

GCSE Combined Science: Trilogy

Worksheet: The effect of lifestyle on some non-communicable diseases

TIME 35 min	TOTAL 32 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: The effect of lifestyle on some non-communicable diseases

NAME _____ **CLASS** _____ **DATE** _____

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

Body mass index (BMI) can be used to judge whether a person has a healthy body mass.

$$\text{BMI} = \frac{\text{mass in kg}}{(\text{height in m})^2}$$

Femi has a mass of 79 kg and a height of 1.60 m.

0 1 . 1

Calculate Femi's BMI.

Give your answer to 1 decimal place.

.....

.....

.....

.....

BMI =

[2 marks]

0 1 . 2

Name **one** non-communicable disease for which obesity is a risk factor.

.....

.....

[1 mark]

0 2

Lifestyle factors can affect the risk of developing some non-communicable diseases.

0 2 . 1

What is meant by a **risk factor** for a disease?

[1 mark]

0 2 . 2

Obesity is a risk factor for which disease?

Tick (✓) **one** box.

Malaria

☐

Measles

☐

Tuberculosis

☐

Type 2 diabetes

☐

[1 mark]

0 2 . 3

Name **one** organ that can be damaged by drinking too much alcohol.

[1 mark]

0 2 . 4

Give **one** disease for which smoking is a risk factor.

[1 mark]

0 3

Body mass index (BMI) can be used to judge whether a person has a healthy body mass.

$$\text{BMI} = \frac{\text{mass in kg}}{(\text{height in m})^2}$$

Priya has a mass of 72 kg and a height of 1.60 m.

0 3 . 1

Calculate Priya's BMI.

Give your answer to 1 decimal place.

.....

.....

.....

.....

BMI =

[2 marks]

0 3 . 2

Name **one** non-communicable disease for which obesity is a risk factor.

.....

.....

[1 mark]

0 4

Body mass index (BMI) can be used to judge whether a person has a healthy body mass.

$$\text{BMI} = \frac{\text{mass in kg}}{(\text{height in m})^2}$$

Maya has a mass of 106 kg and a height of 1.85 m.

0 4 . 1

Calculate Maya's BMI.

Give your answer to 1 decimal place.

.....

.....

.....

.....

BMI =

[2 marks]

0 4 . 2

Name **one** non-communicable disease for which obesity is a risk factor.

.....

.....

[1 mark]

0 5

Lifestyle factors affect the risk of developing many non-communicable diseases.

0 5 . 1

Which **two** diseases have a poor diet as a risk factor?

Tick (✓) **two** boxes.

Cardiovascular disease

☐

Malaria

☐

Measles

☐

Tuberculosis

☐

Type 2 diabetes

☐

[2 marks]

0 5 . 2

Tobacco smoke contains carbon monoxide. Carbon monoxide combines with haemoglobin in red blood cells.

Suggest why this reduces the amount of oxygen the blood can carry.

.....

.....

[1 mark]

0 5 . 3

Scientists have shown a causal mechanism for smoking and lung cancer.

What is meant by a **causal mechanism**?

.....

.....

[1 mark]

0 5 . 4

Which of these is a carcinogen?

Tick (✓) **one** box.

Insulin

☐

Ionising radiation

☐

Plasma

☐

Starch

☐

[1 mark]

0 6

Body mass index (BMI) is used to judge whether a person has a healthy body mass.

$$\text{BMI} = \frac{\text{mass in kg}}{(\text{height in m})^2}$$

Table 1 shows the percentage of adults with Type 2 diabetes in four BMI groups.

Table 1

BMI	Adults with Type 2 diabetes in %
below 18.5	1.2
18.5 to 24.9	2.5
25.0 to 29.9	6.8
30.0 and above	15.4

0 6 . 1

A person has a mass of 94 kg and a height of 1.75 m.

Calculate the person's BMI.

Give your answer to 1 decimal place.

.....

.....

.....

.....

BMI =

[2 marks]

0 6 . 2

Describe the relationship between BMI and the percentage of adults with Type 2 diabetes.

[1 mark]

0 6 . 3

Calculate how many times greater the percentage of adults with Type 2 diabetes is in the group with a BMI of 30.0 and above than in the group with a BMI of 18.5 to 24.9.

[1 mark]

0 6 . 4

Obesity is a risk factor for Type 2 diabetes.

Explain why a person with a high BMI may never develop Type 2 diabetes.

[1 mark]

0 7

Smoking and drinking alcohol can harm unborn babies.

0 7 . 1

Explain why pregnant women are advised not to smoke.

[2 marks]

0 7 . 2

Give **one** effect that drinking alcohol during pregnancy can have on the baby.

.....

.....

[1 mark]

0 7 . 3

Tobacco smoke contains carcinogens.

What is a **carcinogen**?

Give **one** other example of a carcinogen.

.....

.....

.....

.....

[2 marks]

0 8

Body mass index (BMI) can be used to judge whether a person has a healthy body mass.

$$\text{BMI} = \frac{\text{mass in kg}}{(\text{height in m})^2}$$

Table 2 shows how BMI is used to put people into weight categories.

Yusuf has a mass of 106 kg and a height of 1.85 m.

Table 2

BMI	Weight category
below 18.5	underweight
18.5 to 24.9	healthy weight
25.0 to 29.9	overweight
30.0 and above	obese

0 8 . 1

Calculate Yusuf’s BMI.
Give your answer to 1 decimal place.

.....

.....

.....

.....

BMI =

[2 marks]

0 8 . 2

Use Table 2 to give Yusuf’s weight category.

.....

.....

[1 mark]

0 8 . 3

Give **one** reason why BMI may not give a true picture of a person’s health.

.....

.....

[1 mark]

.....

END OF QUESTIONS

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: The effect of lifestyle on some non-communicable diseases · 32 marks

Question 1 (3 marks)

01.1 [2 marks]

Answer: 30.9

- $79 \div 1.60^2$ (1)
 - 30.9 (1)
-

01.2 [1 mark]

- Type 2 diabetes / cardiovascular disease / coronary heart disease (1)

Notes: Allow (some types of) cancer, e.g. bowel cancer.

Question 2 (4 marks)

02.1 [1 mark]

- something that is linked to an increased rate / likelihood of the disease (1)
-

02.2 [1 mark]

Correct: Type 2 diabetes

02.3 [1 mark]

- liver / brain (1)
-

02.4 [1 mark]

- lung cancer / lung disease / cardiovascular disease / coronary heart disease (1)

Notes: Allow named lung diseases, e.g. bronchitis, emphysema, COPD.

Question 3 (3 marks)

03.1 [2 marks]

Answer: 28.1

- $72 \div 1.60^2$ (1)
- 28.1 (1)

03.2 [1 mark]

- Type 2 diabetes / cardiovascular disease / coronary heart disease (1)

Notes: Allow (some types of) cancer, e.g. bowel cancer.

Question 4 (3 marks)

04.1 [2 marks]

Answer: 31.0

- $106 \div 1.85^2$ (1)
- 31.0 (1)

04.2 [1 mark]

- Type 2 diabetes / cardiovascular disease / coronary heart disease (1)

Notes: Allow (some types of) cancer, e.g. bowel cancer.

Question 5 (5 marks)

05.1 [2 marks]

Correct: Cardiovascular disease; Type 2 diabetes

05.2 [1 mark]

- less haemoglobin is available to combine with / carry oxygen (1)

05.3 [1 mark]

- an explanation of how the risk factor causes the disease (not just a correlation between them) (1)

05.4 [1 mark]

Correct: Ionising radiation

Question 6 (5 marks)

06.1 [2 marks]

Answer: 30.7

- $94 \div 1.75^2$ (1)
- 30.7 (1)

06.2 [1 mark]

- as BMI increases, the percentage of adults with Type 2 diabetes increases (1)

06.3 [1 mark]

Answer: 6.2 times (6.16)

- $(15.4 \div 2.5 =) 6.2$ (1)

06.4 [1 mark]

- a risk factor only increases the likelihood / other factors (e.g. genes, exercise) are also involved (1)

Question 7 (5 marks)

07.1 [2 marks]

- harmful chemicals from the smoke, e.g. carbon monoxide, pass to the fetus / reduce the oxygen supply to the fetus (1)
- so the baby may be born with a low birth weight / be born prematurely / be stillborn (1)

07.2 [1 mark]

- damage to the development of the baby / its brain / low birth weight / miscarriage (1)

Notes: Allow fetal alcohol syndrome.

07.3 [2 marks]

- a substance / factor that increases the risk of cancer (1)
- ionising radiation (1)

Notes: For the second mark allow other correct examples, e.g. ultraviolet radiation, asbestos, X-rays.

Question 8 (4 marks)

08.1 [2 marks]

Answer: 31.0

- $106 \div 1.85^2$ (1)
- 31.0 (1)

08.2 [1 mark]

Answer: obese

- obese (1)

Notes: Allow ECF from their BMI.

08.3 [1 mark]

- it does not distinguish between muscle and fat, e.g. athletes with a lot of muscle can have a high BMI / it does not show where fat is stored / it ignores other factors such as exercise or diet (1)
-