

GCSE Combined Science: Trilogy

Worksheet: Communicable (infectious) diseases

TIME 30 min	TOTAL 30 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
-----------------------	--------------------------	------------------------------	-----------------------------------

Topics: Communicable (infectious) diseases

NAME	CLASS	DATE
-------------	--------------	-------------

- 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

Communicable diseases are caused by pathogens.

0 1 . 1

What is a pathogen?

[1 mark]

0 1 . 2

Which list contains **only** types of pathogen?

Tick (✓) **one** box.

Antibodies, bacteria, fungi and viruses

☐

Bacteria, fungi, protists and viruses

☐

Bacteria, enzymes, protists and viruses

☐

Bacteria, fungi, platelets and viruses

☐

[1 mark]

0 1 . 3

Give **two** ways that pathogens can be spread from one organism to another.

.....

.....

.....

.....

[2 marks]

0 1 . 4

Bacteria that reproduce inside the body can make a person feel ill.
How do bacteria make a person feel ill?

.....

.....

[1 mark]

0 1 . 5

How do viruses cause damage in the body?

.....

.....

[1 mark]

0 2

Communicable diseases are caused by pathogens. Pathogens can be spread from one person to another by direct contact, by water or by air.

0 2 . 1

What is a pathogen?

.....

.....

[1 mark]

0 2 . 2

Which is an example of a pathogen being spread by air?
Tick (✓) **one** box.

Drinking water that contains the pathogen

☐

Breathing in droplets from an infected person's sneeze

☐

Kissing an infected person

☐

Touching an infected person's skin

☐

[1 mark]

0 2 . 3

Give **two** ways of reducing the spread of a pathogen that is spread in droplets from coughs and sneezes.

.....

.....

.....

.....

[2 marks]

0 3

Pathogens may be viruses, bacteria, protists or fungi.
Table 1 shows four communicable diseases.

Table 1

Disease	Type of pathogen
Measles	
Gonorrhoea	
Rose black spot	
Malaria	

0 3 . 1

Complete Table 1.
Give the type of pathogen that causes each disease.

.....

.....

.....

.....

.....

.....

.....

.....

[4 marks]

0 3 . 2

Explain why it is important to identify the type of pathogen causing a disease before choosing a treatment.

[2 marks]

0 4

A stomach infection spread rapidly among 2400 passengers on a cruise ship. The pathogen is present in vomit and faeces, spreads by touching contaminated surfaces, and can survive outside the body for several days.

0 4 . 1

Suggest **two** reasons why the infection spread so quickly among the passengers.

[2 marks]

0 4 . 2

312 of the 2400 passengers had symptoms.
Calculate the percentage of passengers who had symptoms.

Percentage = %

[2 marks]

0 4 . 3

The crew closed the buffet and asked passengers to use alcohol hand gel before eating.

Suggest **two** reasons why hand gel alone may not fully control the outbreak.

.....

.....

.....

.....

[2 marks]

0 5

A disease caused by a virus spread through a school. The virus is passed on by direct contact and by touching surfaces that an infected person has touched.

Table 2 shows the number of pupils absent with the disease.

Table 2

Day	Number of pupils absent with the disease
1	3
3	11
5	29
7	44
9	31
11	14
13	5

0 5 . 1

Suggest **two** reasons why the number of pupils with the disease increased so quickly between day 1 and day 5.

.....

.....

.....

.....

[2 marks]

0 5 . 2

On day 6 the school:

- asked all pupils to wash their hands with soap before eating
- cleaned door handles and desks twice a day
- told pupils with the disease to stay at home until 48 hours after their symptoms stopped.

Explain how **each** of these measures reduces the spread of the virus.

.....

.....

.....

.....

.....

.....

[3 marks]

0 5 . 3

The school has 480 pupils.
Calculate the percentage of pupils who were absent with the disease on day 7.

.....

.....

.....

.....

Percentage = %

[2 marks]

0 5 . 4

The number of pupils with the disease would probably have fallen after day 7 even if the school had done nothing.
Suggest **one** reason why.

.....

.....

[1 mark]

END OF QUESTIONS

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Communicable (infectious) diseases · 30 marks

Question 1 (6 marks)

01.1 [1 mark]

Answer: A microorganism that causes an infectious disease.

- a microorganism that causes (infectious / communicable) disease (1)

Notes: Allow 'microbe' for microorganism. Do not accept 'a disease' on its own.

01.2 [1 mark]

Correct: Bacteria, fungi, protists and viruses

01.3 [2 marks]

Answer: Any two from: direct contact, water, air, food, vectors, body fluids.

- (by) direct contact (1)
- (by / in) water (1)
- (through the) air / in droplets from coughs and sneezes (1)
- (in) food (1)
- (by) vectors / animals such as insects (1)
- (through) body fluids / blood / sexual contact (1)

Any 2 of the points above.

01.4 [1 mark]

Answer: They produce toxins (poisons) that damage tissues.

- (they) produce toxins / poisons (that damage tissues) (1)
-

01.5 [1 mark]

Answer: They reproduce inside cells, which damages the cells.

- (they) live and reproduce inside cells, damaging the cells (1)

Notes: Allow 'reproduce inside cells' on its own.

Question 2 (4 marks)

02.1 [1 mark]

- a microorganism that causes (infectious / communicable) disease (1)

Notes: Allow a bacterium, virus, protist or fungus that causes disease. Do not accept 'a disease' or 'a germ' alone.

02.2 [1 mark]

Correct: Breathing in droplets from an infected person's sneeze

02.3 [2 marks]

- cover the mouth and nose when coughing or sneezing / use a tissue and throw it away (1)
- isolate infected people / infected people stay at home (1)
- wear a face covering / mask (1)
- wash hands (after coughing, sneezing or blowing the nose) (1)
- improve ventilation / open windows (1)
- vaccination (so that fewer people can be infected) (1)

Any 2 of the points above.

Question 3 (6 marks)

03.1 [4 marks]

Answer: Measles: virus; gonorrhoea: bacterium; rose black spot: fungus; malaria: protist.

- measles: virus (1)
 - gonorrhoea: bacterium (1)
 - rose black spot: fungus (1)
 - malaria: protist (1)
-

03.2 [2 marks]

- different types of pathogen are killed by different medicines / need different treatments (1)
 - e.g. antibiotics kill bacteria but do not kill viruses, so the wrong treatment would not cure the disease (1)
-

Question 4 (6 marks)

04.1 [2 marks]

- many people live close together in a confined space, so there is a lot of close contact (1)
- many people touch the same surfaces, e.g. handrails and buffet equipment (1)
- the pathogen survives for several days outside the body, so surfaces stay contaminated (1)

Any 2 of the points above.

04.2 [2 marks]

Answer: 13%

- $312 \div 2400 \times 100$ (1)
- 13 (%) (1)

04.3 [2 marks]

- hand gel cleans only hands, not contaminated surfaces or objects (1)
- passengers can pick up the pathogen again by touching contaminated surfaces after using the gel (1)
- infected passengers are still mixing with other passengers / are not isolated (1)
- the pathogen is also spread in vomit, not only on hands (1)
- some passengers may not use the gel, or may not use it properly / the gel may not kill this pathogen (1)

Any 2 of the points above.

Question 5 (8 marks)

05.1 [2 marks]

- pupils are in close contact at school / share rooms and equipment (1)
- the virus is spread by direct contact / by touching contaminated surfaces (1)
- each infected pupil passed the virus on to more than one other pupil (1)
- the virus reproduces rapidly inside the body (1)
- no pupils were immune (at the start) (1)

Any 2 of the points above.

Notes: Ignore 'the disease is contagious' unqualified.

05.2 [3 marks]

- hand-washing removes / kills viruses on the hands (so fewer are passed on or swallowed) (1)
- cleaning removes / kills viruses on surfaces (so fewer pupils pick them up by touching the surfaces) (1)
- staying at home isolates infected pupils so they cannot pass the virus to uninfected pupils (1)

05.3 [2 marks]

Answer: 9.2%

- $44 \div 480 \times 100$ (1)
- 9.2 (%) (1)

Notes: Allow 9.17 or 9.167. An answer of 9.2 scores 2 marks.

05.4 [1 mark]

- pupils who had the disease recovered and became immune (1)
- there were fewer pupils left who had not already had the disease / fewer pupils who could be infected (1)

Any 1 of the points above.
