

GCSE Combined Science: Trilogy

Worksheet: Protist diseases

TIME 30 min	TOTAL 30 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Protist 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

Malaria is a disease that affects millions of people every year.

0 1 . 1

What type of pathogen causes malaria?

Tick (✓) **one** box.

Bacterium

☐

Fungus

☐

Protist

☐

Virus

☐

[1 mark]

0 1 . 2

Malaria is spread by mosquitoes.

What name is given to an animal that spreads a pathogen?

.....

.....

.....

[1 mark]

0 1 . 3

Give **one** symptom of malaria.

.....

.....

[1 mark]

0 1 . 4

Give **two** ways that the spread of malaria can be controlled.

.....

.....

.....

.....

[2 marks]

0 2

Malaria is a disease that is spread between people by mosquitoes.

0 2 . 1

Which type of pathogen causes malaria?

Tick (✓) **one** box.

Bacterium

Fungus

Protist

Virus

☐

☐

☐

☐

[1 mark]

0 2 . 2

Give the main symptom of malaria.

.....

.....

[1 mark]

0 2 . 3

Give **two** ways of reducing the spread of malaria.

.....

.....

.....

.....

[2 marks]

0 3

In a village, scientists estimate that 4% of mosquitoes carry the malaria protist. During one week, people in the village received a total of 250 mosquito bites.

0 3 . 1

Estimate the number of infective bites (bites from a mosquito carrying the protist) during the week.

.....

.....

.....

.....

Number of infective bites =

[2 marks]

0 3 . 2

An antimalarial drug reduced the concentration of the protist in a patient's blood from 8000 to 200 protists per mm³ within 3 days.
Calculate the percentage decrease in the concentration of the protist.

.....

.....

.....

.....

Percentage decrease = %

[2 marks]

0 3 . 3

Suggest why it is important to take the full course of an antimalarial drug, even after symptoms improve.

[1 mark]

0 4

Aid workers set up a camp for 8000 people in an area where the malaria-carrying mosquito is common. There are areas of standing water near the camp from recent flooding.

0 4 . 1

Suggest **two** reasons why people in the camp could be at high risk of malaria.

[2 marks]

0 4 . 2

Suggest **two** measures the aid workers could use to reduce the risk of malaria in the camp.

[2 marks]

0 4 . 3

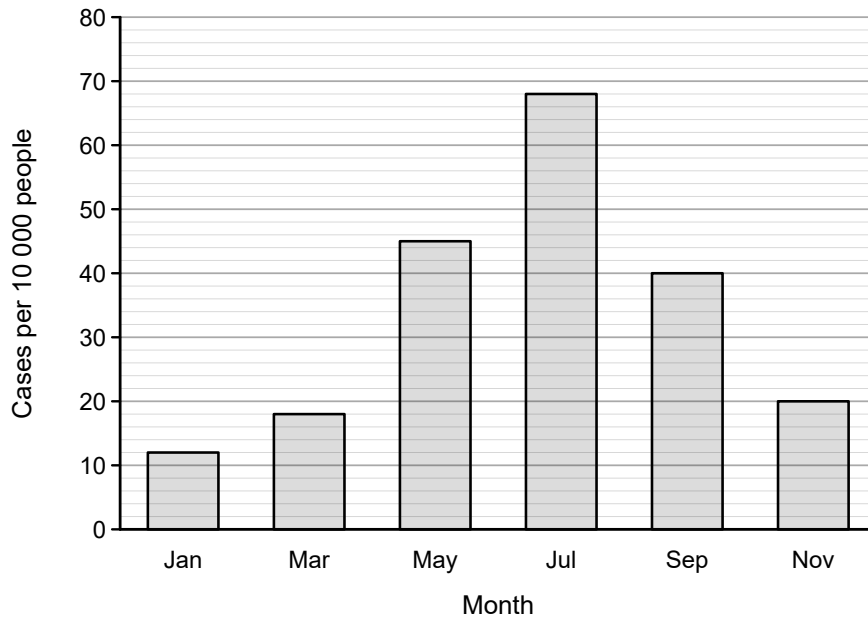
Explain why distributing mosquito nets to only half of the people in the camp would still reduce malaria cases among people without a net.

[2 marks]

0 5

The heaviest rains in a region fall in March and April. Figure 1 shows the number of malaria cases per 10 000 people in the region in six months of the same year.

Figure 1



0 5 . 1

In which of the months shown was the number of malaria cases highest?

[1 mark]

0 5 . 2

The heaviest rains fall in March and April, but malaria cases are highest in July. Suggest why.

[2 marks]

0 5 . 3

Suggest **one** reason why cases do not fall to zero even in the driest months.

.....

.....

[1 mark]

0 6

The protist that causes malaria has a life cycle that includes the mosquito. When a mosquito bites an infected person, it takes in protists with the blood. The protists develop inside the mosquito and are passed to the next person the mosquito bites.

Mosquitoes lay their eggs in still water. Most mosquitoes that spread malaria feed at night.

0 6 . 1

Explain why sleeping under a mosquito net reduces the spread of malaria.

.....

.....

.....

.....

[2 marks]

0 6 . 2

Explain how draining areas of still water reduces the spread of malaria.

.....

.....

.....

.....

[2 marks]

0 6 . 3

Suggest **two** reasons why malaria is more common in hot, wet countries than in cold, dry countries.

.....

.....

.....

.....

[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: Protist diseases · 30 marks

Question 1 (5 marks)

01.1 [1 mark]

Correct: Protist

01.2 [1 mark]

Answer: Vector

- vector (1)
-

01.3 [1 mark]

Answer: Recurrent episodes of fever.

- (recurrent episodes of) fever (1)

Notes: Allow other correct symptoms, e.g. chills / shivering / sweating / headache / tiredness.

01.4 [2 marks]

- stop mosquitoes breeding, e.g. drain standing water (1)
- sleep under mosquito nets (1)
- kill mosquitoes with insecticide (1)
- use insect repellent / cover the skin (1)

Any 2 of the points above.

Question 2 (4 marks)

02.1 [1 mark]

Correct: Protist

02.2 [1 mark]

- (recurrent episodes of) fever (1)

Notes: Allow other correct symptoms, e.g. chills, sweating or headache.

02.3 [2 marks]

- use mosquito nets (to avoid being bitten) (1)
- stop mosquitoes breeding, e.g. by draining areas of standing water (1)
- use insecticide to kill mosquitoes (1)
- use insect repellent (1)

Any 2 of the points above.

Question 3 (5 marks)

03.1 [2 marks]

Answer: 10 bites

- $250 \times 4 \div 100$ (1)
 - 10 (bites) (1)
-

03.2 [2 marks]

Answer: 97.5%

- $(8000 - 200) \div 8000 \times 100$ (1)
 - 97.5 (%) (1)
-

03.3 [1 mark]

- to make sure all the protists are killed, so the disease does not return and the protist is less likely to become resistant (1)
-

Question 4 (6 marks)

04.1 [2 marks]

- standing water gives mosquitoes many places to breed (1)
- many people are living close together, so mosquitoes can bite and infect many people (1)
- people may not have mosquito nets or insect repellent available (1)

Any 2 of the points above.

04.2 [2 marks]

- distribute insecticide-treated mosquito nets (1)
- drain or treat areas of standing water (1)
- spray insecticide in the camp (1)
- provide antimalarial drugs / early diagnosis and treatment (1)

Any 2 of the points above.

04.3 [2 marks]

- people under nets are less likely to be bitten and infected, so there are fewer infected people for mosquitoes to pick up the protist from (1)
- so fewer mosquitoes carry the protist, and anyone who is bitten is less likely to be bitten by an infected mosquito (1)
- insecticide-treated nets kill mosquitoes that land on them, so there are fewer mosquitoes to bite anyone (1)

Any 2 of the points above.

Question 5 (4 marks)

05.1 [1 mark]

Answer: July

- July (1)

05.2 [2 marks]

- heavy rain creates more standing water where mosquitoes can breed (1)
- it takes time for the eggs to develop into adult mosquitoes, and for the number of mosquitoes (and of infected people) to build up (1)

05.3 [1 mark]

- some standing water remains, e.g. in containers or slow-moving streams (1)
- some infected people still have the protist in their blood from earlier in the year and can still be bitten and pass it on (1)

Any 1 of the points above.

Question 6 (6 marks)

06.1 [2 marks]

- mosquitoes cannot bite the person (at night) (1)
- (so) protists are not passed to the person / mosquitoes cannot take in protists from an infected person (1)

06.2 [2 marks]

- mosquitoes cannot lay eggs / breed (1)
- (so) there are fewer mosquitoes / vectors to carry the protists to people (1)

06.3 [2 marks]

- more still water for mosquitoes to breed in (1)
- mosquitoes survive / breed / are active all year in warm conditions (1)
- the protists develop more quickly inside mosquitoes in warm conditions (1)

Any 2 of the points above.
