Page 22: Practical skills
1 The map below shows the date and time of the path of Typhoon Haiyan according to the table information:

2 Countries affected: The Philippines, Vietnam, Laos and China. (Map distortion does not make this clear.)
3 Typhoon Haiyan tracked in a north-westerly direction before turning north as it approached landfall.
4 Typhoon Haiyan was moving fastest on 7 November.

Page 68: Numerical skills
• Sea wall: £5000 per metre = £10 million cost
• Rock armour: £1000 per metre = £2 million cost
• Groynes: £5000 each (placed every 200 m) = £50,000 cost
• Gabions: £110 per metre = £220,000 cost
Therefore the groynes would be the most cost effective.

Page 76: Graphical skills
1 The peak rainfall occurred between three and four hours after the storm began.
2 The peak discharge was at 6.5 hours after the storm began.
3 The lag time was 3.5 hours.

Page 111: Graphical skills
4 The main trend is that as GNI increases the infant mortality rate (IMR) decreases. This is because wealthier countries are able to invest in better housing and living conditions, and a better health care system. The trend is not linear but suggests steps or ‘jumps’ in lowering IMR as wealth increases. There are anomalies such as Nepal having a lower IMR than expected, and Saudi Arabia a higher IMR than expected; often these anomalies are linked to lifestyles and culture.

Page 115: Statistical skills
1 The median of the ‘number of doctors’ is 1.9 (per 1000 people).
2 The mean of the ‘cases of tuberculosis’ is 140.53 (2108 ÷ 15) (per 100,000 people).
3 The range of ‘number of doctors’ is 2.8 (2.8–0). The range of the ‘cases of tuberculosis’ is 831 (834–3).
4 The modes for the ‘number of doctors’ are 1.9 and 2.5 (a bi-modal pattern).
5 Modal class frequencies are: 0–0.5 = 2, 0.6–1.0 = 3, 1.1–1.5 = 0, 1.6–2.0 = 2, 2.1–2.5 = 4, 2.6–3.0 = 1. So 2.1–2.5 is the modal class.
Answers to skills questions

Page 125: Graphical skills

The Nigerian data is given in separate distinct categories so a bar graph or pie chart would be appropriate because each category can be shown separately and compared. (An advanced method may be to have one long bar representing 100% and divide it into the % of GDP proportions.)

For example:

Page 121: Statistical skills

1 The percentage change in number of tourists between 2000 and 2015 was +60.6% (2.12 x 100 ÷ 1.32 = 160.6 then take away 100 to find the change).

2 The percentage change in number of cruise passengers between 2000 and 2015 was +72.5% (1.57 x 100 ÷ 0.91 = 172.5 then take away 100 to find the change).

3 Weaknesses may include: the length of time that each tourist stays is not considered; it is not stated how many cruise passengers actually get off their ships to land in Jamaica; the amount of money that the tourists or cruise passengers spend is not given; the data is not compared with regional or international trends for example, how does the increase in numbers visiting Jamaica compare with the change in number of tourists worldwide?

Page 135: Practical skills

Summary arguments in favour:

<table>
<thead>
<tr>
<th>Heathrow</th>
<th>Gatwick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will help UK’s economy grow through providing transport for trade, business and tourism</td>
<td>Noise compensation payments will be made</td>
</tr>
<tr>
<td>£100 billion of economic benefits to the UK</td>
<td>Limit to the area affected by noise</td>
</tr>
<tr>
<td>Transport and communications infrastructure is already in place and operational</td>
<td>No government (tax payer) money required and a commitment of money to further investment</td>
</tr>
<tr>
<td>Tax money created to help boost the UK economy</td>
<td>Good air quality record and confidence in keeping pollution low</td>
</tr>
<tr>
<td>120,000 new jobs created</td>
<td>Low charges for air passengers</td>
</tr>
<tr>
<td>Ability to connect with the world</td>
<td>Ability to connect to UK regions</td>
</tr>
<tr>
<td>Ability to compete with other international airports</td>
<td>Can complete expansion by 2025</td>
</tr>
</tbody>
</table>
Page 144: Graphical skills

For example:

- Million tonnes of wheat
- Million tonnes of rice

Page 151: Numerical skills

1. Completed table as below:

<table>
<thead>
<tr>
<th>Primary fuel</th>
<th>1990</th>
<th>Index</th>
<th>2000</th>
<th>Index</th>
<th>2010</th>
<th>Index</th>
<th>2014</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>102.1</td>
<td>100</td>
<td>138.3</td>
<td>138.2</td>
<td>69.0</td>
<td>68.9</td>
<td>43.7</td>
<td>43.7</td>
</tr>
<tr>
<td>Natural gas</td>
<td>45.5</td>
<td>100</td>
<td>108.4</td>
<td>238.2</td>
<td>57.2</td>
<td>125.7</td>
<td>36.6</td>
<td>80.4</td>
</tr>
<tr>
<td>Coal</td>
<td>56.4</td>
<td>100</td>
<td>19.6</td>
<td>34.8</td>
<td>11.4</td>
<td>20.2</td>
<td>7.3</td>
<td>12.9</td>
</tr>
<tr>
<td>Bioenergy and waste</td>
<td>0.7</td>
<td>100</td>
<td>2.3</td>
<td>328.6</td>
<td>5.9</td>
<td>842.9</td>
<td>7.9</td>
<td>1128.6</td>
</tr>
</tbody>
</table>

2. As time is involved a multiple line graph is appropriate to show the change over time. For example,
Page 169: Graphical skills

Many of the high performers indicated in Figure 15 are also featured in the map produced from Table 3 data, but in both importing and exporting categories. For example: USA, France, Italy, Germany and Japan are all net importers, which helps them to achieve energy access and security. Canada, Australia, Norway and Saudi Arabia have high energy access and security but are exporters of energy, suggesting that they have surpluses after meeting their own needs. The NEEs India and China are relatively low performers in Figure 15 despite the map from Table 3 showing that they import considerable energy. The pattern only partially matches as the energy use and supply around the world is complicated.

Page 173: Photographic interpretation skills

Reduced transpiration

Deforestation (removal of natural vegetation)

Destruction of forest structure

Soil erosion

Damage to trees

Removal of habitats

Increased run-off

Change to rivers and streams

Degradation of landscape

Possible extinction of species