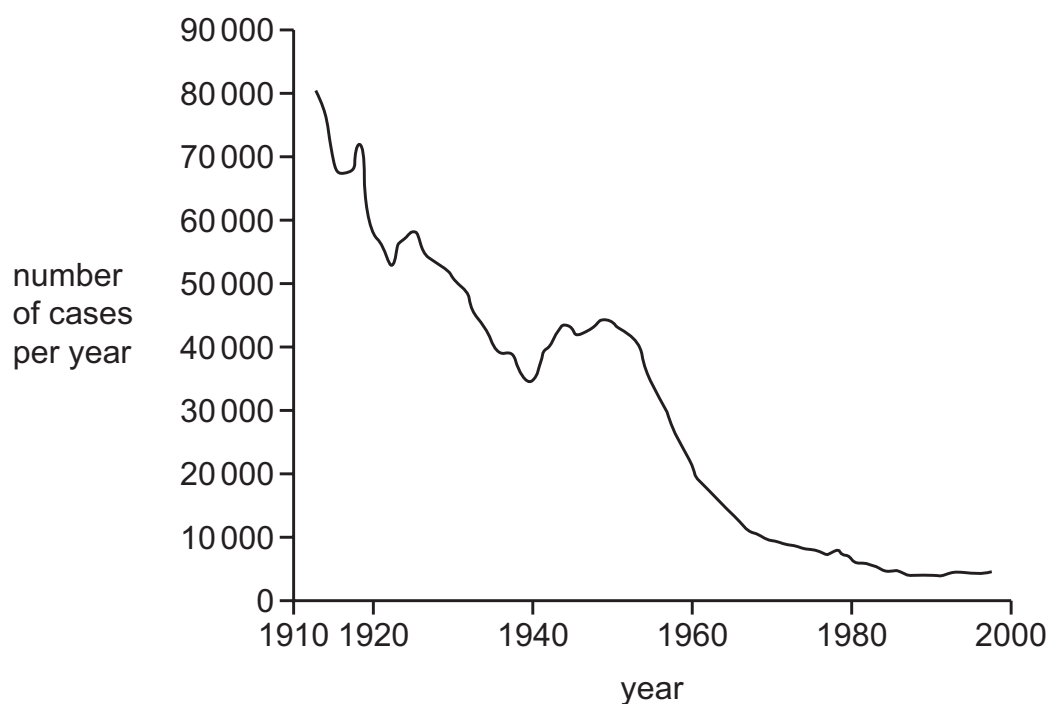


5 Which statement about viruses is correct?

- A** They are cells with a capsid made of phospholipids.
- B** They are cells with a capsid made of protein.
- C** They are particles with a capsid made of phospholipids.
- D** They are particles with a capsid made of protein.

36 The graph shows the decrease in cases of tuberculosis (TB) in a country between 1910 and 2000.



Which factors could have contributed to the fall over this period?

- 1 pasteurisation of milk
- 2 the provision of new housing to reduce overcrowding
- 3 removing large pools of stagnant water
- 4 identification of contacts of people infected with TB

A 1, 2 and 4 **B** 1 and 3 **C** 1 and 4 only **D** 2, 3 and 4

37 The pathogens for some diseases are transmitted by vectors.

Which disease is transmitted with the help of a vector that could be controlled by the removal of pools of water?

- A** cholera
- B** HIV/AIDS
- C** malaria
- D** tuberculosis

38 How does penicillin affect bacteria?

- A** It inhibits DNA replication by binding to nucleotides.
- B** It inhibits translation by preventing tRNA binding to ribosomes.
- C** It is a competitive inhibitor of an enzyme in cell wall synthesis.
- D** It is a competitive inhibitor of an enzyme in protein synthesis.

38 Which factors affect the global pattern of distribution of malaria?

- 1 the disease is mainly restricted to tropical and subtropical environments
- 2 the effective vaccine has eradicated the disease in many countries
- 3 the vector required for transmission of malaria parasites

	1	2	3
A	✓	✓	✗
B	✓	✓	✓
C	✓	✗	✓
D	✗	✓	✓

key

✓ = effect

✗ = **not** an effect

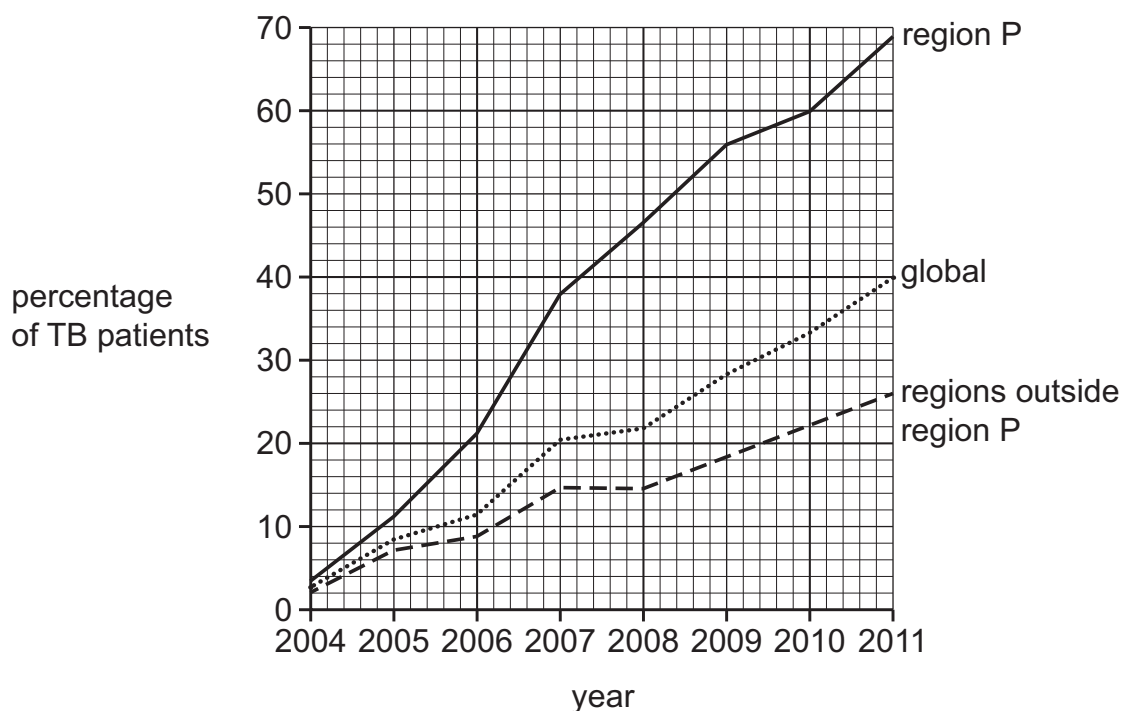
36 Which row correctly identifies the pathogens causing malaria and TB?

	malaria	TB
A	protocist	virus
B	protocist	bacterium
C	prokaryote	bacterium
D	prokaryote	virus

37 What could be used to help prevent an outbreak of cholera in a town?

- A** treatment of sewage waste
- B** spraying still water with insecticides to kill mosquito larvae
- C** increased use of antiviral medicine
- D** preventing the reuse of hypodermic needles

38 The graph shows the percentage of tuberculosis (TB) patients who were also known to be infected with HIV, from 2004 to 2011.



Which statement about the graph is correct?

- A** From 2004 to 2010, the percentage of TB patients with HIV infection in region P increased from 3% to 69%.
- B** From 2005 to 2011, the percentage of TB patients with HIV infection increased more rapidly in region P than in regions outside region P.
- C** From 2006 to 2011, the percentage of TB patients with HIV infection in regions outside region P doubled.
- D** From 2007 to 2011, the percentage of TB patients with HIV infection globally increased from 20% to 30%.

36 Infectious diseases may be caused by bacteria, protoctists and viruses. Different pathogens may be transmitted by airborne droplets, from faeces to mouth (faecal-oral), by sexual intercourse and by vectors.

Four examples of infectious diseases are listed.

- 1 cholera
- 2 HIV/AIDS
- 3 malaria
- 4 tuberculosis

Which table classifies the four diseases correctly to show the type of pathogen that causes the disease and the mode of transmission?

A

	bacterium	protoctist	virus
droplet			2
faecal-oral	1		
sexual		3	
vector			4

B

	bacterium	protoctist	virus
droplet		2	
faecal-oral	1		
sexual			3
vector		4	

C

	bacterium	protoctist	virus
droplet	4		
faecal-oral	1		
sexual			2
vector		3	

D

	bacterium	protoctist	virus
droplet	3		
faecal-oral		2	
sexual	1		
vector			4

- 37** Scientists investigated the sensitivity and resistance of a bacterium called *Clostridium difficile* to four antibiotics. Colonies of bacteria were grown on agar plates for 24 hours, after which a different antibiotic was added to each plate. The number of bacterial colonies that died, stopped growing and continued growing were then counted. A bacterial colony is a group of bacterial cells that have multiplied from one bacterium.

Which antibiotic would be the best to treat a person infected with *Clostridium difficile*?

	antibiotic	number of colonies that died	number of colonies that stopped growing	number of colonies that continued growing
A	ampicillin	2	5	13
B	clindamycin	4	8	6
C	metronidazole	13	6	1
D	cefoxitin	9	5	4