

GCSE Combined Science: Trilogy

Worksheet: Bacterial diseases

TIME 35 min	TOTAL 31 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Bacterial diseases

NAME	CLASS	DATE
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- 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

Salmonella is a type of bacterium that causes food poisoning.

0 1 . 1

Give **two** symptoms of *Salmonella* food poisoning.

[2 marks]

0 1 . 2

The symptoms are caused by the bacteria and by poisonous substances that the bacteria secrete.

What name is given to these poisonous substances?

[1 mark]

0 1 . 3

How is *Salmonella* usually spread to humans?

Tick (✓) **one** box.

By inhaling droplets from coughs and sneezes

☐

By eating food containing the bacteria

☐

By the bite of an infected insect

☐

By sexual contact

☐

[1 mark]

0 1 . 4

Give **one** way the spread of *Salmonella* is controlled in the UK.

.....

.....

[1 mark]

0 2

Salmonella food poisoning and gonorrhoea are both diseases caused by bacteria.

0 2 . 1

How is *Salmonella* food poisoning spread?

Tick (✓) **one** box.

By eating food that contains the bacteria

☐

By inhaling droplets from coughs and sneezes

☐

By the bite of an infected mosquito

☐

By sexual contact

☐

[1 mark]

0 2 . 2

Give **two** symptoms of *Salmonella* food poisoning.

.....

.....

.....

.....

[2 marks]

0 2 . 3

Give **one** way the spread of gonorrhoea can be controlled.

.....

.....

[1 mark]

0 3

Salmonella bacteria reproduce by binary fission: one bacterium divides to form two. In warm food, *Salmonella* bacteria can divide once every 20 minutes.

0 3 . 1

A piece of cooked chicken is left in a warm kitchen. It contains one *Salmonella* bacterium.

Calculate the number of bacteria on the chicken after 2 hours, if the bacteria divide every 20 minutes.

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.....

.....

.....

Number of bacteria =

[2 marks]

0 3 . 2

Another piece of food contains 500 *Salmonella* bacteria.

Calculate how long it would take for the number of bacteria to reach 4000, if they divide every 20 minutes.

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.....

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.....

Time = minutes

[2 marks]

0 3 . 3

A person who eats food containing *Salmonella* bacteria may start to vomit and have diarrhoea several hours later.
Explain why the symptoms do not start straight away.

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.....

[2 marks]

0 4

Lyme disease is a bacterial infection spread to humans by the bite of an infected tick. Ticks pick up the bacterium by feeding on infected deer or mice, and can pass it to a human when they then feed on human blood.

0 4 . 1

What name is given to an animal, such as a tick, that spreads a pathogen from one host to another?

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.....

[1 mark]

0 4 . 2

Suggest **two** ways a person could reduce their risk of Lyme disease when walking through areas where ticks live.

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.....

.....

[2 marks]

0 4 . 3

A tick usually needs to stay attached and feeding for more than 24 hours before it passes on the bacterium.

Explain why checking your skin for ticks each evening reduces the risk of infection.

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.....

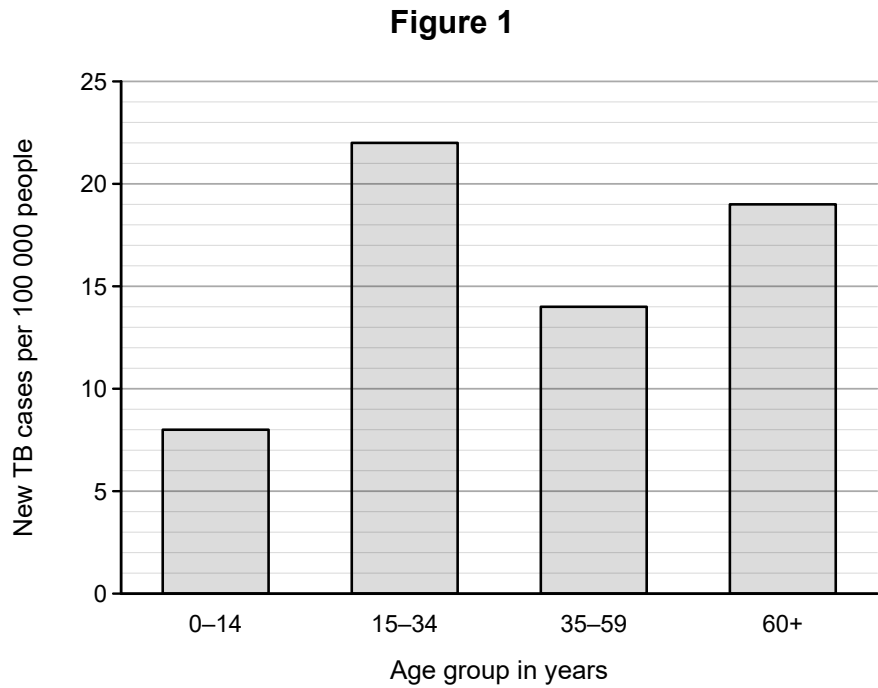
.....

[2 marks]

0 5

Tuberculosis (TB) is a bacterial disease. It is spread when people breathe in droplets from the coughs of an infected person.

Figure 1 shows the number of new TB cases per 100 000 people in four age groups in one country.



0 5 . 1

Which age group had the highest rate of new TB cases?

.....

.....

[1 mark]

0 5 . 2

Calculate how many more new cases per 100 000 people there were in the 15–34 age group than in the 0–14 age group.

.....

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.....

.....

Difference = cases per 100 000 people

[2 marks]

0 5 . 3

Suggest **one** reason why the 15–34 age group might have a higher rate of TB than the 0–14 age group.

.....

.....

[1 mark]

0 6

Gonorrhoea is a sexually transmitted disease (STD).

0 6 . 1

What type of pathogen causes gonorrhoea?

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.....

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[1 mark]

0 6 . 2

Give **two** symptoms of gonorrhoea.

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.....

.....

[2 marks]

0 6 . 3

Gonorrhoea used to be easily treated with the antibiotic penicillin.
Explain why penicillin is no longer used to treat gonorrhoea.

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[2 marks]

0 6 . 4

Give **two** ways the spread of gonorrhoea can be controlled.

.....

.....

.....

.....

[2 marks]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Bacterial diseases · 31 marks

Question 1 (5 marks)

01.1 [2 marks]

Answer: Any two from: fever, abdominal cramps, vomiting, diarrhoea.

- fever / high temperature (1)
- abdominal cramps / stomach pains (1)
- vomiting (1)
- diarrhoea (1)

Any 2 of the points above.

01.2 [1 mark]

Answer: Toxins

- toxins (1)

Notes: Do not accept 'poisons' / 'poisonous substances' (given in the question).

01.3 [1 mark]

Correct: By eating food containing the bacteria

01.4 [1 mark]

Answer: Poultry are vaccinated against *Salmonella*.

- vaccinating poultry / chickens (1)
- cooking food (especially chicken and eggs) thoroughly (1)
- preparing food in hygienic conditions / washing hands before handling food (1)

Any 1 of the points above.

Question 2 (4 marks)

02.1 [1 mark]

Correct: By eating food that contains the bacteria

02.2 [2 marks]

Answer: Any two from: fever, abdominal cramps, vomiting, diarrhoea.

- fever (1)
- abdominal cramps / stomach pains (1)
- vomiting (1)
- diarrhoea (1)

Any 2 of the points above.

02.3 [1 mark]

- using a condom / a barrier method of contraception (1)
- treating infected people (and their sexual partners) with antibiotics (1)

Any 1 of the points above.

Question 3 (6 marks)

03.1 [2 marks]

Answer: 64

- 2 hours = 120 minutes = 6 divisions, or 2^6 (1)
- 64 (1)

03.2 [2 marks]

Answer: 60 minutes (1 hour)

- $4000 \div 500 = 8 = 2^3$, so 3 divisions (1)
- $3 \times 20 = 60$ (minutes) (1)

Notes: Allow 1 hour for 2 marks.

03.3 [2 marks]

- the bacteria reproduce inside the body, so their number increases over time (1)
- the symptoms are caused by the bacteria and the toxins they secrete, which take time to build up to a harmful level (1)
- the body's defences, e.g. stomach acid and white blood cells, destroy some of the bacteria at first (1)

Any 2 of the points above.

Question 4 (5 marks)

04.1 [1 mark]

Answer: Vector

- vector (1)

04.2 [2 marks]

- cover the skin, e.g. wear long trousers and sleeves (1)
- use insect repellent (1)
- check the skin for ticks after walking and remove them promptly (1)
- keep to paths / avoid long grass (1)

Any 2 of the points above.

04.3 [2 marks]

- checking each evening means that a tick is found and removed within 24 hours of attaching (1)
 - before it has fed for long enough to pass the bacterium into the person's blood (1)
-

Question 5 (4 marks)

05.1 [1 mark]

Answer: 15–34

- 15–34 (1)

05.2 [2 marks]

Answer: 14

- $22 - 8$ (1)
- 14 (1)

05.3 [1 mark]

- young adults may travel or work in crowded places, or mix with more people, so they are more likely to breathe in droplets from an infected person (1)
- young children mix with fewer people outside their family, so they are less likely to meet an infected person (1)

Any 1 of the points above.

Question 6 (7 marks)

06.1 [1 mark]

Answer: A bacterium

- bacterium / bacteria (1)

06.2 [2 marks]

Answer: A thick yellow or green discharge from the vagina or penis; pain when urinating.

- thick yellow / green discharge from the vagina / penis (1)
- pain on urinating (1)

06.3 [2 marks]

- many strains of the bacterium are (now) resistant to penicillin (1)
- (so) penicillin would not kill the bacteria / would not cure the infection (1)

06.4 [2 marks]

- treating infected people with an (effective) antibiotic (1)
- using a barrier method of contraception / condoms (1)
- testing and treating the sexual partners of infected people (1)
- having fewer sexual partners (1)

Any 2 of the points above.