Keeping healthy – 2021/20 GCSE 21st Biology Combined Science B

1. Nov 2021/Paper_J260/01/No.11

(a) Diseases can be communicable or non-communicable.

Which statements describe **communicable** diseases and which statements describe **non-communicable** diseases?

Tick **one** box (✓) in each row.

Statement	Communicable diseases	Non-communicable diseases
They are caused by alleles.		
They are caused by lifestyle choices.		
They are caused by pathogens.		
They are caused by trauma.		

[2]

(b) Measles is caused by a virus. White blood cells help protect us against measles.

Complete each sentence about how white blood cells protect us against measles.

Use the words.

You can use each word once, more than once, or not at all.

abiotic **antibodies** **antigens** **digested** **disabled** **inflamed**

One type of white blood cell makes types of molecules called ..... .

These molecules bind to measles ..... .

Other white blood cells ingest the measles viruses and they are ..... .

[3]

(c) A vaccine can help prevent the spread of measles. Not all parents have their children vaccinated. Parents may have ethical reasons or may need more information before making a decision.

Which parents are talking about an ethical reason and which parents need more information before making a decision?

Tick **one** box (✓) in each row.

Parents	Ethical reason	More information
Mia "I'm worried about how safe the vaccine is."		
Sam "It is up to me to decide what is best for my child."		
Ali "My faith does not allow vaccination."		
Jamal "There is no risk. I don't know anyone who has had measles."		

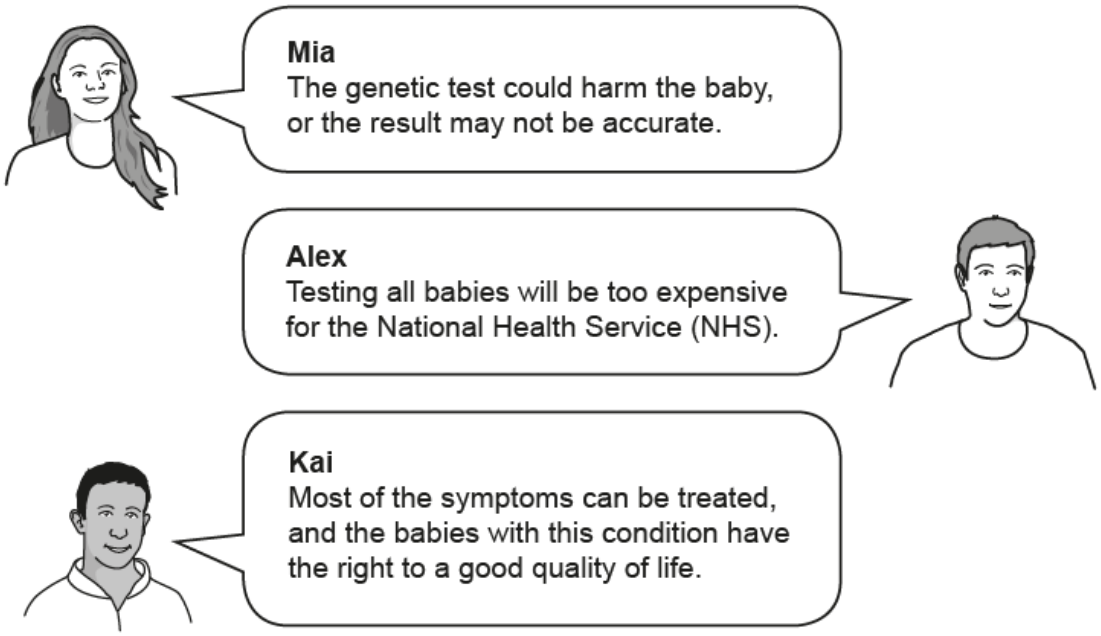
[3]

2. Nov 2021/Paper_J260/01/No.2

DiGeorge syndrome is a genetic disorder caused by the deletion of a small part of chromosome 22.

A genetic test can be used to show if babies have this disorder.

(a) Some friends are discussing if babies should be genetically tested for DiGeorge syndrome soon after they are born.



(i) Which friend is considering risk?

.....

[1]

(ii) Which friend has a concern that should be answered by government and society?

.....

[1]

(iii) Which friend is thinking about ethical issues?

.....

[1]

(iv) Give **one** other example of when a genetic test could be used.

.....

..... **[1]**

(b) 679 106 babies were born in the UK in 2017.

It is estimated that 1 in every 2000 babies are born with DiGeorge syndrome.

Calculate the expected number of babies born in 2017 with DiGeorge syndrome.

Give your answer to the **nearest whole number.**

Expected number = ... **[2]**

(c) Scientific discoveries are often reported in newspapers.

Why is it important that scientific discoveries are reported in newspapers?

Tick (✓) **two** boxes.

- More people read newspapers than scientific journals. ☐
- Scientists write in newspapers to make money. ☐
- Other scientists can check the validity of the work. ☐
- The government can see the risks involved in the research. ☐
- The research could affect people's lives so they should know about it. ☐

[2]

3. Nov 2021/Paper_J260/05/No.1

(a) Diseases can be communicable or non-communicable.

Which statements describe **communicable** diseases and which statements describe **non-communicable** diseases?

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They are caused by alleles.		
They are caused by lifestyle choices.		
They are caused by pathogens.		
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(b) Measles is caused by a virus. White blood cells help protect us against measles.

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Use the words.

You can use each word once, more than once, or not at all.

abiotic **antibodies** **antigens** **digested** **disabled** **inflamed**

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(c) A vaccine can help prevent the spread of measles. Not all parents have their children vaccinated. Parents may have ethical reasons or may need more information before making a decision.

Which parents are talking about an ethical reason and which parents need more information before making a decision?

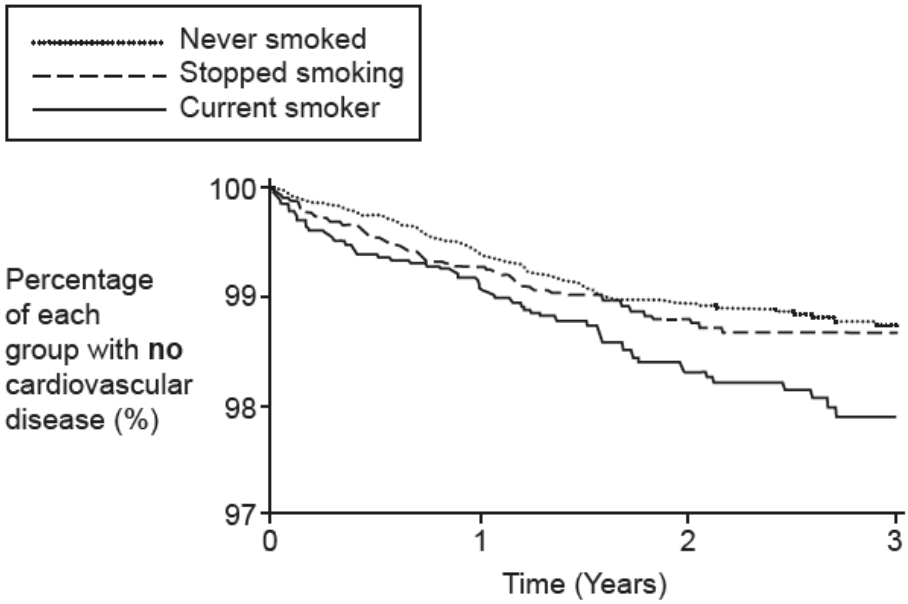
Tick **one** box (✓) in each row.

Parents	Ethical reason	More information
Mia "I'm worried about how safe the vaccine is."		
Sam "It is up to me to decide what is best for my child."		
Ali "My faith does not allow vaccination."		
Jamal "There is no risk. I don't know anyone who has had measles."		

[3]

4. Nov 2021/Paper_J260/05/No.3

The graph shows the results of a three-year study into the effect of smoking on the risk of cardiovascular disease.
None of the people at the start of the study had cardiovascular disease.



(a) Give **two** conclusions that can be made from the graph about the impact of smoking on a person's risk of cardiovascular disease.

1 .....

.....

2 .....

.....

[2]

(b) At the beginning of the study, the number of people in the 'stopped smoking' group was 3175.

After three years the percentage of this group with no cardiovascular disease was 98.8%.

Calculate the number of people in this group **with** cardiovascular disease after three years.

Number of people in the 'stopped smoking' group with cardiovascular disease = ... **[2]**

(c) Data on cardiovascular disease was collected over three years and across nine different countries.

A sample of people were taken from each of the three groups:

- never smoked
- stopped smoking
- current smoker.

(i) Why do studies use samples?

.....

..... **[1]**

(ii) How can scientists be confident in the conclusions they make from **this** study?

.....

..... **[1]**

(d) Suggest **three** lifestyle changes, other than stopping smoking, which can reduce the risk of cardiovascular disease.

1 .....

2 .....

3 .....

[3]

5. Nov 2021/Paper_J260/06/No.4

In some countries, scientists regularly collect data on blood cholesterol levels for men and women.

Some typical data is shown in the table.

		Years					
		1960–1962	1971–1974	1976–1980	1988–1994	1999–2002	2007–2010
Mean blood cholesterol level (mg/dL)	**Men**	220	215	213	204	202	194
	Women	225	217	216	207	204	198

(a) (i) Give **two** conclusions that can be made from the data in the table.

1 .....

.....

2 .....

.....

[2]

(ii) Suggest what scientists should do to ensure that any conclusion they make is representative of the whole population of a country.

.....

..... **[1]**

(iii) Calculate the percentage change in mean blood cholesterol level for **men** between 1960–1962 and 2007–2010.

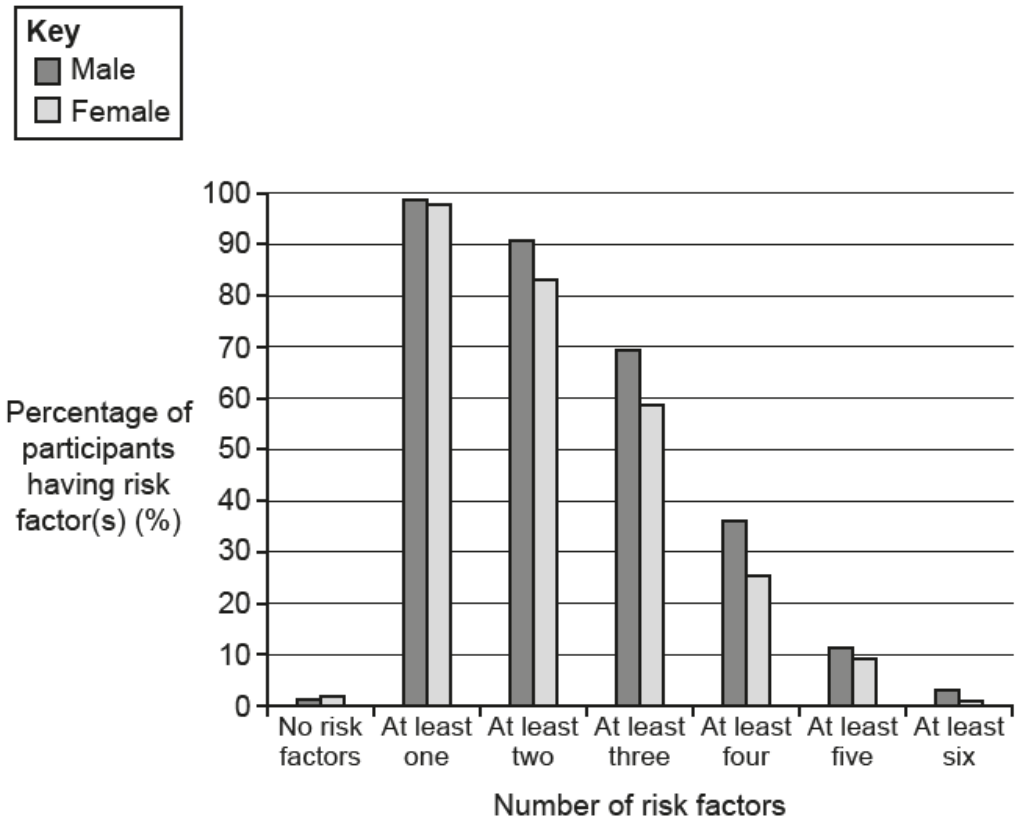
Give your answer to **2** significant figures.

Use the equation: percentage change = $\frac{\text{difference}}{\text{original}} \times 100\%$

Percentage change = ... % **[3]**

(b) High blood cholesterol has been identified as one risk factor for developing cardiovascular disease.

Scientists conducted a study on a sample of men and women who had cardiovascular disease, to see how many risk factors they had. The data is shown in the graph.



(i) Give **two** conclusions that can be made from the data shown in the graph.

1 .....

.....

2 .....

.....

[2]

(ii) Suggest **one** way in which an individual could lower their risk of developing cardiovascular disease.

.....

..... **[1]**