D4.3 Climate change: data-based questions

What the Cell · DP Biology · data-based questions

Name _____ **Date** _____ **Total** _____ / 13

Read the data carefully before you answer. The number of marks shows how many separate points to make. Show your working in calculations.

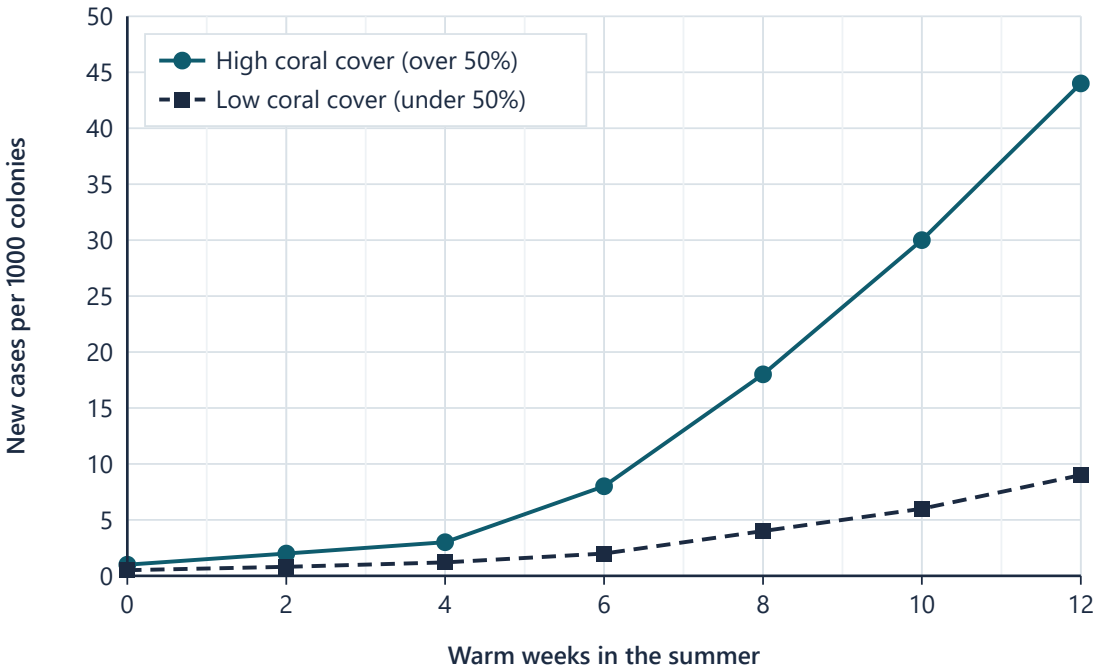
1 Warm water and coral disease

7 marks



Image: Jim Maragos, U.S. Fish and Wildlife Service, Public domain, Wikimedia Commons.

White syndrome is an infectious disease that kills coral tissue. Over six years, scientists surveyed reefs on the Great Barrier Reef. Each summer they counted the number of weeks in which the sea was at least 1 °C warmer than normal ("warm weeks"), and the number of new cases of disease per 1000 coral colonies. Reefs were grouped by coral cover.



a **Identify** the number of warm weeks below which disease stays low on reefs with high coral cover. **[1]**

b **Compare** the results for reefs with high and low coral cover. **[2]**

c **Suggest** why disease spreads more where coral cover is high. **[1]**

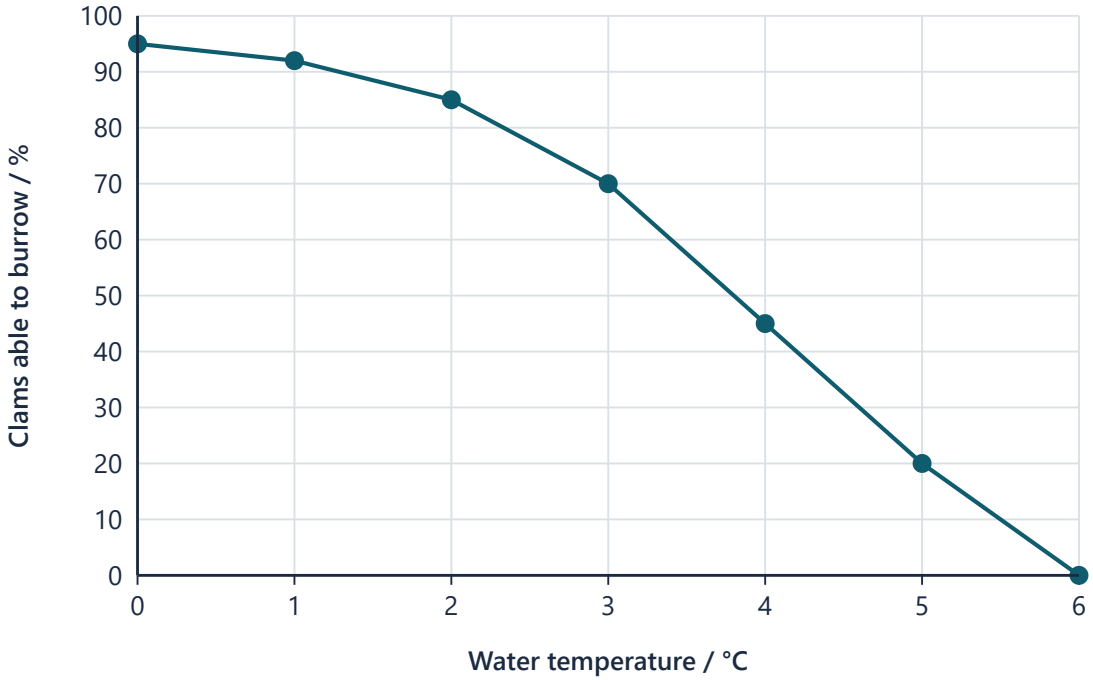
d **Suggest** two other effects that rising carbon dioxide levels could have on coral reefs. **[2]**

e **State** one advantage of a field study like this compared with experiments in tanks. **[1]**

2 A warming Antarctic sea

6 marks

The Antarctic soft-shell clam (*Laternula elliptica*) lives buried in mud on the sea bed, where the water is normally about 0 °C. Clams were kept at different temperatures for two weeks, then placed on mud, and the percentage that could bury themselves was recorded.



a **Estimate** the temperature at which half the clams can burrow. **[1]**

b **Suggest** why no clams can burrow at 6 °C. **[1]**

c Less oxygen dissolves in warmer water. **Explain** how this could add to the effect of temperature on the clams. **[2]**

d Some Antarctic waters have warmed by about 1 °C in 50 years. **Discuss** the long-term survival of this species. **[2]**