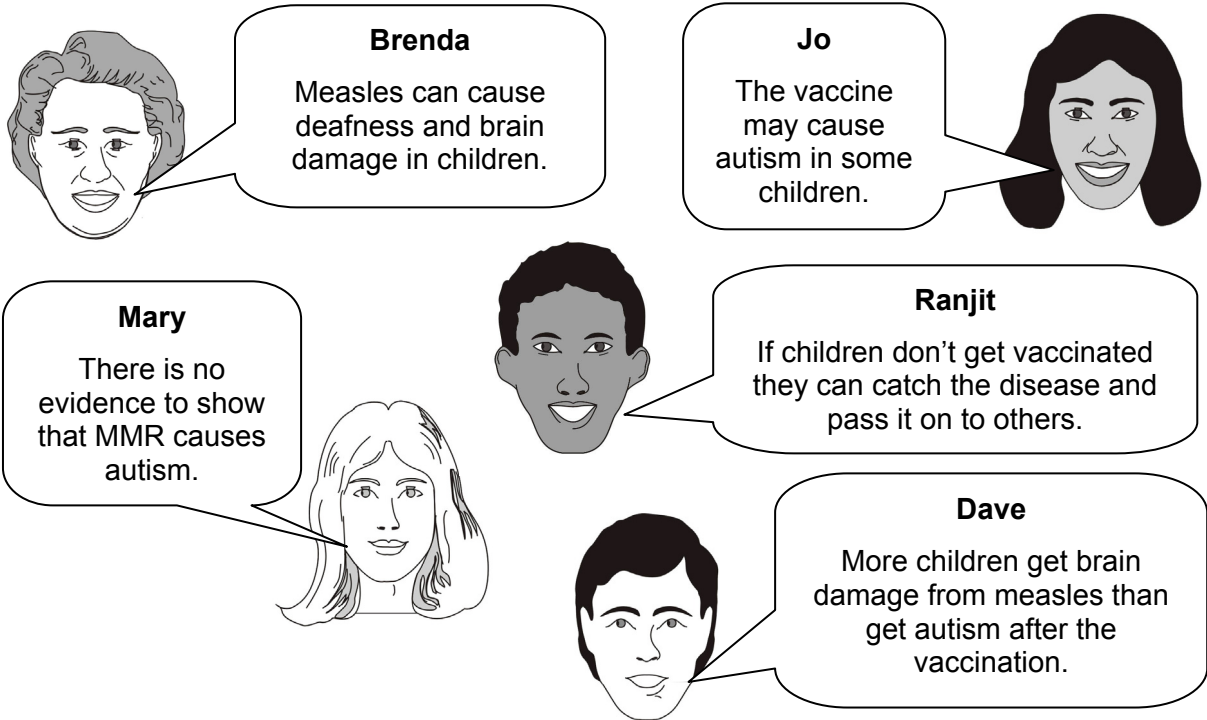


Answer **all** the questions.

- 1 (a) Vaccination can protect our bodies from diseases.
The measles, mumps and rubella vaccine is called MMR.
People have different opinions about using the MMR vaccine.



Brenda
Measles can cause deafness and brain damage in children.

Jo
The vaccine may cause autism in some children.

Mary
There is no evidence to show that MMR causes autism.

Ranjit
If children don't get vaccinated they can catch the disease and pass it on to others.

Dave
More children get brain damage from measles than get autism after the vaccination.

Some statements support the use of MMR vaccine. Others don't.

Complete the table by writing the names of the people in the correct columns.

people whose statements support the use of MMR vaccine	people whose statements do not support the use of MMR vaccine

[3]

- (b) Janet and John have a new baby.
They are thinking of having the baby vaccinated.
They find it hard to understand all of the information about vaccination.

Look at the following information about vaccination.

Draw a straight line to link each piece of **information** with its correct **effect**.
One has been done for you.

information	effect
some people think that vaccination may damage the baby	this prevents epidemics from starting
large numbers of the population need to be vaccinated against a disease	this is why antibiotics do not work against viruses
some viruses change very quickly	this makes the body more likely to catch other diseases
the HIV virus that causes AIDS damages the immune system	this is why people have to be injected with a new flu vaccine every year
	fewer parents are getting their children vaccinated with the MMR vaccine

[3]

[Total: 6]

2 This question is about resisting disease.

- (a) Finish the sentences about how we resist disease.
Choose the best words from the following list.

antibodies

antigens

blood

excretory

engulf

immune

mutate

protect

vaccines

Our bodies have an system that helps protect us from infection.

White blood cells produce chemicals called that kill invading microorganisms.

White blood cells can also microorganisms.

A safe form of the disease-causing organism is found in the [4]

- (b) Which **one** of the following is produced by microorganisms and causes the symptoms of disease?

Put a tick (✓) in the correct box.

antibodies

☐

antibiotics

☐

toxins

☐

[1]

[Total: 5]

3 (a) New antibiotics are tested using double blind trials.

The following statements describe how this test is carried out.
Some of the statements are **true**.
Some are **false**.

Put a tick (✓) in the box if the statement is **true**, and a cross (x) if it is **false**.

Patients are divided into two groups, those that will get the medicine and those that will get a placebo. ☐

Only the doctor knows which patient is in which group. ☐

The doctor does not know which tablets are the antibiotic and which tablets are the placebo. ☐

Only the patient knows if they are getting the antibiotic or the placebo. ☐

Double blind trials use twice as many patients as blind trials. ☐

[3]

(b) When new treatments are discovered they are checked by other people.
This is called **peer review**.

Which **one** of the following statements, **A**, **B**, **C** or **D**, best describes peer review?

- A** asking the scientist's brothers and sisters to examine the evidence
- B** asking members of the public to examine the evidence
- C** asking other scientists to examine the evidence
- D** asking members of parliament to examine the evidence

answer [1]

[Total: 4]

- 4 Plastics are used in cars.
When a car is scrapped, the plastic inside is thrown away.
New laws have been passed to stop the plastic being thrown away.



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Here is a list of waste disposal suggestions.

- A bury it as 'land fill'
- B pour acid on it
- C let it rot
- D burn it in incinerators for energy
- E recycle it

(a) Which of the methods, **A**, **B**, **C**, **D** or **E**, can be used to dispose of plastics?

answer [2]

(b) Which method, **A**, **B**, **C**, **D**, or **E**, is most environmentally friendly?

answer [1]

[Total: 3]

- 5 Chemists modify plastics to change their properties. Different modifications have different effects.

Draw lines to link each **modification** to its **effect**, and each **effect** to its **reason**.

modification	effect	reason
use plasticisers	more rigid	allows molecules to slide past each other
increase cross-linking	easier to bend	molecules fit together more closely
increase crystallinity	increased density	stops molecules sliding past each other

[4]

[Total: 4]

6 Here is some information about three plastics.

plastic	chain length	tensile strength of sample in MPa	melting point in °C
A	500	100	115
B	1000	100	120
C	1500	245	140

- (a) (i) Which of the plastics are solid at 130 °C?
Put a ring around the correct answer.

none of these A B C all of these [1]

- (ii) Which of the plastics are liquid at 105 °C?
Put a ring around the correct answer.

none of these A B C all of these [1]

- (b) Chemists look for patterns in the properties of compounds.

What pattern is shown by the table above?

Choose words from the list to complete the sentences.

decreases
increases
doesn't change
has no clear pattern

- (i) As the chain gets longer, the tensile strength [1]

- (ii) As the chain gets longer, the melting point [1]

(c) Melting points tell us about forces inside a molecule.

(i) Which statement, **A**, **B**, **C** or **D**, is correct?

Higher melting point

- A** means stronger forces inside each molecule
- B** means stronger forces between molecules
- C** means weaker forces inside each molecule
- D** means weaker forces between molecules.

answer [1]

(ii) Which statement, **A**, **B**, **C** or **D**, is correct?

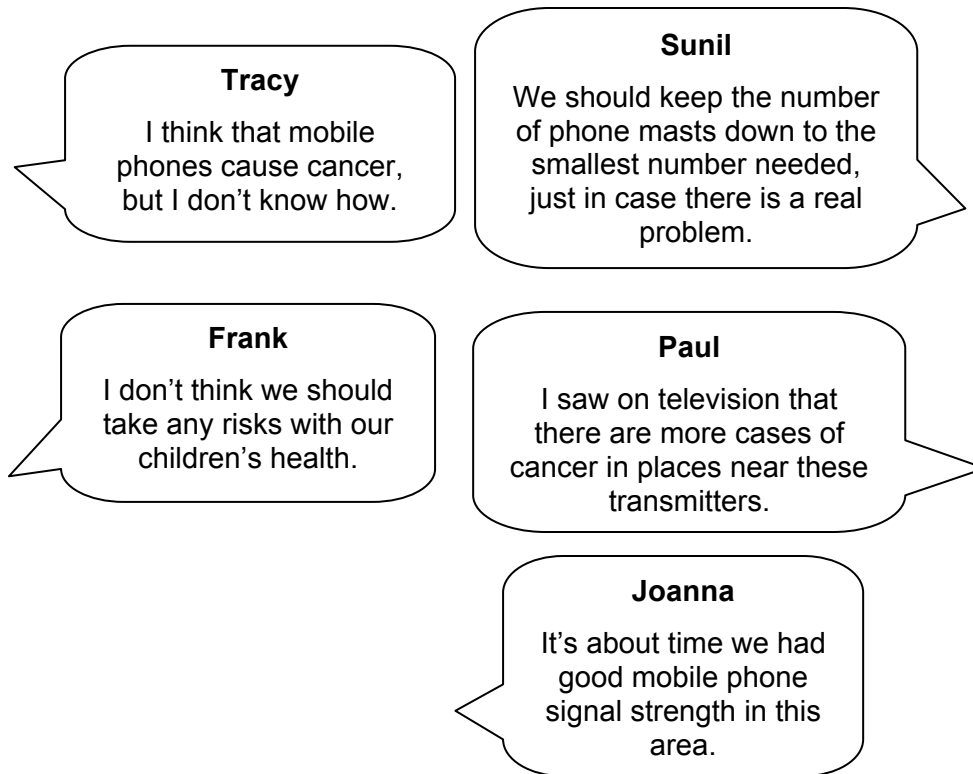
Higher melting point

- A** means more energy is needed to break the molecules apart from each other
- B** means less energy is needed to break the molecules apart from each other
- C** means the same energy is needed to break the molecules apart from each other
- D** is not related to energy because melting point is a temperature.

answer [1]

[Total: 6]

- 7 Local people find out that a new mobile phone transmitter is planned for their area. This is what some of them say:



- (a) Which **two** people have identified a possible risk from mobile phone transmitters?

..... and [2]

- (b) Which **one** person is referring to a **correlation** between a risk and an outcome?

answer [1]

- (c) Which **one** person is referring to a risk being the **cause** of an outcome?

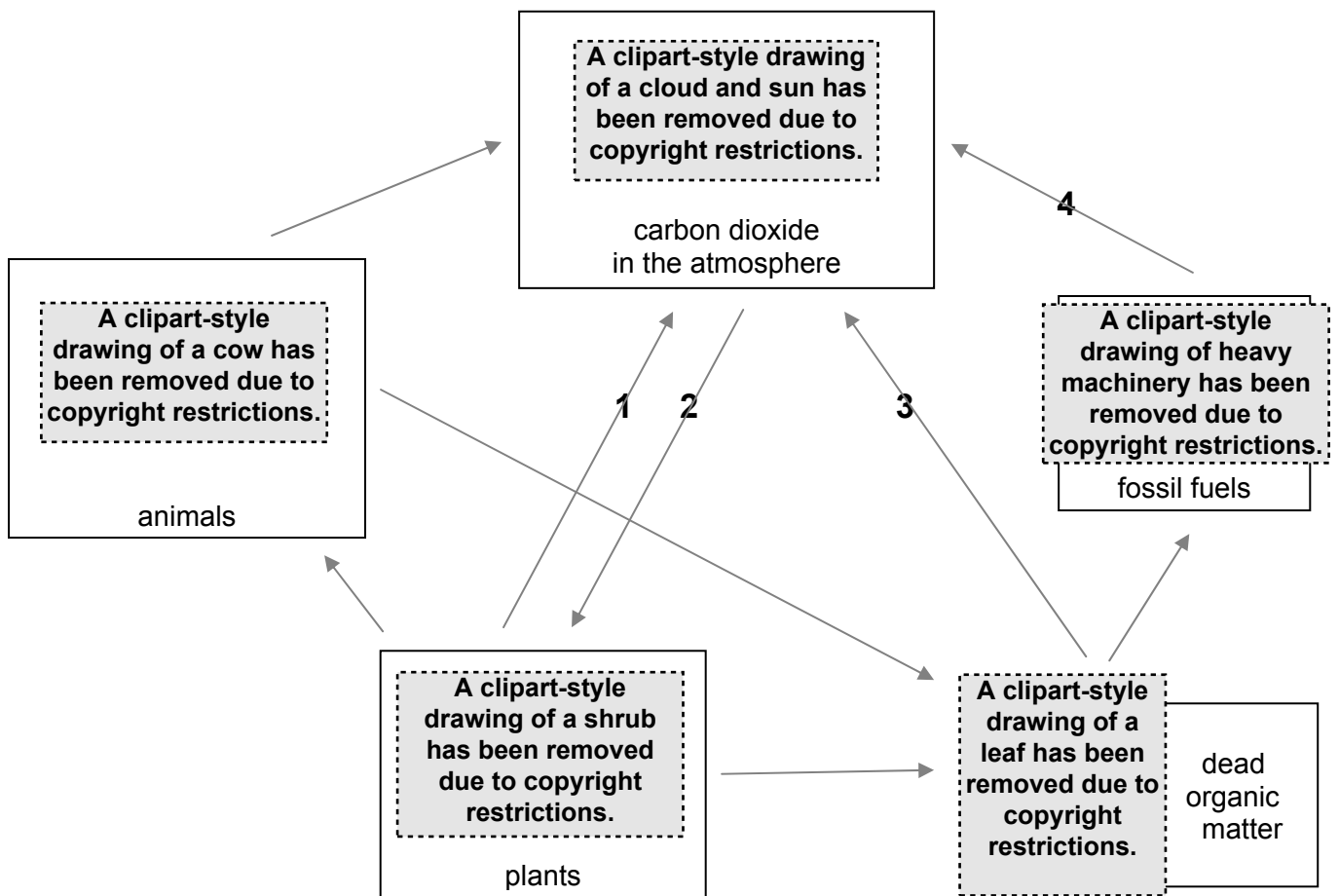
answer [1]

- (d) Which **one** person is using the ALARA (as low as reasonably possible) principle?

answer [1]

[Total: 5]

8 The diagram shows part of the carbon cycle.



Write down the name of the process shown by:

(a) arrow 1

process [1]

(b) arrow 2

process [1]

(c) arrow 3

process [1]

[Total: 3]

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- 9 This question is about the electromagnetic spectrum.

Look at the statements about the intensity of electromagnetic radiation reaching a surface.

Put a tick (✓) in the box next to every **correct** statement.

If the same number of X-ray photons and infrared photons arrive, the X-ray beam has a greater intensity.

☐

If the surface is further from the source, the intensity is greater.

☐

The amount of heating a surface receives from a beam of radiation depends on its intensity.

☐

The intensity depends on the number of photons arriving at the surface each second.

☐

The total energy reaching the surface depends only on intensity.

☐

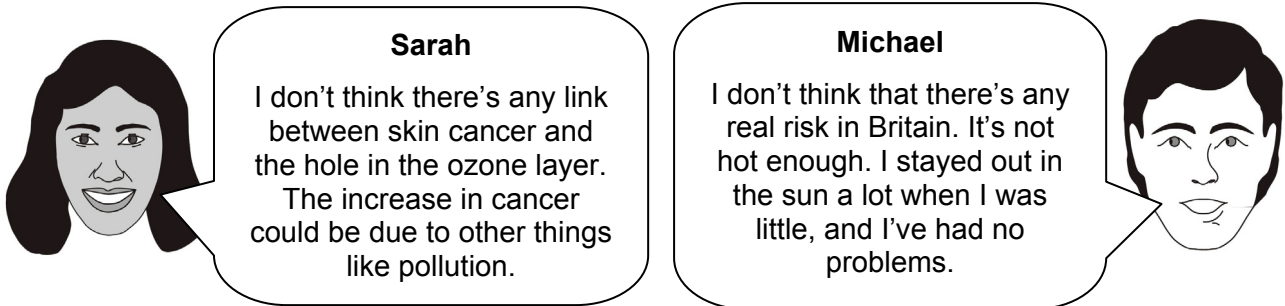
[2]

[Total: 2]

- 10 In recent years, the ozone layer has been getting thinner. This has allowed more ultraviolet radiation from the Sun to reach Britain.

There is concern about the increase in skin cancer in Britain.

Here are two people's comments about this cancer.



- (a) Put ticks (✓) in the boxes next to the **two** statements that you need to convince Sarah of a **causal** link between skin cancer and the hole in the ozone layer.

Pollution is not the only thing that causes cancer.

☐

Skin cancer can be caused by ionising radiation.

☐

Skin cancer has increased at the same time as the ozone layer has become thin.

☐

Ultraviolet radiation is absorbed by ozone.

☐

Some chemicals can damage the ozone layer.

☐

[2]

- (b) Put ticks (✓) in the boxes next to the **two** statements that you need to convince Michael of the real risk of skin cancer in Britain.

Feeling hot in the Sun doesn't tell you how much ultraviolet radiation there is.

☐

Global warming has increased the temperature in Britain.

☐

Carbon dioxide levels are causing global warming.

☐

More ultraviolet reaches the Earth than it used to.

☐

Ultraviolet radiation is part of the electromagnetic spectrum.

☐

[2]

[Total: 4]

END OF QUESTION PAPER

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