Population

Population Change – student assessment task

In this enquiry, you are going to find out what is happening to the rate of population growth in the world. You will do this by looking at the changes in birth rate and death rate in 10 countries. You will see how these rates have changed over the period 1980 to 2010. Then you will try to predict how the birth and death rates might go on changing in the future. The information for these 10 countries is shown on the Data sheet included in this brief.

The 10 countries that you will investigate are:

- Afghanistan
- Bangladesh
- Brazil
- China
- India
- Jamaica
- Kenya
- Nigeria
- Pakistan
- South Africa

Use your atlas to find out where all these countries are.

These countries have been chosen because:

- They include the two countries with the biggest populations: China and India.
- They also include some other very big populations: Bangladesh, Brazil, Nigeria, South Africa and Pakistan.
- All of them have close ties with the UK. Some have been British colonies in the past and are the original homes of many migrants to the UK. Some are important trading partners. Afghanistan has had British troops fighting there recently.
- All of them have been classed as developing countries, although countries like China and Brazil have become quite developed. This is important because it is the poorer developing countries that usually have the highest birth rates.
- By studying these 10 countries, you should get a reasonably clear idea of how the whole world is going.

Tasks

You should carry out some, or all, of these tasks. Discuss with your teacher which of them you should start with. You might be best to work in groups and divide the tasks between members of each group.

The first enquiry question is, ‘What is happening to the rate of population growth in these ten countries?’ These tasks will help you answer this question:

- Draw a graph for each country to show how its birth rate and death rate have changed over the 30-year period. Line graphs will be the best way to show these figures. Use two different colours for your lines, one for birth rate and one for death rate.
- Work out how the rate of population growth has changed over the 30-year period for each country. You can do this by subtracting deaths per thousand from births per thousand for each year: 1980, 1990, 2000 and 2010. This will give you the population growth rate per thousand population for that year.
You could either mark the population growth rate figures on your graphs showing the birth and death rates for each country or you could mark the population growth rates for all 10 countries on a separate graph. If you do this, you will have to show each country with a different coloured line.

Can you see any trends? Is birth rate going up or down in most of the countries? Is death rate going up or down in most countries? Is the rate of population growth going up or down in most countries?

Are there any countries that do not follow the patterns that you saw? If so, can you explain why they are different?

The second enquiry question is, ‘Does the level of wealth of a country help to explain the rate of change of its population?’ These tasks will help you answer this question:

- Draw three sets of axes:
  - x-axis (horizontal) is GDP per person, from $0 on the left to $11,000 on the right
  - y-axis (vertical) is birth rate or death rate or rate of population increase, from 0 at the bottom to 50 at the top.

- Using the figures for 2010:
  - draw a scatter graph to see if GDP per person is linked to birth rate.
  - draw a second scatter graph to see if GDP per person is linked to death rate.
  - draw a third scatter graph to see if GDP per person is linked to the rate of population increase.

- When you draw each graph, mark a clear dot or circle or cross for each country. Do not join the points together.

- Now look carefully to see if there is a pattern in each of the graphs, for example:
  - As GDP per person goes up, does birth rate go up or down or is there no real pattern?
  - As GDP per person goes up, does death rate go up or down or is there no real pattern?
  - As GDP per person goes up, does rate of population increase go up or down or is there no real pattern?

- If you see that there are links, then you need to try to explain why those two sets of data are linked. This is the important part of the enquiry! This is where you really show whether you are a good geographer.

**Concluding your enquiry**

Now you have to decide what the future of the world’s population is likely to be. In Unit 3: Enquiry worksheet 7 you were asked to draw three lines on a graph to show different predictions of how world population might change. Look back at your graph. (If you did not do that activity, ask your teacher to provide you with a copy of the graph.)

1. Which of the three lines seems the most likely to show what will actually happen?
2. You never can tell what the world is going to be like in the future. What might happen to change your predictions?
### Data sheet

<table>
<thead>
<tr>
<th>Country</th>
<th>Birth rate per thousand</th>
<th>Death rate per thousand</th>
<th>GDP per person in $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>52</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>43</td>
<td>35</td>
<td>27</td>
</tr>
<tr>
<td>Brazil</td>
<td>32</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>China</td>
<td>18</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>India</td>
<td>35</td>
<td>31</td>
<td>26</td>
</tr>
<tr>
<td>Jamaica</td>
<td>29</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td>Kenya</td>
<td>49</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td>Nigeria</td>
<td>47</td>
<td>44</td>
<td>43</td>
</tr>
<tr>
<td>Pakistan</td>
<td>42</td>
<td>40</td>
<td>31</td>
</tr>
<tr>
<td>South Africa</td>
<td>35</td>
<td>29</td>
<td>24</td>
</tr>
</tbody>
</table>