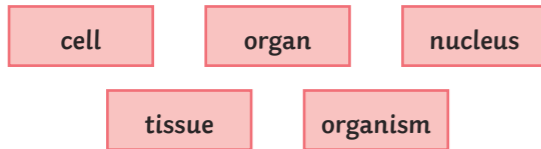


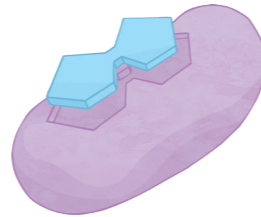
Place the following structures in order from smallest to largest:



1. _____
2. _____
3. _____
4. _____
5. _____

Define what an enzyme is.

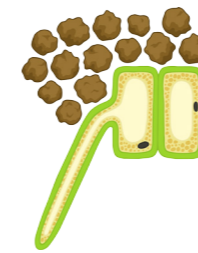
Enzymes are described as being **specific** to a substrate. What does this mean? Use the diagram to help your explanation.



What is the function of phloem tissue?

The xylem tissue is composed of hollow tubes strengthened by lignin. What is the function of xylem tissue?

Describe how a root hair cell is adapted for the efficient uptake of water and mineral ions.



Bile is made in the liver and stored in the gall bladder.

Bile neutralises s _____ a _____ to lower the pH so protease enzymes can work.

It also e _____ fats to give them a larger s _____ a _____ for lipase to work on. This speeds up d _____.

Describe how to carry out the test for reducing sugars. Keywords: Benedict's, heat, colour change, blue, red.

1. _____
2. _____
3. _____
4. _____

Where, in the plant, is meristem tissue located?

Transpiration is: (Tick the correct box.)

The movement of water molecules from a high water concentration to a lower water concentration across a partially permeable membrane.

The evaporation and diffusion of water from the leaves of a plant.

The movement of glucose molecules around the plant.

Name three factors that affect the rate of transpiration.

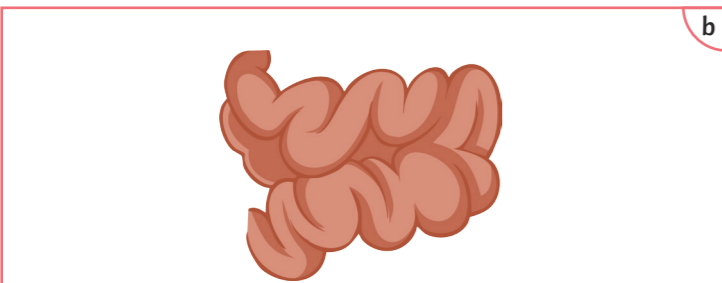
- _____
- _____
- _____
- _____

Describe how to test for starch.

1. _____
2. _____
3. _____

Describe how to test for protein.

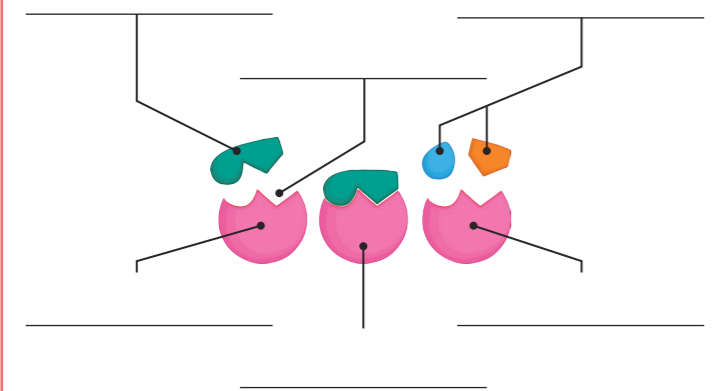
1. _____
2. _____
3. _____



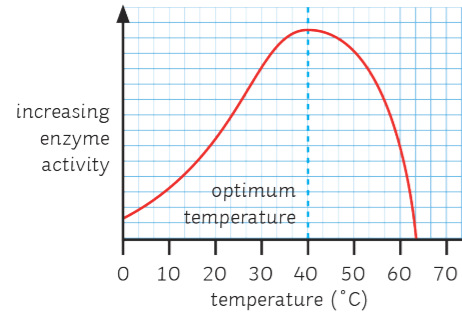
The _____ is the part of the body where food is absorbed into the bloodstream.

The diagram below shows the **lock and key** model of enzyme function. Label the diagram using the following words:

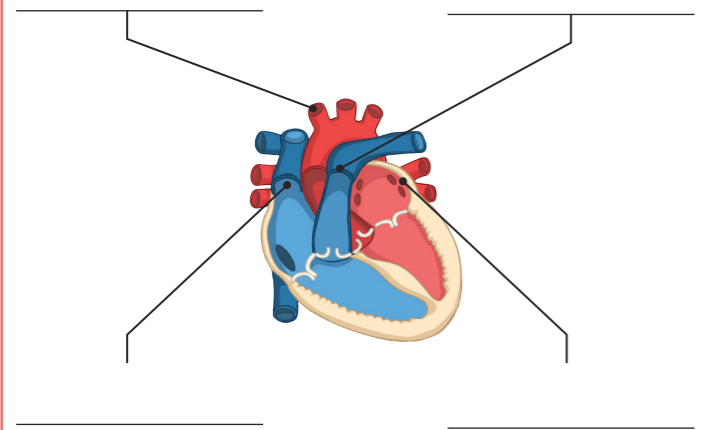
enzyme, active site, substrate, products, enzyme-substrate complex.



Use the graph below to describe how temperature affects enzyme function. Keywords: optimum, rate of activity, temperature, increase, decrease 50 °C



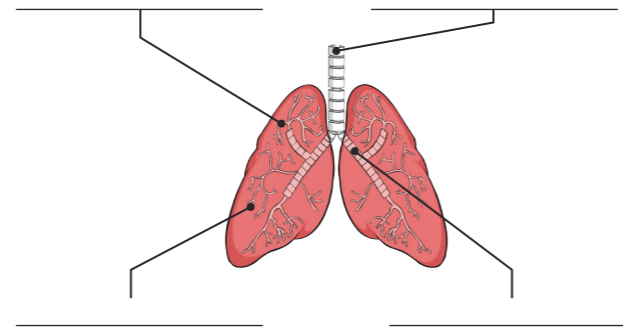
Label the following blood vessels on the diagram of the heart:
aorta, vena cava, pulmonary artery, pulmonary vein.



The artery carries blood a _____ from the heart.
It has thick layers of m _____ for strength and elastic f _____. The walls are thick with a small l _____.

Why does the left ventricle have a thicker, more muscular wall than the right ventricle?

Label the following parts on the diagram below:
trachea, bronchus, bronchiole, alveolus.



In coronary heart disease, layers of fatty material builds up inside the coronary arteries. Explain how this can lead to a heart attack. Keywords: fatty material, oxygen, heart attack, arteries.

What are statins? Choose the correct answer.

- They reduce the amount of LDL.
- They reduce the amount of HDL.
- They increase the amount of LDL.

Stents can be used to treat coronary heart disease. Give one advantage and one disadvantage of using stents.

advantage: _____

disadvantage: _____

How can the valves in the heart become damaged?

What happens when the valves become leaky?

What can they be replaced by?

What could be the problems?

A problem with heart transplants is rejection of the donor heart. What is meant by rejection in terms of a heart transplant?

Describe two ways that the lungs are adapted for gaseous exchange.

- _____
- _____
- _____
- _____

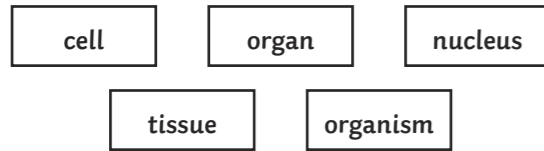
Match up the four components of the blood and their functions

- | | |
|-------------------|--------------------------|
| red blood cells | help to clot the blood |
| white blood cells | transport oxygen |
| platelets | defend against pathogens |
| plasma | liquid part of blood |

Explain how an infection from a microorganism could lead to the development of other, non-communicable diseases.

What is the difference between a benign and a malignant tumour?

Place the following structures in order from smallest to largest:



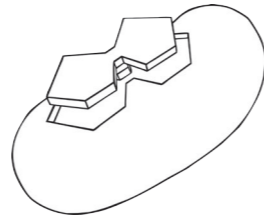
1. nucleus
2. cell
3. tissue
4. organ
5. organism

Define what an enzyme is.

A biological catalyst.

Enzymes are described as being **specific** to a substrate.

What does this mean? Use the diagram to help your explanation.



The active site of the enzyme has a unique shape. Only a substrate with a complimentary shape can fit and bind to form an enzyme-substrate complex.

Bile is made in the liver and stored in the gall bladder.

Bile neutralises stomach acid to lower the pH so protease enzymes can work.

It also emulsifies fats to give them a larger surface area for lipase to work on. This speeds up digestion.

Describe how to carry out the test for reducing sugars.

Keywords: Benedict's, heat, colour change, blue, red.

1. Place the test sample into a test tube (about 2ml).
2. Add an equal amount of Benedict's reagent.
3. Heat in a water bath for 5 minutes.
4. The colour will change from blue to either green/yellow/red, depending on the amount of reducing sugar present.

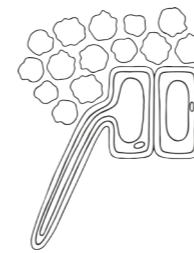
What is the function of phloem tissue?

To transport food substances (dissolved sugars) around the plant. This process is called translocation.

The xylem tissue is composed of hollow tubes strengthened by lignin. What is the function of xylem tissue?

To transport water and dissolved minerals from the roots to the stem and the leaves. This is called the transpiration stream.

Describe how a root hair cell is adapted for the efficient uptake of water and mineral ions.



They have a large surface area for the rapid absorption of water and mineral ions from the soil.

Where, in the plant, is meristem tissue located?

Growing tips of roots and shoots.

Transpiration is:
(Tick the correct box.)

The movement of water molecules from a high water concentration to a lower water concentration across a partially permeable membrane.

The evaporation and diffusion of water from the leaves of a plant.

The movement of glucose molecules around the plant.

Name three factors that affect the rate of transpiration.

Any three from the following:

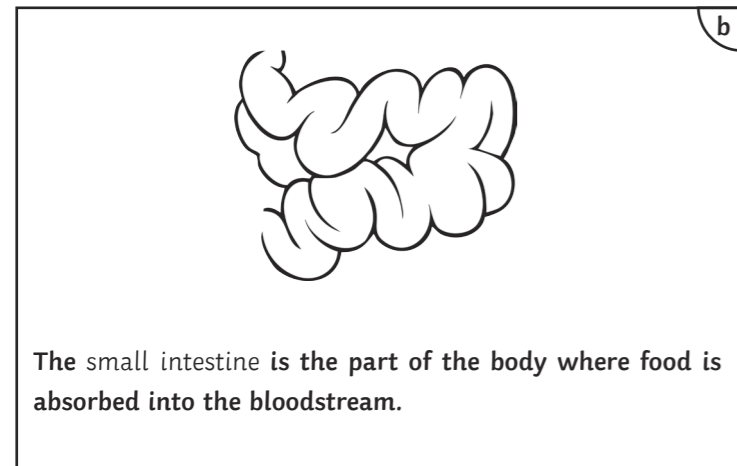
- temperature;
- light intensity;
- air flow;
- humidity.

Describe how to test for starch.

1. Place the test sample into a test tube.
2. Add a few drops of iodine solution and mix.
3. The colour will change from orange to blue/black if starch is present.

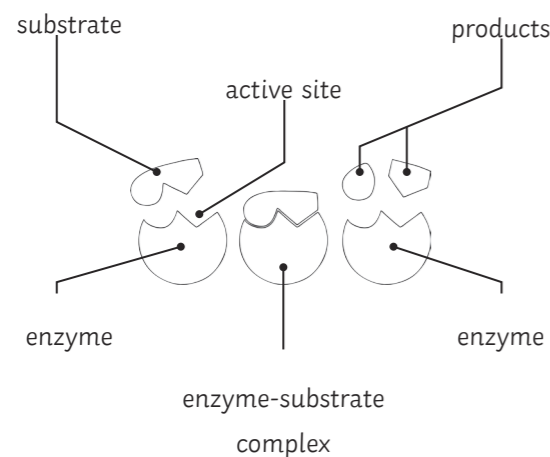
Describe how to test for protein.

1. Place the test sample into a test tube (about 2ml).
2. Add an equal amount of Biuret reagent and mix.
3. The colour will change from blue to purple if protein is present.

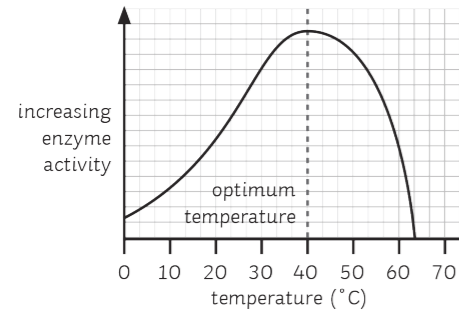


The diagram below shows the **lock and key** model of enzyme function. Label the diagram using the following words:

enzyme, active site, substrate, products, enzyme-substrate complex.



Use the graph below to describe how temperature affects enzyme function. Keywords: optimum, rate of activity, temperature, increase, decrease 50 °C



Initially, as temperature increases, the rate of enzyme activity also increases up to 40°C. This is the optimum temperature. After 40°C, as the temperature increases, the rate of enzyme activity decreases.

Why does the left ventricle have a thicker, more muscular wall than the right ventricle?

The left ventricle has to pump blood at high pressure so that it can reach all body cells. Whereas the right ventricle only has to pump blood to the lungs.

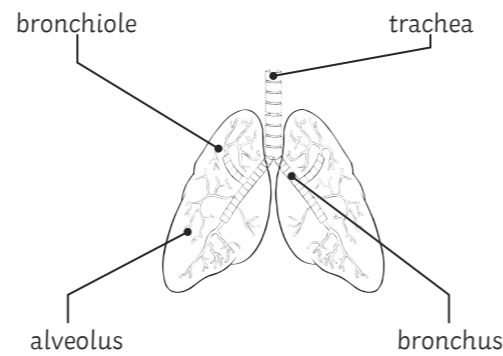
What are statins? Choose the correct answer.

- They reduce the amount of LDL.
- They reduce the amount of HDL.
- They increase the amount of LDL.

Describe two ways that the lungs are adapted for gaseous exchange.

- Any three from the following:
- large surface area;
 - moist lining;
 - thin walls;
 - good blood supply.

Label the following parts on the diagram below: trachea, bronchus, bronchiole, alveolus.

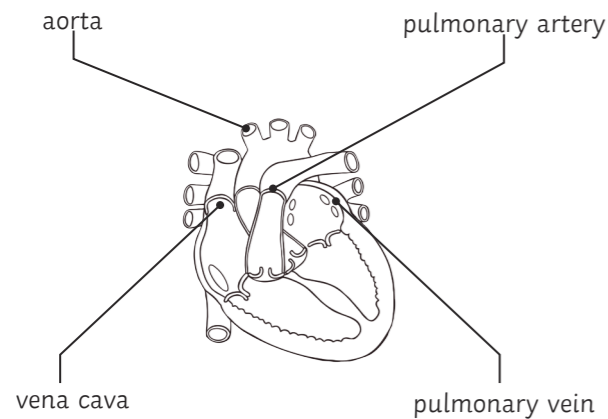


Stents can be used to treat coronary heart disease. Give one advantage and one disadvantage of using stents.

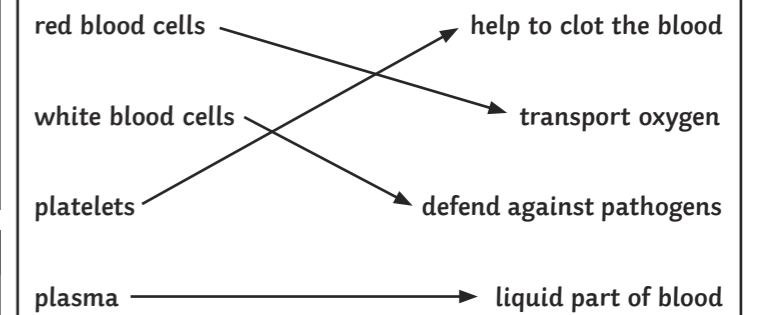
advantage: Patients recover quickly and they are effective for a long time.

disadvantage: There is a risk of the patient developing a blood clot near the stent, which can lead to a heart attack.

Label the following blood vessels on the diagram of the heart: aorta, vena cava, pulmonary artery, pulmonary vein.



Match up the four components of the blood and their functions



In coronary heart disease, layers of fatty material builds up inside the coronary arteries. Explain how this can lead to a heart attack. Keywords: fatty material, oxygen, heart attack, arteries.

The layers of fatty material block the coronary arteries and restrict blood flow to heart muscle cells. This results in a lack of oxygen and the heart muscle cells stop respiring. This can lead to a heart attack.

How can the valves in the heart become damaged?

Heart attack, infection, old age.

What happens when the valves become leaky?

Blood flows in two directions.

What can they be replaced by?

Biological or mechanical valves.

What could be the problems?

A blood clot.

Explain how an infection from a microorganism could lead to the development of other, non-communicable diseases.

Infection from some viruses can lead to the development of cancer (e.g. HPV infection and cervical cancer). Also, infection with pathogens can sometimes trigger allergic reactions and worsen asthma, for example.

The artery carries blood away from the heart. It has thick layers of muscle for strength and elastic fibres. The walls are thick with a small lumen.

What is the difference between a benign and a malignant tumour?

A benign tumour remains in one place and doesn't invade other tissues in the body – not usually dangerous.

A malignant tumour spreads to other parts of the body when cells break off and travel in the bloodstream to form secondary tumours.

A problem with heart transplants is rejection of the donor heart. What is meant by rejection in terms of a heart transplant?

When the body's immune system (white blood cells) attacks and destroys the donor heart muscle cells.