Answers to data response and decision making exercises

With a population in 2016 of 187 million, Nigeria contains almost half of the people living in the continent of Africa and is the seventh most populous state in the world. It is situated on the coast of central West Africa and in terms of area is about twice the size of the American state of California. Its capital is Abuja and its largest city and most important economic trading centre is Lagos.

Fig. 8.19 Location of Nigeria.

Fig. 8.20 Nigeria.

1. Table 8.1 shows some important information about the population of Nigeria in 2016.

Year	Population	Yearly change	Migrants (net)	Median age (years)	Fertility rate	Density (people per sq km)	Urban population (% of total)	Country's share of world population (%)
2016	186 987 563	4 785 601	–60 000	18	5.67	205	49	2.52

Table 8.1 Population data for Nigeria 2016.

a) What is a 'migrant'?
Someone who permanently moves into or out of a country. If people move in from another country they are known as immigrants, and are called emigrants if they move out.

b) What is 'fertility rate' a measure of?
The average number of children a woman gives birth to in a region or country of the world during the course of her lifetime.

c) What does 'urban' population mean?
The proportion of people in a country who live in towns and cities as opposed to those who live in rural or largely countryside areas.

2. Table 8.2 shows how the population of Nigeria is projected to change between 2020 and 2050.

Year	Population	Yearly change	Migrants (net)	Median age (years)	Fertility rate	Density (people per sq km)	Urban population (% of total)	Country's share of world population (% of total)
2020	206 830 983	4 925 804	–60 000	18	5.41	227	52.6	2.81
2030	262 599 107	5 808 283	–56 000	19	4.74	288	60.6	3.23
2040	327 405 603	6 688 076	–60 000	21	4.12	360	67.4	3.7
2050	398 507 704	7 222 353	–60 000	23	3.59	438	74.1	4.22

Table 8.2 Projected population change in Nigeria 2020–2050.

a) How many people will be added to the population of Nigeria between 2020 and 2050?
191 676 721

b) By how much will the fertility rate drop between 2020 and 2050?
1.82

c) Suggest a reason why the proportion of 'urban' Nigerians will increase so much by 2050.
People will move from the countryside to take up jobs created in towns and cities.

3. Fig. 8.21 is the population pyramid for the projected population of Nigeria in 2050.
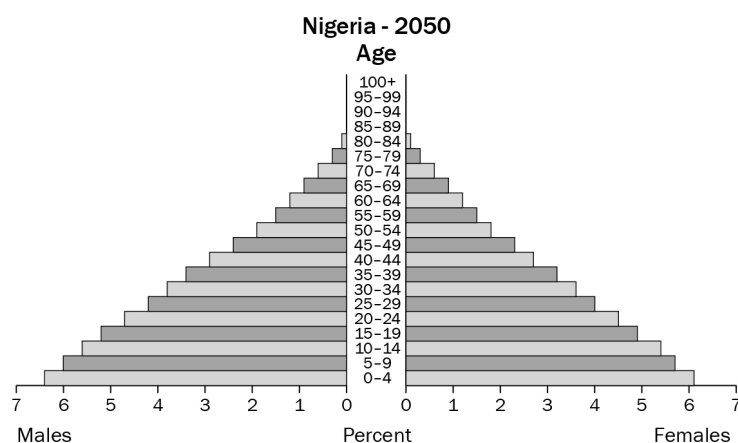

Fig. 8.21 Population pyramid for Nigeria 2050.

a) What percentage of the population will be female and aged 5–9 years in 2050? 5.6% or 5.7%

b) What percentage of the population will be male and aged 50–54 years in 2050? 1.9% or 2.0%

c) Describe three features of the population pyramid that are typical of Less Economically Developing Countries (LEDCs).

i. It has a wide base because the fertility rate will still be high at 3.59 by 2050. The considerable number of children being born will mean that the country will have a large proportion (approximately 35%) of young dependents aged 0-14 years.

ii. The proportion of people in each age group declines very regularly for both males and females as they get older. This suggests that the country will still have a relatively high death rate by 2050, affecting people of all ages fairly evenly.

iii. There is a narrow short top to the population pyramid which shows that only approximately 7% of the population are old dependents aged over 65 years. This is because life expectancy will still be low due to the high death rate which still exists.
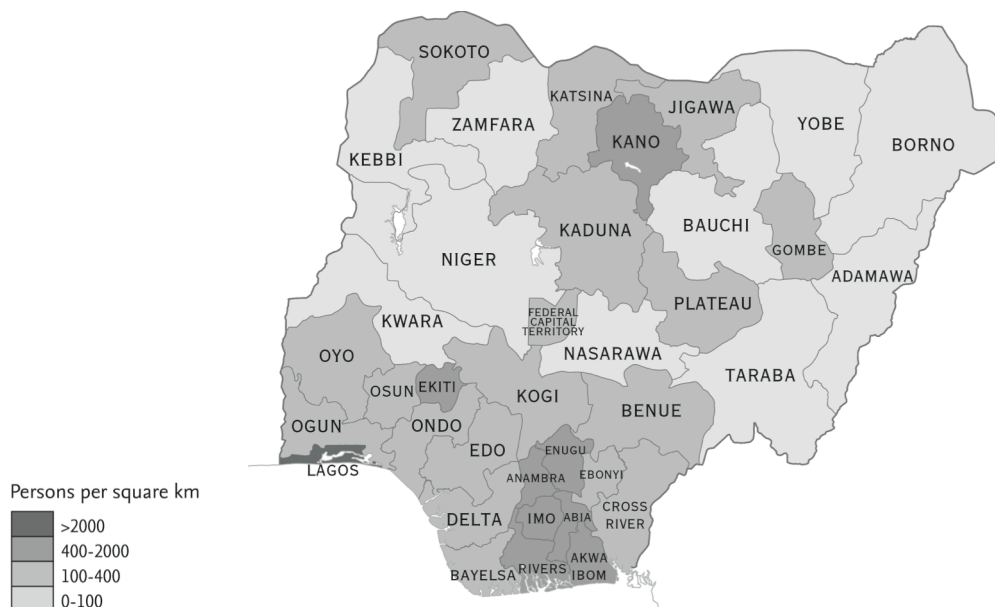
4.

Fig. 8.22 Population density within Nigeria.

Figure 8.22 shows that population density within Nigeria varies a great deal between different districts. Suggest three reasons that might help to explain why the population density of the district of Kano is so much greater than that of the district of Niger.

a) One reason could be that a physical factor such as the climate of Kano is much more favourable for farming than elsewhere in the country. For example, it may have a temperate climate with mild temperatures and precipitation distributed evenly through the year compared to other areas which may suffer from seasonal droughts or floods.

b) Kano could possess much higher quantities of natural resources such as minerals, forests and water compared with other districts of Nigeria. If this is the case then manufacturing and service industries will set up in the area to exploit them. People looking for work from surrounding districts will almost certainly then move into Kano, boosting its population density.

c) If Kano has very good communication links by way of roads, railways, rivers and airports to elsewhere in the country and overseas then this is likely to increase its population density. Good transport links are important for trade which will attract companies which export goods. In turn, people seeking work will be drawn into the Kano district to fill newly created jobs.

5. The rate of urbanisation in Nigeria is one the fastest of any country in the world. This increase is already causing a number of serious environmental problems as shown in Figures 8.23–26.

Fig. 8.23 Goats and chickens searching in street rubbish in Kano, Nigeria.

Fig. 8.24 Slum in Lagos, Nigeria.

Fig. 8.25 Deforestation in Nigeria.

Fig. 8.26 A water kiosk in Nigeria.

Describe and explain the causes and effects of each of the environmental problems shown in the images.

Urbanisation is the rate of increase in people living in towns and cities. By 2050 urban residents in Nigeria will rise by around 200 million. As towns and cities expand to cope with such an increase, surrounding natural areas, such as forests as well as vital farmland, are lost under new housing. Such urban sprawl, as it is called, is an important reason globally for the loss of forest habitats. In LEDCs like Nigeria, there are often insufficient funds available to provide important services such as refuse disposal, improved water supplies and affordable housing for people living in urban areas. As city populations rise, this

situation gets worse, leading to rubbish accumulating in the street, improved water only being available from standpipes used by thousands of people every day, and many are forced to live in slum or shanty dwellings without fresh water, power supplies or adequate sewage removal. Death causing diseases such as cholera and diarrhoea then become a real risk to the young.

6. According to the World Bank, only 28 per cent of Nigerians have access to improved sanitation and this is a major reason explaining why life expectancy is low at 52 years and infant mortality high at 117 deaths per 1000 live births by the age of five years. This compares for example with a life expectancy of 82 years and an infant mortality rate of 3 in Sweden.

   Explain what 'improved sanitation' is and, using examples that you have studied from elsewhere in the world, describe the kind of things that could be done in an LEDC such as Nigeria to improve the sanitary conditions in which people live.
   Improved sanitation involves ensuring that human waste is always hygienically removed and treated away from the risk of human contact and the diseases this may cause. A flush toilet connected to a piped sewage system is a good example. Such high-tech and expensive solutions are not always appropriate in LEDCs such as Nigeria. Other LEDCs such as Kenya have already begun installing much cheaper, sustainable alternatives, which rely on local resources and expertise. The government of Nigeria could adopt the same approach. In Nairobi, for example, the Kenyan government has been working with Oxfam, a non-governmental development agency, to install cheap and portable plastic 'fresh life' toilets which hygienically separate human liquid and solid waste. The toilets are then emptied by a local company that processes the waste to make organic fertiliser and biofuel pellets that are sold back to residents to fertilise their gardens and heat and light their homes.

7. In 1956 the government of Nigeria discovered oil in Ogoniland, which covers approximately 1000 sq km in Rivers State in the southern Niger Delta region of the country. Ogoniland forms part of the third largest mangrove forest ecosystem in the world and is home to over one million indigenous Ogoni people.

Fig. 8.27 Location of Ogoniland.

Fig. 8.28 Mangrove forest.

Fig. 8.29 An Ogoni woman catching fish in the mangrove forests of the Niger Delta.

a) Why would the government of Nigeria have wanted to extract as much oil as possible from Ogoniland?

Oil is a valuable fossil fuel which is vital to the economies of countries throughout the world. For example, it is refined to manufacture petroleum, diesel and aviation fuels. The more oil produced from Ogoniland, the greater the income the government will receive from exporting it. The income can then be used to provide public services such as schools, medical centres and housing to significantly improve the life chances of people living in the country. The government will also want to see production high because more oil at home will assist industrial growth through, for example, companies using the oil to generate electricity, heat homes and lay asphalt on the roads.

Read the following extract, which is from a report by the United Nations Environment Programme (UNEP) about the impact of oil exploitation in Ogoniland.

While oil exploration and production in the Niger Delta began in the late 1950s, operations were suspended in Ogoniland in the early 1990s due to disruptions from local public unrest. The oilfields and installations have since largely remained dormant. However, major oil pipelines still cross through Ogoniland and oil spills continue to affect the region, due to such factors as a lack of maintenance and vandalism to oil infrastructure and facilities.

Environmental contamination in Ogoniland from oil spills remains untreated, or only partially remediated, today.

Fig. 8.30 A boy stands next to a danger sign in an oil contaminated area of Ogoniland, Nigeria.

Fig. 8.31 An oil pipeline crossing a mangrove forest in Ogoniland, Nigeria.

b) Describe the impacts that oil pollution can have on marine ecosystems.

Liquid petroleum floats on the surface of water and spreads out until it is just one molecule thick. A small quantity of oil can therefore have a devastating impact. Surface oil prevents sunlight passing through and contributes to deoxygenating the water and preventing photosynthesis in plants. Oil penetrates the fur and plumage of animals and birds, destroying their insulation and water-resistant properties. Oil is highly caustic, and when swallowed by preening wildlife, will dissolve stomach linings and cause blindness. If chemical detergents are used to manage a spill then the treated oil will often sink to the bottom of water bodies, covering coral and poisoning the silt and sand.

Mangrove forests are considered one of the most threatened tropical ecosystems. At least 35% of the world's mangroves have already disappeared. In India, the Philippines and Vietnam, this figure reaches as high as 50%, and in the Americas, mangroves are being cleared more quickly than tropical rainforests.

There are many threats to mangrove forests and their habitats – pollution is a major one. Pesticides, fertilisers and other man-made toxic chemicals carried along by rivers from upstream sources can seriously harm and kill animals that live in mangrove forests. Furthermore, oil pollution smothers mangrove roots and results in the suffocation of trees.

c) Drawing on examples that you have studied, outline other causes of forest destruction apart from pollution, around the world.

Deforestation is the clear cutting or permanent destruction of forest and woodland. There are many reasons for deforestation around the world as can be seen in regions of tropical rainforest such as the Amazon Basin. Here, constructing new road links like the Belem-Brasília highway allows an easy route of entry to the forest by millions of settlers who remove the trees to make way for commercial cattle farms and also subsistence gardens. Fourteen percent of all forest loss each year is to make way for beef ranches. Elsewhere trees are removed to be used in the construction of buildings and for the manufacture of furniture and paper. Globally ten billion trees are processed into paper products each year, which accounts for 35% of all the trees felled around the world. Two other reasons include the loss of forest when huge open pit mines and quarries are opened to extract valuable minerals like gold and emeralds, and the outward spread of cities. For example, urban sprawl in Atlanta has been responsible for the loss of 65% of the city's tree cover to construction since 1973.

UNEP estimates that restoring the degraded mangrove forest ecosystem of the Ogoniland is likely to take at least thirty years and become the world's most wide-ranging and long-term oil clean-up exercise ever undertaken.

d) Using other examples that you have studied, describe how oil pollution of the Ogoniland region might be managed in a way that could mean that the environment there might eventually be restored.

Using floating booms such as those deployed after the Deepwater Horizon tanker disaster in the Gulf of Mexico in 2010 can prevent oil spreading, particularly to highly ecologically important sites. Oil sludge that builds up against the boom is then sucked up and removed by special boats called skimmers. Using sorbents in Ogoniland is something else which could be considered. These are organic materials such as hay and volcanic ash which absorb the oil and which can then be disposed of in a sustainable way. Having a carefully prepared plan to implement as soon as a spill occurs will also help to significantly reduce the effects of pollution. A good example of what could be implemented in Ogoniland is the Rhine Action Plan, which was set up following the catastrophic Sandoz chemical spill in 1986. This included a requirement for every factory along the river having to install waste water plants to ensure that no polluted water was discharged into the river again. Chemical dispersants that break up the oil and allow it to sink to the river or seabed should be avoided if at all possible.