a) Red blood cells: **Carry oxygen around the body**

(b) Arteries: **Carry blood away from the heart**

(c) Platelets: **Stop bleeding when the skin is cut.**

(d) Valves: **Prevent back flow of blood in veins**

19. (a) Name the human body organ where each of the following takes place:

(i) Filtration of blood

Kidney

(ii) Blood gets oxygen while carbon dioxide is removed.

Lungs

(b) Give the use of the following components of blood in the body

(i) White blood cells

Fight disease against disease causing germs

(ii) Blood platelets

Form blood clot that stops bleeding

20. How is the function of the pulmonary vein different from that of other veins?

It carries oxygenated blood while others carry deoxygenated blood

21. Name the blood vessel which takes blood from the heart to the lung.

Pulmonary artery

22. (a) Apart from the respiratory gases and body wastes, name any other two materials carried in blood.

(i) Antibodies

(ii) Glucose/ food nutrients

(iii) drugs

(b) Name the component of blood which transport oxygen in the human body.

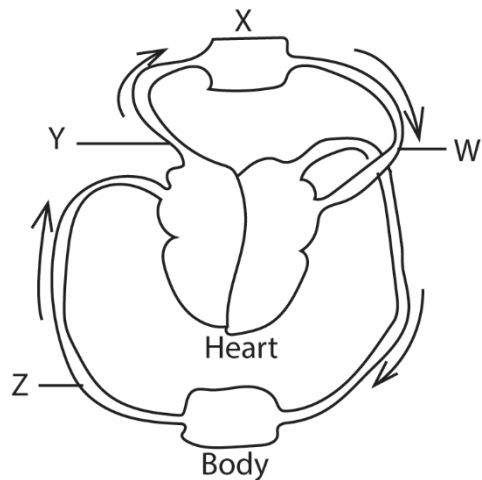
Red blood cells

(c) Which disease-causing germ attacks the white blood cells in humans?

Bacteria, viruses

23. The diagram below shows circulation of blood in the human body

Study and use it to answer the question that follow



- (e) Name the organ marked with letter X.
Lungs
- (f) Which blood vessel is marked with letter W?
Pulmonary vein
- (g) State the similarity between blood vessel Y and blood vessel Z.
Both carry deoxygenated blood
- (h) Why does blood W bring back to the heart.
Brings oxygenated blood to be supplied to the body

24. (a) State two causes of diarrhea.

Eating contaminated food

Eating food without washing hands

Drinking contaminated water

(c) How can diarrhea be prevented?

- **Washing hands before eating food**
- **Washing fruits before eating**
- **Covering food properly**

- **By giving a patient with diarrhea plenty of fluids.**
25. Matata came back from school and found a piece of left over boiled potato which was not covered. Because he was very hungry, he began to eat it at once.
- (d) State two good healthy practice which Matata did not follow.
- **Did not wash his hands first**
 - **He did not warm the food before eating it**
- (e) Name a disease Matata could suffer from
- **Diarrhea**
 - **Cholera**
 - **dysentery**
- (f) Give a reason for your answer in (b) above?
- Housefly could have left germs because it was not covered.**
26. When does a person become dehydrated?
- When he/she loses water through vomiting or diarrhea.**
27. Why are the legs of a person who has fainted raised higher than the head as a way of giving first aid?



Raising legs allows more blood supply to the brain

28. (a) Which type of blood vessels return blood to the heart?

Veins

- (b) What is the function of valves in the blood vessels during blood circulation?

Allow blood to flow in one direction

- (c) What type of blood is carried by most blood vessels with valves?

Deoxygenated blood

(d) Give any one waste materials carried by blood.

Urea

Uric acid

Carbon dioxide

29. Which condition in babies is shown by sunken spot on the head?

Dehydration

30. How is the function of the pulmonary vein different from that of other veins?

Pulmonary vein carries oxygenated blood whereas other carry deoxygenated blood.

31. State the injury causes by steam to a human body

Scald

32. In which one way does tooth paste promote oral health?

Supplies calcium for strong tooth

Provides good breathe

33. (a) Give any two signs which show that a baby is dehydrated
- (iii) Sunken eye
 - (iv) Pale skin
- (b) State any two pieces of advice you would give to a mother whose baby is dehydrated
- (iii) Give oral rehydration salt solution
 - (iv) Give a lot of juices
34. (a) What causes fainting?
- Low blood circulation to the brain
- (b) State any two conditions that can lead to fainting
- (i) sickness
 - (ii) fatigue/tiredness
 - (iii) hunger
 - (iv) anger
 - (v) emotions
- (d) Why are the legs of a person who has fainted raised higher than the head when giving First Aids
- To increase blood flow in to the brain

Thank You

Dr. Bbosa Science