

Cambridge International AS & A Level

## BIOLOGY (9700) PAPER 2

Past Paper Questions By Topic





Chapter 13

Selection and evolution





## 13.1 Natural and artificial selection

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Globally, measles is an important disease that mainly affects children. Many deaths from measles occur in children under five years of age.

Table 3.1 shows the population of six countries in Africa in 2009 and the number of cases of measles per 100 000 people for the four years 2009 to 2012.

All six countries are classified as low-income countries.

Table 3.1

country	population in 2009	number of cases per 100 000 people			
		2009	2010	2011	2012
Central African Republic	4266000	0.26	0.05	15.31	3.12
Chad	11371000	1.45	1.66	71.60	0.96
Eritrea	5 5 5 8 0 0 0	1.48	0.89	0.81	3.16
Ethiopia	84838000	1.39	4.86	3.64	4.74
Gambia	1628000	0.00	0.12	0.00	0.00
Niger	15303000	5.23	2.34	4.67	1.59

(a) (i) The actual number of cases of measles in Chad in 2009 was 165 and in Eritrea was 82. Calculate the actual number of cases of measles in Ethiopia in 2009. Show your working.

[2]

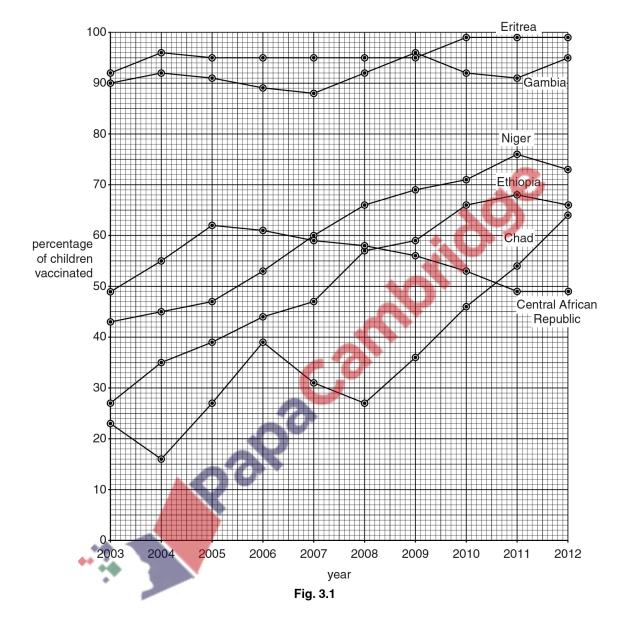
(ii)	Use the data for Chad, Eritrea and Ethopia to explain the advantages of showing the lata in Table 3.1 as number of cases of measles per 100 000 people rather than the latual number of cases.	
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Fig. 3.1 shows the percentage of children vaccinated against measles over a ten year period from 2003 to 2012.

- The percentage vaccinated represents children under one year of age who have been given at least one dose of the vaccine against measles in the given year.
- The data are for the six African countries shown in Table 3.1.









(b)	Vaccination is known to protect populations against infectious diseases.
	Some of the data in Table 3.1 (on page 4) and Fig. 3.1 (on page 6) support this statement.
	Describe the data that support this statement <b>and</b> comment on the data that do <b>not</b> support this statement.
	[4]
(c)	The successful eradication of smallpox involved an intensive global vaccination programme. It is hoped that the same can be achieved with measles.
	Outline <b>two</b> features, apart from cost, of the smallpox eradication programme that may have made it easier to eradicate than measles.
	[2]
(d)	State precisely the type of immunity gained by receiving a measles vaccine.
	[1]





financial costs must be considered.
State two examples of these costs.
1
2
[2]
Papa Cantibridge.

(e) Planning the prevention and control of measles using a vaccination programme means that







