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0 7 Eating food containing *Salmonella* bacteria can cause illness.

0 7 . 1 Two symptoms of infection by *Salmonella* are vomiting and diarrhoea.

What causes these symptoms?

[1 mark]

_____

_____

0 7 . 2 Give **two** ways a person with a mild infection of *Salmonella* can help prevent the spread of the bacteria to other people.

[2 marks]

1 _____

_____

2 _____

_____

0 7 . 3 In very serious infections of *Salmonella*, a doctor can prescribe drugs to kill the bacteria.

What type of drug can the doctor prescribe to kill the bacteria?

[1 mark]

_____

_____

0 7 . 4 A person with AIDS may take longer than a healthy person to recover from a *Salmonella* infection.

Explain why.

[2 marks]

_____

_____

_____

_____

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0 7 . 5 *Salmonella* bacteria can be transmitted from chickens to humans. Chickens can be vaccinated to prevent the transmission of *Salmonella* bacteria to humans.

Suggest **one** other way farmers could prevent the transmission of *Salmonella* from chickens to humans.

[1 mark]

A restaurant owner employed a scientist to test the effectiveness of two kitchen cleaning liquids.

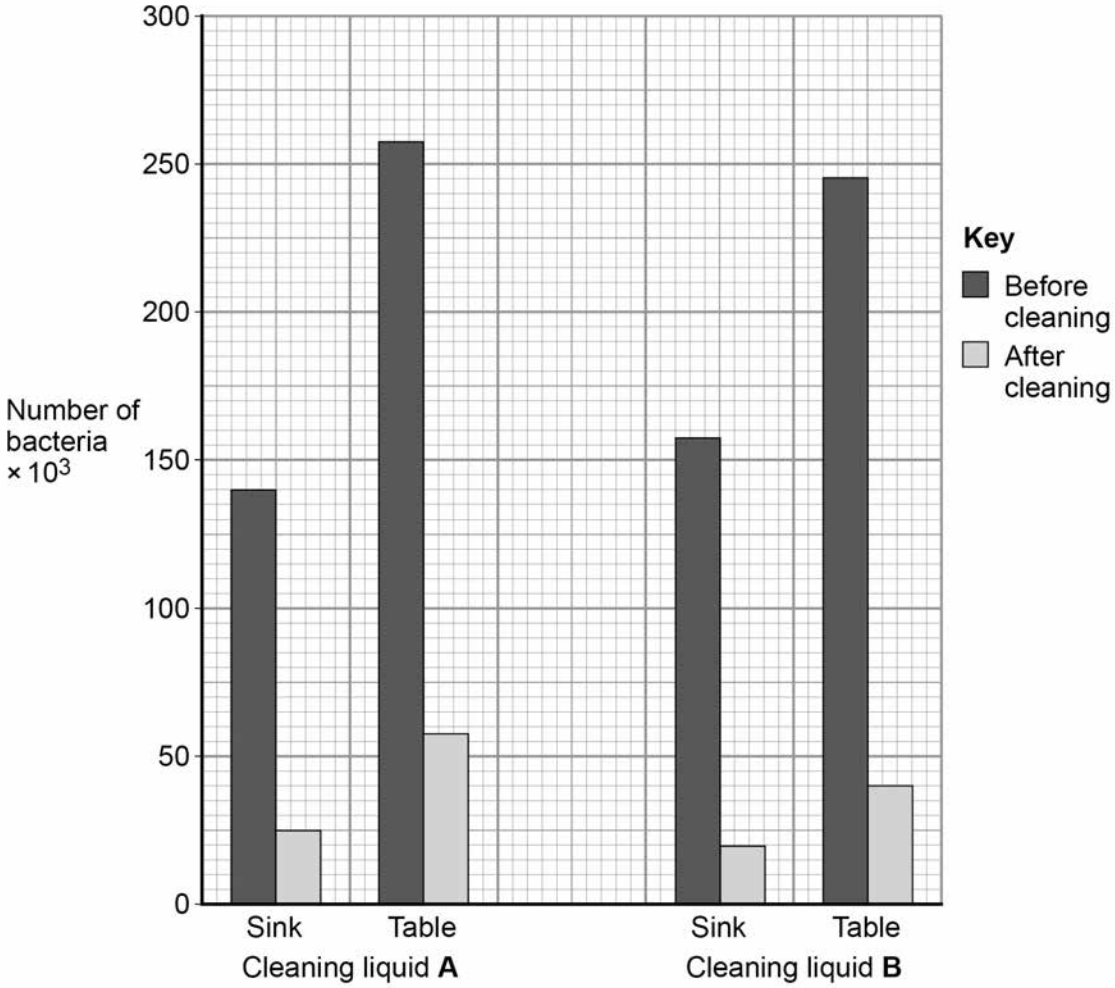
The scientist took samples from two work surfaces:

- before the surfaces had been cleaned with the cleaning liquids
- after the surfaces had been cleaned with the cleaning liquids.

The samples were then analysed for the number of bacteria they contained.

The results are shown in **Figure 10**.

Figure 10



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0 7 . 6 Which cleaning liquid is the more effective?

Give a reason for your answer.

[1 mark]

Cleaning liquid _____

Reason _____

_____

_____

Question 7 continues on the next page

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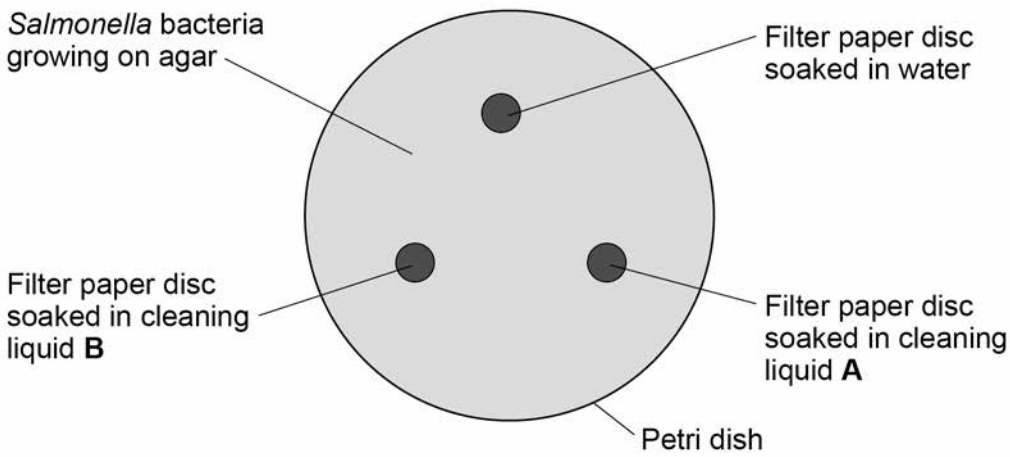
The scientist investigated the effect of cleaning liquid **A** and cleaning liquid **B** on *Salmonella* bacteria grown in a laboratory.

Figure 11 shows the way the investigation was set up.

Figure 11



The Petri dish was placed in an incubator at 25 °C for 48 hours.

After 48 hours, the scientist calculated the area around each paper disc where no bacteria were growing.

The results are shown in **Table 4**.

Table 4

Filter paper disc	**Area around disc with no bacteria growing in cm^2**
Water	0
Cleaning liquid **A**	11
Cleaning liquid **B**	13

0 7 . 7 What measurement would the scientist need to take to calculate the area where no bacteria were growing?

[1 mark]

_____

_____

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0 7 . 8 Give **one** change to the investigation that would allow the scientist to check if the results are repeatable.

[1 mark]

_____

_____

0 7 . 9 The scientist showed the results to the restaurant owner.

Both cleaning liquids cost the same per dm^3.

Suggest **one** other factor the restaurant owner should consider when choosing which cleaning liquid to use.

[1 mark]

_____

_____

11

Turn over for the next question

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.1	toxins / poisons (secreted by / from / in bacteria)		1	AO1 4.3.1.3
07.2	any **two** from: • wash hands after using toilet / being sick **or** wash hands before preparing / handling food **or** do not prepare food (whilst infected) • isolate yourself • disinfect clothes / surfaces • do not share utensils / cutlery / towels	ignore 'wash hands' unqualified ignore reference to coughing / sneezing allow examples of how isolation could be achieved	2	AO2 4.3.1.1
07.3	antibiotics	allow named examples of antibiotics	1	AO1 4.3.1.8
07.4	immune system is damaged / weakened **or** immune system doesn't function properly white blood cells cannot kill bacteria / *Salmonella* (as effectively)	allow immunocompromised allow lack of / no white blood cells allow no / fewer antibodies so bacteria not killed **or** less phagocytosis so bacteria not killed **or** no / fewer antitoxins to counter toxins	1 1	AO2 4.3.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.5	any **one** from: • (give chickens) antibiotics • don't sell infected chickens / eggs • keep infected chickens isolated / indoors • slaughter the infected chickens	 allow (give chickens) monoclonal antibodies allow don't sell the chickens / eggs ignore don't sell chickens / eggs allow keep the chickens indoors ignore keep chickens indoors ignore vaccination / chlorination / disinfection	1	AO1 4.3.1.3
07.6	(cleaning liquid) B **and** greater reduction in number of bacteria (after cleaning) in both locations	 ignore few bacteria in both locations allow neither / both **and** idea of experimental error	1	AO3 4.1.1.6 4.3.1
07.7	radius (of area with no bacteria growing)	allow diameter (of the area with no bacteria growing) ignore πr^2 unqualified allow idea of placing agar plate onto graph paper and counting the squares not covered with bacteria	1	AO2 4.1.1.6

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.8	repeat **and** look to see if results are similar	ignore repeat unqualified allow repeat **and** look to see if results are different allow repeat and see if there are anomalies ignore repeat and identify anomalies ignore repeat and compare unqualified	1	AO3 4.1.1.6
07.9	any **one** from: • toxicity / side / health effects • effect on other types of bacteria / pathogens • interaction with other cleaners • ease of use • dilution factor of each cleaner (vs. cost) • time cleaner is effective for	 ignore harmful / dangerous allow reference to allergies allow not tested on other types of bacteria ignore germs ignore concentration unqualified ignore how long the cleaner lasts for allow reference to odour of cleaning liquid ignore reference to cost unqualified ignore environmental effects / flammability	1	AO3 4.1.1.6
Total			**11**	