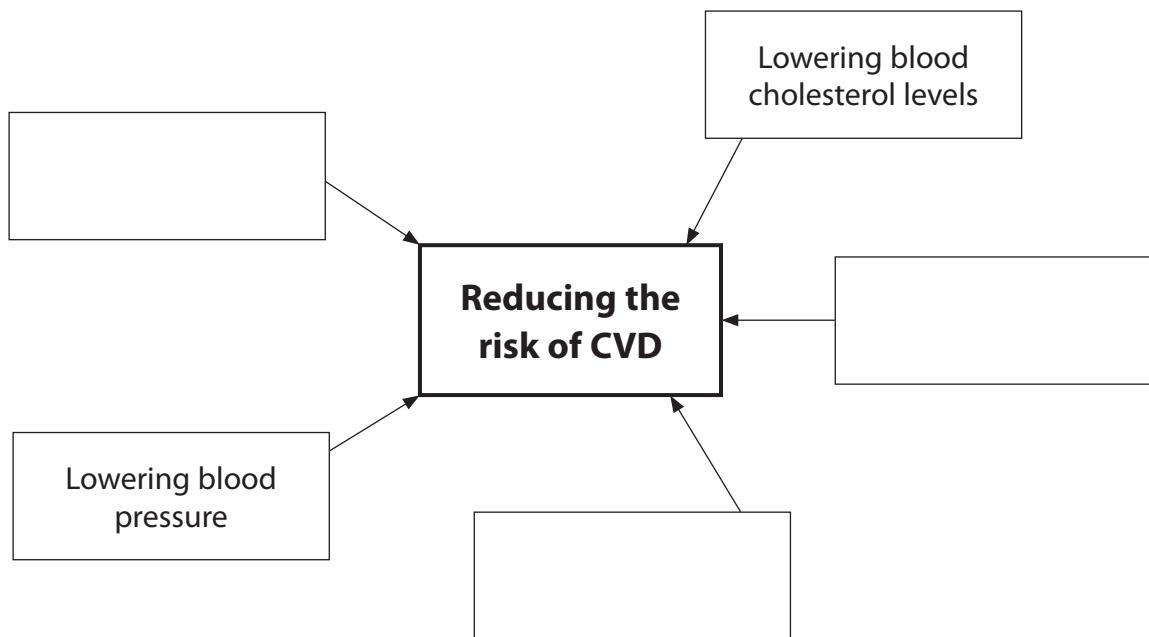


1 The risk of developing cardiovascular disease (CVD) can be reduced in several ways. Lowering blood cholesterol levels and lowering blood pressure are two ways of reducing CVD.

(a) (i) Complete the diagram below by giving three other ways in which the risk of CVD may be reduced. Write your answers in the empty boxes.

(3)



(ii) Explain how lowering blood cholesterol levels can reduce the risk of CVD.

(2)

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(b) Risk calculators can be used to estimate the probability that a person will develop CVD. Many of these calculators start by asking for the age and gender of the person using them. Explain why information about age and gender is important in estimating the risk of developing CVD.

(2)

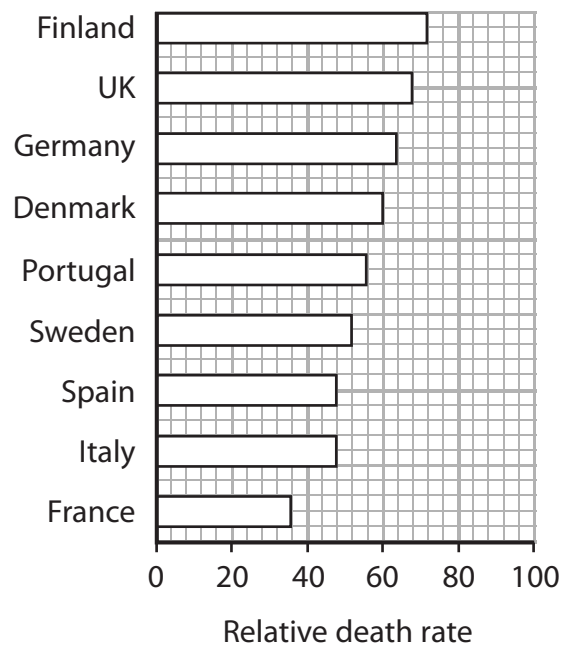
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(c) The graph below shows the relative death rate from CVD in some countries in Western Europe.



(i) Compare the relative death rates from CVD in Finland, Denmark and Sweden.

(3)

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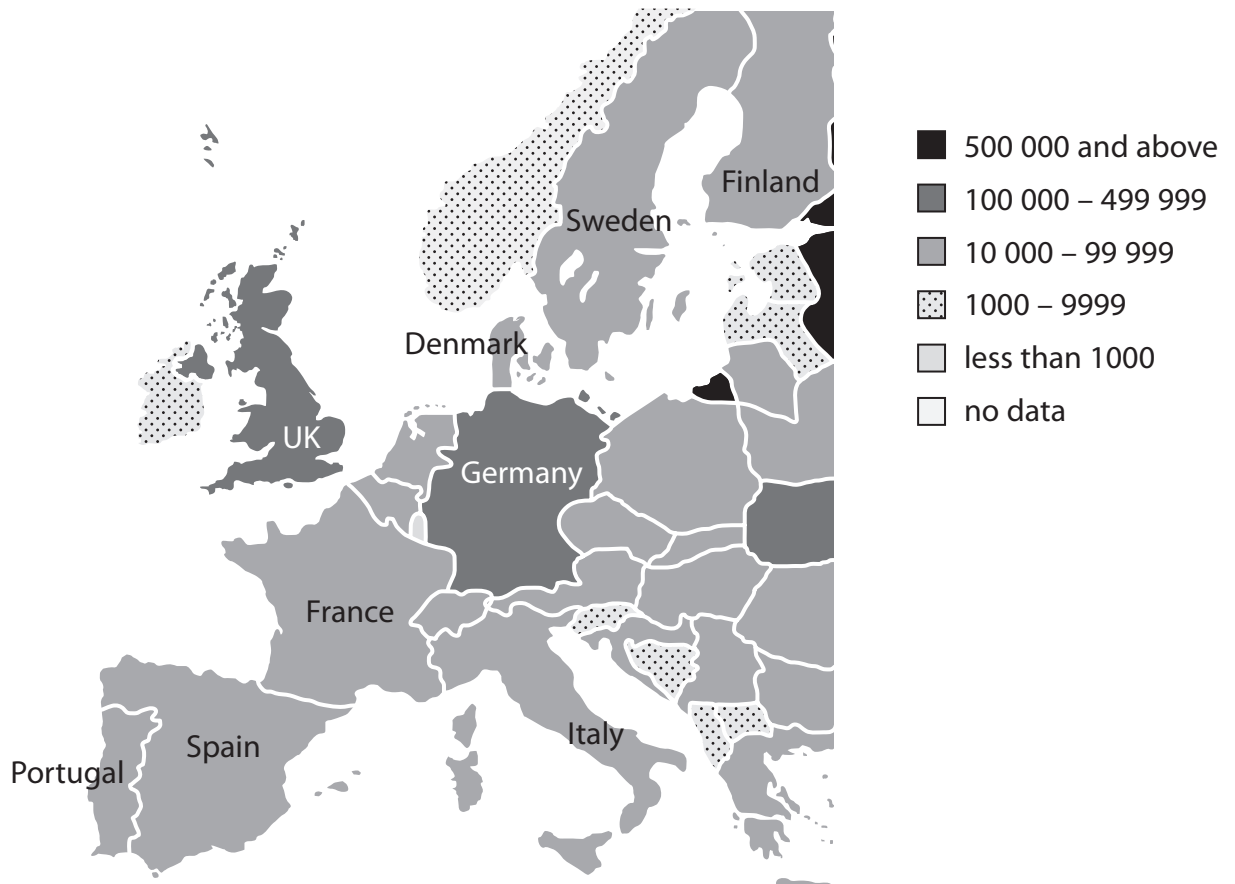
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(ii) The map below shows the number of deaths from CVD in one year in Western Europe.



Describe **two** differences between the data presented in the map and the data shown in the graph.

(2)

1

2

(iii) Suggest **one** reason for the differences between the data presented in the map and the data shown in the graph.

(1)

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(Total for Question 1 = 13 marks)

2 Cardiovascular diseases are very common in the Western World.

(a) Many cardiovascular diseases result from atherosclerosis.

Place a cross ☒ in the box next to the correct word or words to complete each of the following statements.

(i) Atherosclerosis usually results from the formation of plaques inside (1)

- A** arteries
- B** capillaries
- C** veins
- D** ventricles

(ii) The plaques begin to form after damage to (1)

- A** endothelial cells
- B** epidermal cells
- C** red blood cells
- D** white blood cells

(iii) These cells may be damaged due to (1)

- A** blood flowing slowly under low pressure
- B** blood flowing quickly under low pressure
- C** blood flowing slowly under high pressure
- D** blood flowing quickly under high pressure

(iv) The plaque consists of (1)

- A** carbohydrate deposits
- B** fatty deposits
- C** plasma deposits
- D** protein deposits

(v) The presence of a plaque in the vessels supplying blood to the brain could result in

(1)

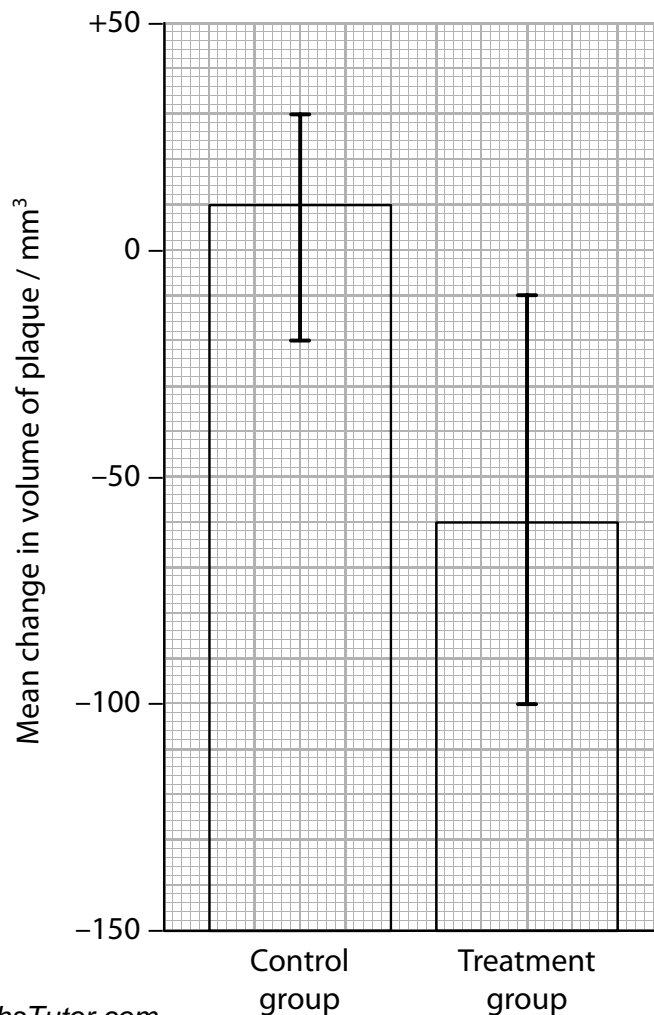
- A** cancer
- B** a heart attack
- C** kidney damage
- D** a stroke

(b) A clinical trial was carried out to investigate the effect of a drug on the volume of plaques in patients with atherosclerosis.

Forty patients with atherosclerosis were divided into two groups of twenty. Each patient had the volume of their plaque determined. One group was the control group and the treatment group took the drug daily for two months.

At the end of the two months, the volume of the plaque in each patient was determined again. The mean change in volume of the plaque was calculated.

The results of the clinical trial are shown in the graph below.



(i) Using the information in the graph, describe what the results of this trial show.

(2)

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(ii) Suggest **two** reasons why the results of this trial do **not** indicate that this drug could be useful in treating patients with atherosclerosis.

(2)

1

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2

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(Total for Question 2 = 9 marks)

3 Blood is carried around the body of many animals in different types of blood vessels. The structures of these blood vessels relate to their function.

(a) The table below refers to the structure of capillaries and veins. If the statement is correct, place a tick (✓) in the appropriate box and if the statement is incorrect, place a cross (✗) in the appropriate box.

(3)

Type of blood vessel	Valves present along the length of the vessel	Wall consists of a single layer of cells	Endothelial cells present
Capillary			
Vein			

(b) Semilunar valves and elastic fibres are found in the aorta. For each of these structures, describe its location in the aorta and explain its function.

Semilunar valves

(3)

Location

Function

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Elastic fibres

(3)

Location

Function

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4 Many animals have a heart and circulatory system.

(a) Give **one** reason why many animals have a circulatory system.

(1)

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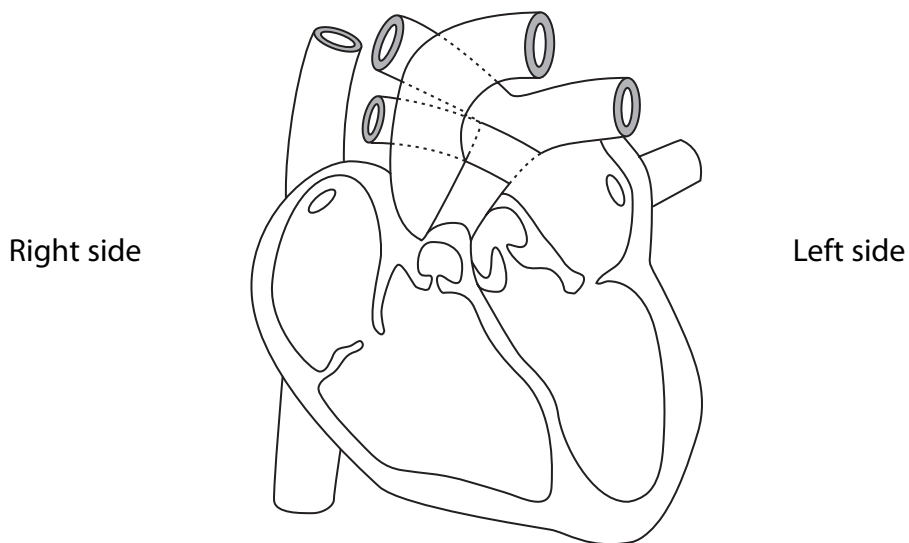
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(b) The diagram below shows a section through a mammalian heart.

On the diagram, draw arrows to show the flow of blood into and through the right side of the heart during one beat of the heart.



(3)

(c) Explain why a mammalian heart is divided into a right side and a left side.

(2)

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