

TWENTY FIRST CENTURY  
**science**

Module P2

RADIATION AND LIFE

Practice test

FOUNDATION

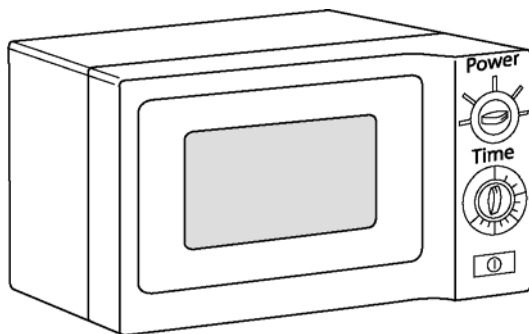
Name: .....

Form/teaching set: .....

**Answer all of the questions.**

**Write your answers in the spaces provided on this paper.**

1 This question is about how a microwave oven works.



(a) The oven uses microwaves to heat the food.

The diagram shows the electromagnetic spectrum.

Some regions of the spectrum are shown by the letters **A**, **B** and **C**.

radio waves	<b>A</b>	infrared	<b>B</b>	ultraviolet	<b>C</b>	gamma rays
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Which region is **microwaves**? ..... [1]

(b) The oven has several important features.

Draw a straight line between each **feature** and the **reason for the feature**.

One has been done for you.

**Feature**

**Reason for the feature**

door screen and metal case

controls the number of seconds for cooking the food

door safety switch

controls the radiation intensity

power setting

makes sure no-one cooks their hand

timer

reflects microwaves back into the oven

[2]

(i) The radiation delivers energy in packets.

Put a **ring** around the name of these energy packets.

**atoms    photons    spectrums    rainbows**

[1]

(ii) Complete the sentence to describe why food becomes hotter when the oven is switched on.

Choose a phrase from the list.

**get colder    move around more    vibrate less    vibrate more**

When the food absorbs the radiation energy, the particles

.....

[1]

[Total marks: 5]

2 This question is about some of the expected effects of climate change.

(a) In the next 100 years, sea levels are expected to rise.

(i) Complete the sentence to explain why sea levels are expected to rise.

Choose the best words from the list.

**boil    expand    freeze    melt**

Sea levels will rise because more ice will ..... and

because the water in the sea will ..... [2]

(ii) Describe one effect that rising sea levels will have on the environment.

.....

..... [1]

(b) Describe and explain another possible effect on people or the environment of climate change.

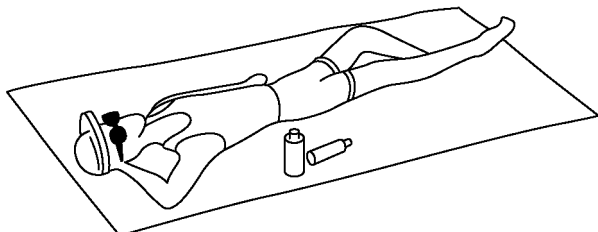
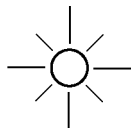
.....

.....

..... [2]

[Total marks: 5]

3 This question is about radiation from the Sun.



Complete the sentences.

Choose the best words from the list.

Each word may be used once, more than once, or not at all.

**absorbs    damages    emits    microwave    shines    ultraviolet**

Nicky is sunbathing. She can feel heat energy on her skin.

She knows infrared radiation is reaching her because her skin ..... it.

Nicky knows that being in the Sun increases her risk of skin cancer.

The radiation which causes skin cancer is .....

The radiation causes skin cancer because the energy ..... living cells.

Nicky uses a sun-screen to protect her skin. The sun-screen

..... the radiation.

[4]

[Total marks: 4]

4 This is part of a magazine article about carbon dioxide emissions from cars.

European car makers are unlikely to meet their target for reducing emissions of carbon dioxide. Cutting pollution from cars is part of the European Union's effort to reduce global warming.

The European car industry promised to cut emissions of carbon dioxide from 185 grams per car per kilometre driven in 1995 to 140 g/km by 2008. The European Union's goal is to reach 120 g/km by 2010.

A report by the European Commission said CO<sub>2</sub> emissions from cars had fallen to 163 g/km by 2003, which is not enough to meet the targets. European car makers' carbon dioxide emissions are predicted to be at least 145 g/km in 2008.

Car makers have made progress by introducing more fuel-efficient engines and by encouraging demand for diesel motors, which use less fuel than petrol engines. But progress has slowed as consumers are buying more powerful cars.

Although emissions from new models have decreased, carbon dioxide levels from road transport have risen because more people are driving more cars. The European Commission says 'We need to do more to meet the targets. Member countries must base car taxes on carbon dioxide emissions.'

(a) The article gives data about measured emissions and targets for the future.

(i) Use information in the article to complete the table.

	Emissions from cars in g/km
CO <sub>2</sub> emissions measured in 1995	185
CO <sub>2</sub> emissions measured in 2003	
CO <sub>2</sub> emissions predicted for 2008	
CO <sub>2</sub> emissions target for 2010	120

[2]

The graph shows how carbon dioxide emissions from cars need to be reduced.

The dotted line shows the values needed in order to reach the emissions goal for 2010.

(ii) Plot the data for 2003 and 2008 from your table.



[1]

(b) The last paragraph of the article describes a **correlation** between two factors.

Which two factors show a correlation?

1 .....

2 .....

[1]

(c) The passage tells us that some consumer choices are making it hard for the car manufacturers to meet the emission targets.

Put ticks (✓) in boxes next to the two factors that **increase** the risk of global warming.

More people are buying diesel cars rather than petrol cars.

More people are buying cars.

People are buying more powerful cars.

Newer engines are more fuel efficient.

[1]

(d) The graph shows that the 2010 emissions target is unlikely to be met.

What could governments do to ensure the target is met?

.....  
.....

[1]

[Total marks: 6]

[Total marks for test: 20]

TWENTY FIRST CENTURY  
**science**

Module P2

RADIATION AND LIFE

Practice test

HIGHER

Name:.....

Form/teaching set:.....

**Answer all of the questions.**

**Write your answers in the spaces provided on this paper.**

1 This question is about some of the expected effects of climate change.

(a) In the next 100 years, sea levels are expected to rise.

Explain why sea levels are expected to rise.

.....  
.....  
.....

[2]

(b) Describe and explain another possible effect on people or the environment of climate change.

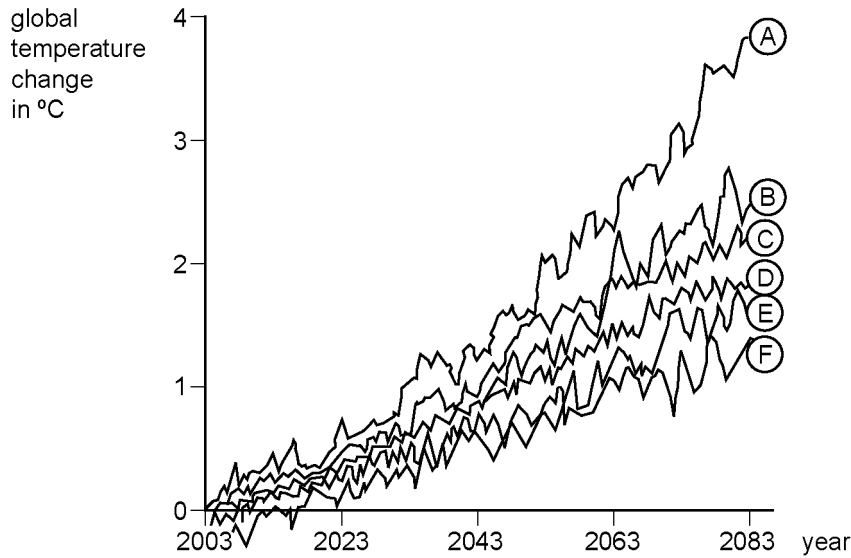
.....  
.....  
.....

[2]

(c) Scientists use computer simulations to predict future climate changes.

They use a simplified model of the real world.

They include factors which describe human activity.



The graph shows the predictions made by the different models.

Use information from the graph, together with what you have learnt in the course, to explain why these models increase confidence that human activity causes climate change, but do not prove that it is definitely true.

.....

.....

.....

.....

.....

.....

.....

[3]

[Total marks: 7]

2 This question is about the risks of sunbathing.

(a) Nicky is sunbathing. She is using suncream to avoid sunburn.

(i) Which word in the last sentence above describes an **outcome**?

..... [1]

(ii) Which phrase in the last sentence above describes a **factor** which affects the outcome?

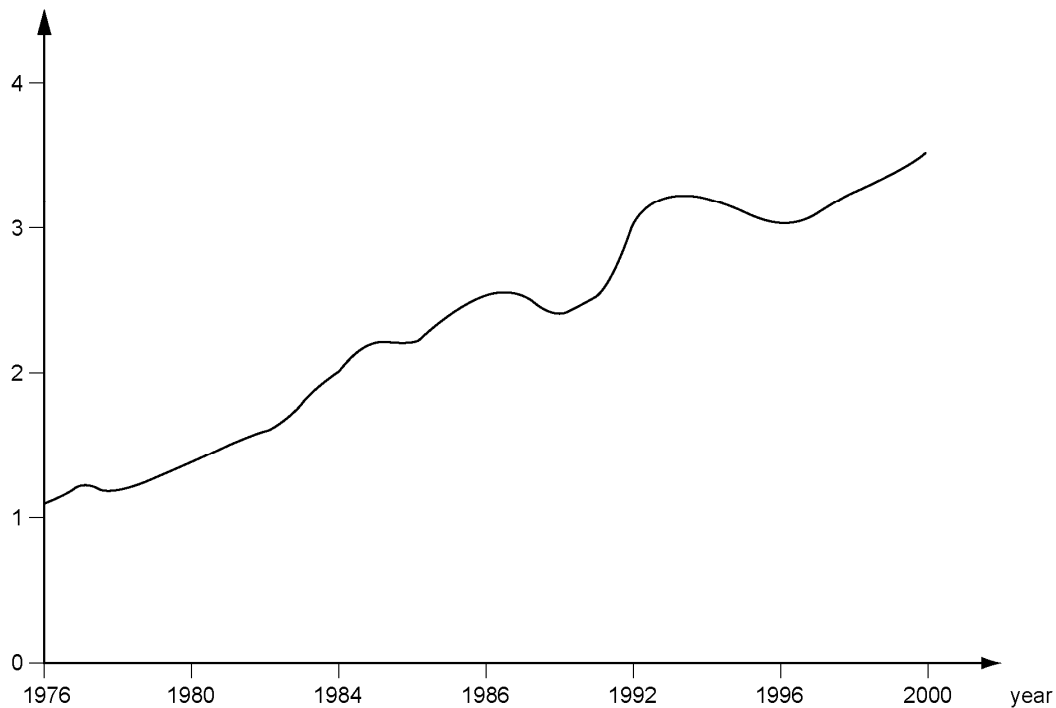
..... [1]

(iii) How does this factor affect the outcome?

..... [1]

(b) The graph shows how the number of cases of skin cancer has changed over 24 years.

cases of skin cancer each year per 100,000 people



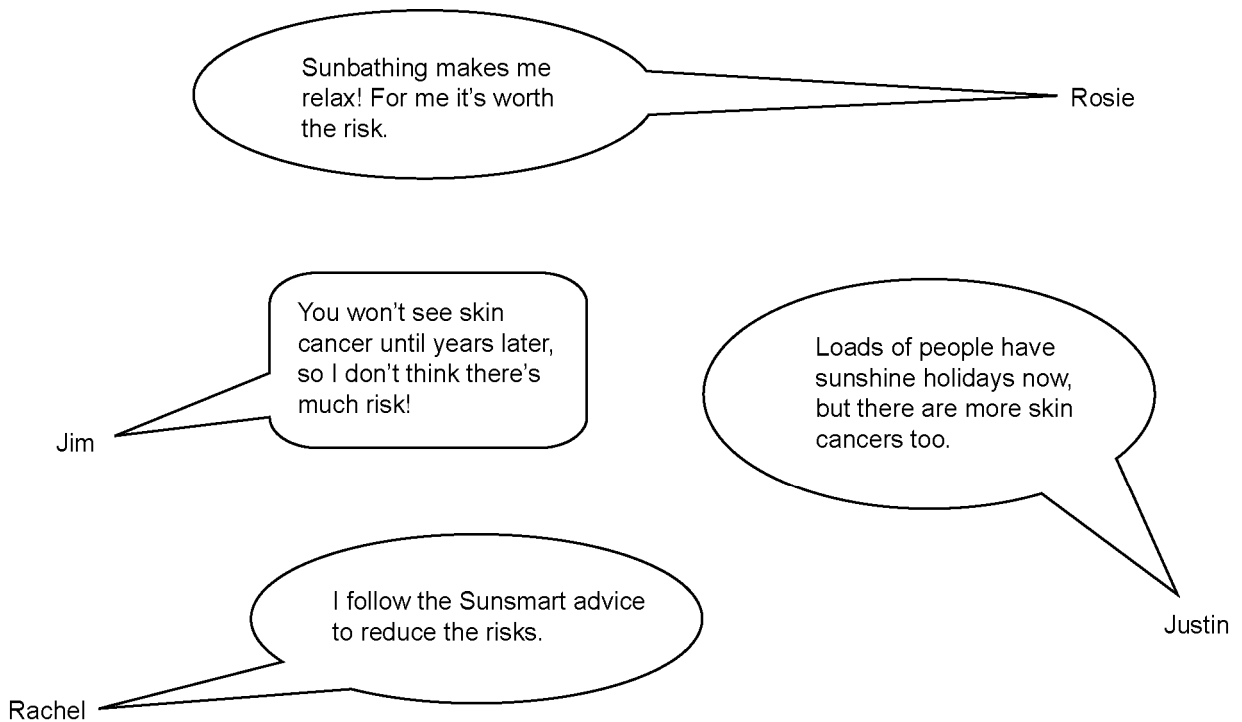
Describe the trend shown by the graph and suggest a reason for it.

.....

..... [2]

(c) Skin cancer is first noticed several years after sunbathing.

Some young people discuss this risk.



Write down the name of the person who is talking about

(i) the benefit of an activity that carries a risk .....

(ii) a perceived risk which is **less** than the actual risk .....

[2]

[Total marks: 7]

3 This is part of a magazine article about carbon dioxide emissions from cars.

European car makers are unlikely to meet their target for reducing emissions of carbon dioxide. Cutting pollution from cars is part of the EU's effort to reduce global warming.

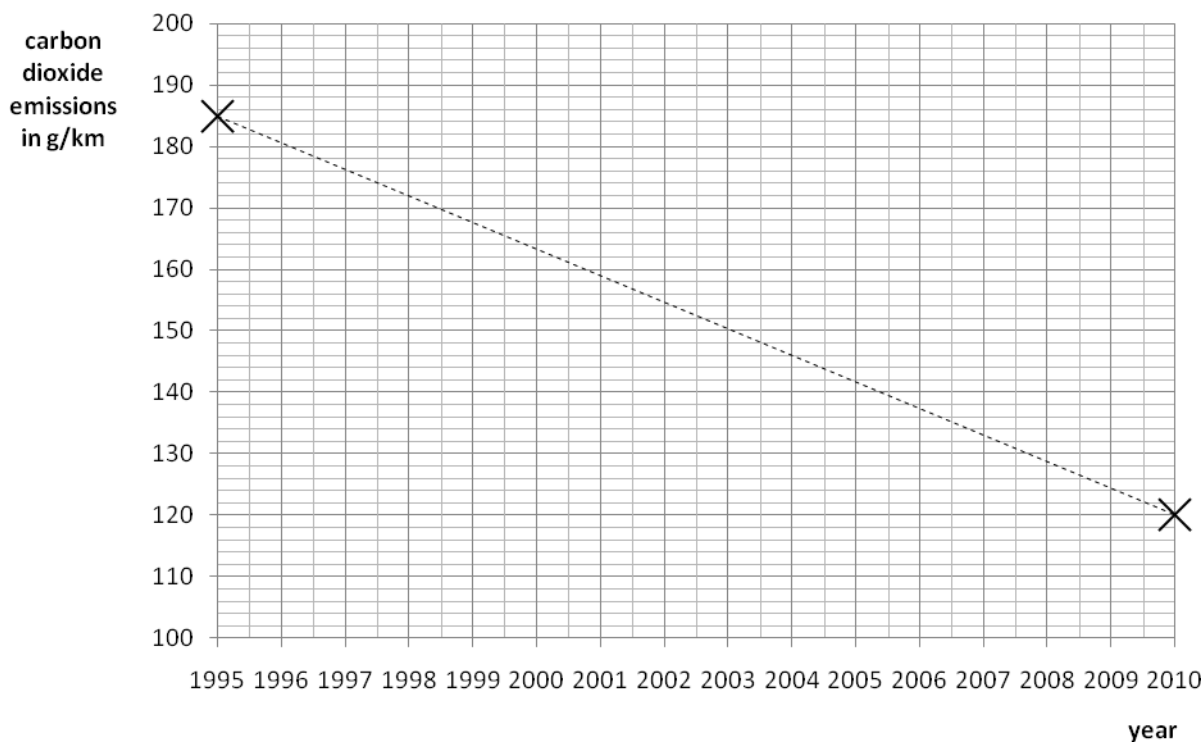
The European car industry promised to cut emissions of carbon dioxide from 185 grams per car per kilometre driven in 1995 to 140 g/km by 2008. The EU's goal is to reach 120 g/km by 2010.

A report by the European Commission said CO<sub>2</sub> emissions from cars had fallen to 163 g/km by 2003, which is not enough to meet the targets. European car makers' carbon dioxide emissions are predicted to be at least 145 g/km in 2008.

Car makers have made progress by introducing more fuel-efficient engines and by encouraging demand for diesel motors, which use less fuel than petrol engines. But progress has slowed as consumers are buying more powerful cars.

Although emissions from new models have decreased, carbon dioxide levels from road transport have risen because more people are driving more cars. The EC says 'We need to do more to meet the targets. Member countries must base car taxes on carbon dioxide emissions.'

- (a) The article gives data about measured emissions and targets for the future. The graph shows how carbon dioxide emissions from cars need to be reduced. The dotted line shows the values needed in order to reach the emissions goal for 2010. Use information in the article to complete the graph with the emissions **measured** in 2003 and the emissions **predicted** for 2008.



[2]

(b) The last paragraph of the article describes a **correlation** between two factors.

Which two factors show a correlation?

1 .....

2 ..... [1]

(c) The passage tells us that some consumer choices are making it hard for the car manufacturers to meet the emission targets.

Put ticks (✓) in boxes next to the two factors that **increase** the risk of global warming.

More people are buying diesel cars rather than petrol cars.

More people are buying cars.

People are buying more powerful cars.

Newer engines are more fuel efficient.  [1]

(d) Use the graph to explain why the article says that ‘car makers are unlikely to meet their target for reducing emissions of carbon dioxide’.

.....

..... [1]

(e) What could governments do to ensure the target is met?

.....

..... [1]

[Total marks: 6]

[Total marks for test: 20]