

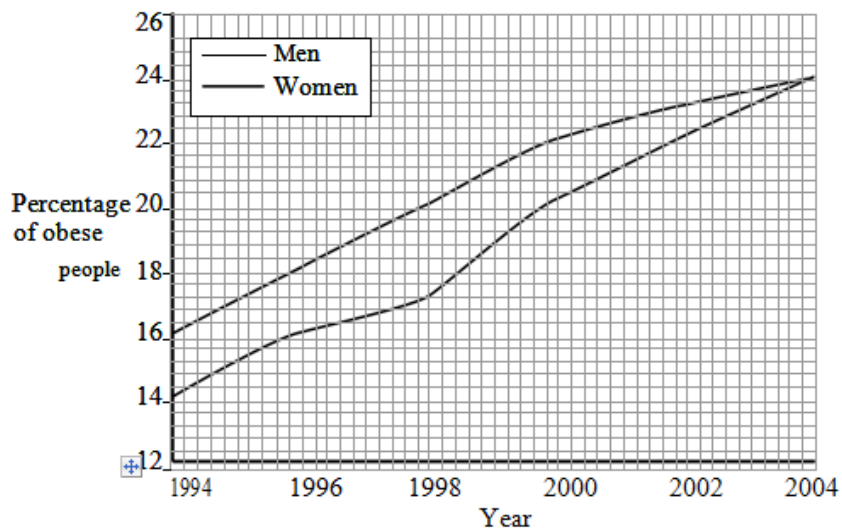
Circulatory System 3

Q:1 Obesity is a factor that affects Coronary Heart Disease (CHD).

(a) What is meant by obesity?

(1 mark)

(b) The graph shows how the percentages of obese men and women in the UK changed between 1994 and 2004.



(i) Describe how the percentage of obese women changed between 1994 and 2004.

(2 marks)

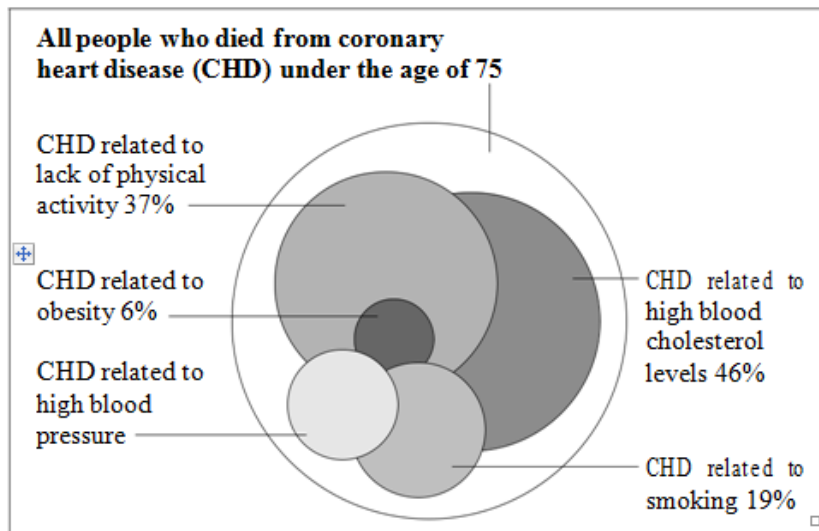
(ii) The percentage of obese men changed between 1994 and 2004. Suggest two reasons for this change.

1 _____

2 _____

(2 marks)

(c) The chart below is published by the British Heart Foundation. It shows how death from CHD is related to a number of different factors.



The bigger the circle, the more people are affected by the factor.

(i) What is the main factor causing death from CHD?

(1 mark)

(ii) Estimate the percentage of deaths from CHD related to high blood pressure.

_____ %

(1 mark)

(iii) The data are shown as overlapping circles instead of a bar chart. The percentages of deaths related to the different factors add up to more than 100%.

What does this tell you about some of the people who died from CHD?

(1 mark)

Q:2 Cholesterol is a substance which affects our health.

(a)(i) Which organ in the body produces cholesterol?

(1 mark)

(ii) Which organ in the body may be damaged by high levels of cholesterol in the blood?

(1 mark)

(iii) Name one factor, other than diet, which affects the level of cholesterol in the blood.

(1 mark)

(b) Other than increasing fitness, give two reasons why regular exercise is important in maintaining a healthy body.

1. _____

2. _____

(2 marks)

Q:3 Many substances affect our bodies.

List **A** gives the names of four substances which affect the body. List **B** gives information about these substances.

Draw a line from each substance in List **A** to the correct information about it in List

List A – Substance

Salt

Carbon monoxide

HDL
(High density lipoprotein)

Saturated fat

List B – Information

'Good' cholesterol

Increases blood cholesterol levels

Causes irregular periods in women

Reduces the amount of oxygen carried by the blood

Leads to high blood pressure in 30% of the population

(4 marks)

Q:4 A European Union report estimates that by 2011, one million children in the Union will be obese and have raised blood cholesterol levels.

(a) Body mass is dependent on the metabolic rate of the body. What is meant by metabolic rate?

(2 marks)

(b) Cholesterol is carried around the body by the two types of lipoprotein: low-density lipoproteins (LDLs) and high-density lipoproteins (HDLs).

Describe the relationship between the two types of lipoproteins and heart health.

(3 marks)

Q:5 The concentration of cholesterol in the blood affects people's health.

(a) Give two factors that affect the concentration of cholesterol in the blood.

1. _____

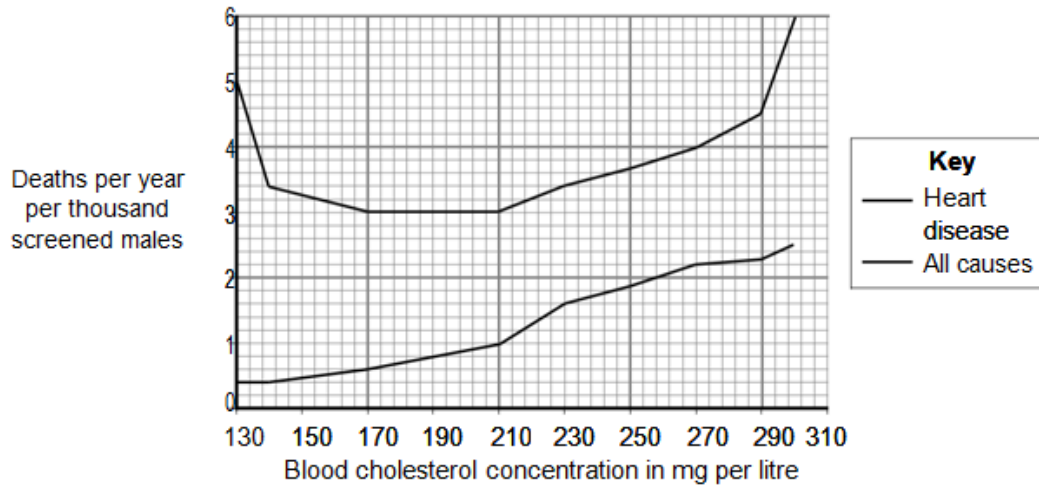
2. _____

(2 marks)

(b) Doctors screened men for blood cholesterol concentration.

The doctors then compared death rates from heart disease with deaths from all causes in this screened group.

The graph shows the results.



(b) (i) Which is the best conclusion that can be drawn from the data?

Tick (☑) one box.

There is a positive correlation between blood cholesterol concentration and deaths from all causes.

There is a negative correlation between blood cholesterol concentration and deaths from all causes.

Blood cholesterol concentration is only one of several factors affecting death from all causes.

(1 mark)

(b) (ii) Based on the data in the graph only, which is the ideal range for blood cholesterol concentration?

Range _____ to _____ mg cholesterol per litre.

(1 mark)

Q:6 Read the information about cholesterol and ways of treating high cholesterol levels.

Diet and inherited factors affect the level of cholesterol in a person’s blood.

Too much cholesterol may cause deposits of fat to build up in blood vessels and reduce the flow of blood. This may cause the person to have a heart attack. Some drugs can lower the amount of cholesterol in the blood.

The body needs cholesterol. Cells use cholesterol to make new cell membranes and some hormones. The liver makes cholesterol for the body.

Some drugs can help people with high cholesterol levels.

Statins block the enzyme in the liver that is used to produce cholesterol.

People will normally have to take statins for the rest of their lives. Statins can lead to muscle damage and kidney problems. Using some statins for a long time has caused high numbers of deaths.

Cholesterol blockers reduce the absorption of cholesterol from the intestine into the blood.

Cholesterol blockers can sometimes cause problems if the person is using other drugs.

Evaluate the use of the two types of drug for a person with high cholesterol levels.

(6 marks)

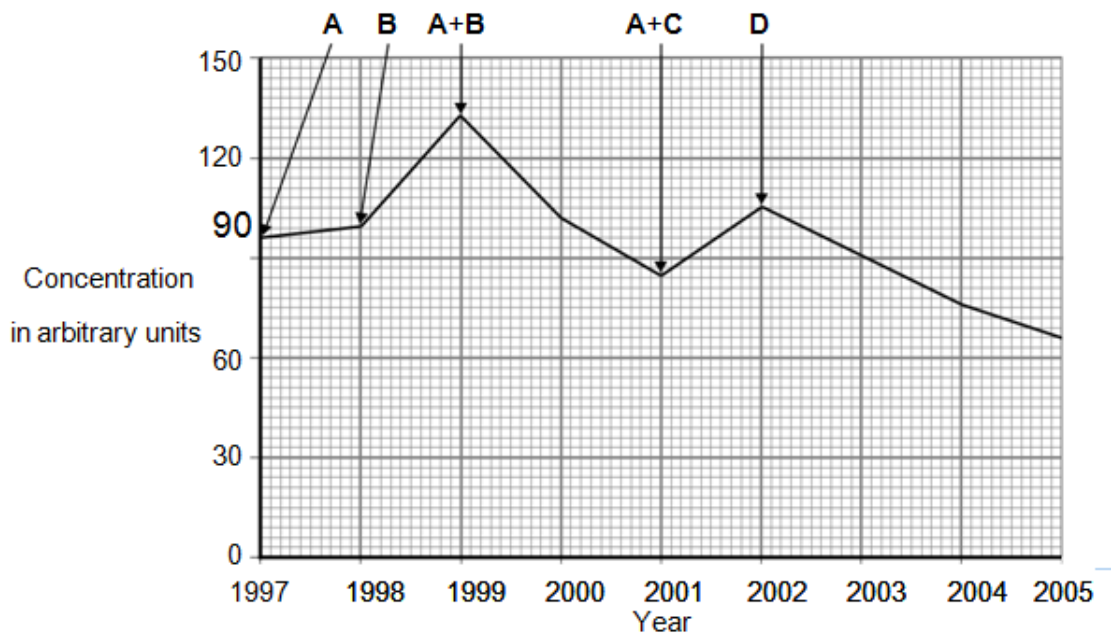
Q:7 LDL is one form of cholesterol found in the blood.

People with a high concentration of LDL in their blood may be treated with drugs called statins.

A high concentration of LDL cholesterol in the blood may result in an increased risk of heart and circulatory diseases.

The graph shows the effects of the treatment of one person with four different statins, A, B, C and D, over a period of 8 years. The arrows show when each new treatment was started.

Each treatment was continued until the next treatment was started.



Compare the effectiveness of the five treatments in reducing the risk of heart and circulatory diseases for this person.

(4 marks)

Q:8 Many people are obese (very overweight).

Obesity can lead to heart disease.

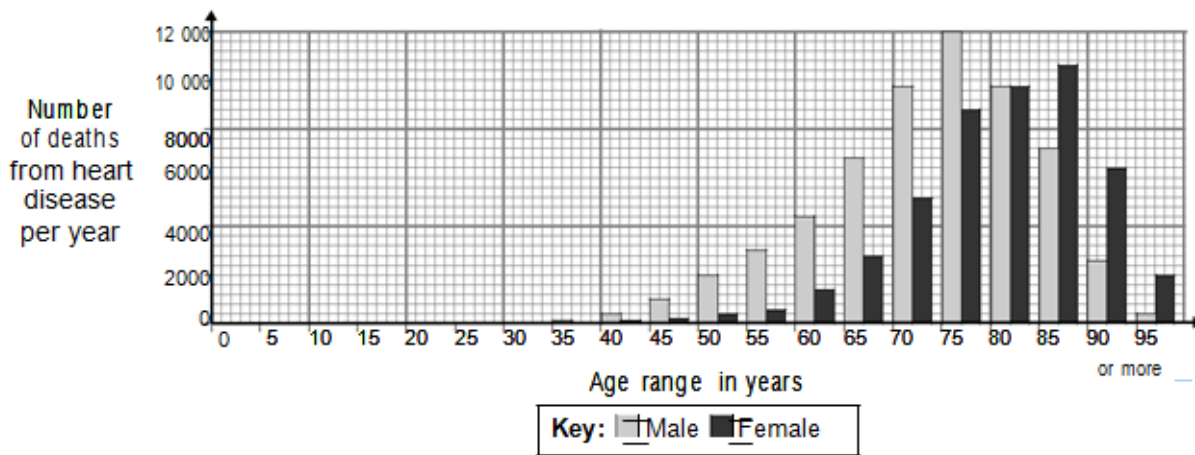
Other than heart disease, name two conditions which are linked to obesity.

1. _____

2. _____

(2 marks)

(b) The graph shows the number of deaths from heart disease each year in the UK.



The pattern for deaths from heart disease in men is different from the pattern in women.

(b) (i) Give two differences between the patterns for men and women.

1 _____

2 _____

(2 marks)

(b) (ii) Suggest two reasons for the difference in the number of deaths from heart disease in men and women between the ages of 40 and 60.

1 _____

2 _____

(2 marks)

(c) Scientists have developed drugs to reduce the concentration of cholesterol in the blood.

Give the three main stages in testing a new drug before it is sold to the public.

1 _____

2 _____

3 _____

(3 marks)

TOTAL MARKS=41