Oxford Cambridge and RSA

GCSE Biology B (Twenty First Century Science)

J257/03 Breadth in Biology (Higher)

Question Set 21

1 In the past, humpback whales have been hunted for meat, oil and blubber (fat).

This hunting (known as whaling) caused their numbers to decrease and humpback whales to beclassed as an endangered species.

Whaling was banned in 1986.

The data in the table shows how the estimated number of humpback whales has changed overtime.

	Estimated humpback whale population
Before whaling	125 000
Before the ban on whaling in 1986	Less than 5000
2015	24 500

(a) Explain why scientists can only estimate how many humpback whales there are. **[1]**

Not all whales will be counted as some may inhabit unknown areas or regions inaccessible to humans. The population of humpback whales is too large to accurately count.

(b) In 2015, humpback whales were removed from the endangered species list. Do you agree with this decision?

Justify your answer using data from the table. **[1]**

Yes, although population numbers in 2015 are low in comparison to numbers before whaling, the numbers are high enough that the population can sustain itself and is not at immediate risk of extinction. Given that whaling is banned, population numbers will likely continue to rise.

(c) Current estimates of population size suggest that the number of humpback whales may not be increasing. **[2]**

Suggest **two** possible reasons for this.

Decline in food source abundance. Environmental pollution (e.g. sewage leaks, oil spills, litter) may negatively impact the health of humpback whales **[1]**

(d) In 2018, Japan announced that it will start to hunt whales again.

Use the data in the table to explain why scientists are concerned.

Current population numbers are already much lower than before whaling (24500 cf 125 000) so the reintroduction of whaling may have a much more significant effect on the number of whales. Population numbers will likely decline to a greater extent than before, putting humpbacks at risk of extinction.

(e) Whales migrate each year to breeding grounds.

On average, the distance travelled is 5000 km and they travel at an average speed of 1.6 km per hour.

Calculate how many **days** it will take the whales to reach the breeding grounds.

Use the equation: time = distance ÷ speed

Give your answer to **2** significant figures.

1·6 km/hour = 1·6 × 24 = 38·4 km/day
t = 5000 ÷ 38·4 = 130 days

Time in days = ……130…… **[3]**

Total Marks for Question Set 21: 8