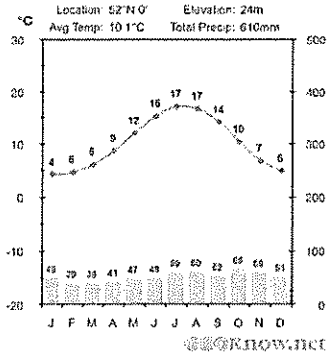
# Instructions on how to draw a climate graph

## How to make a Climate Graph




### Step 1:

Have your axis sheet in front of you.
Decide which set of data you are using from the data sheet

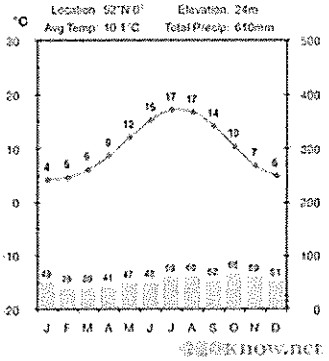
### Step 2:

a) Start with precipitation, this is the blue bars on a climate graph.
b) Look at the rainfall January on your data table.
c) Using a ruler, draw January's rainfall as a bar on the graph.
d) Look at the axis- rainfall is on the right hand side of your graph. Draw your bar up to the number of the data.
e) Repeat for the other months!

For Temperature

a) Temperature is the line graph on the climate graph
b) Make sure you're looking at temperature and not precipitation on your data table
c) Plot the point in the middle of the month
d) The left hand side of the graph has the temperature numbers on it
e) Repeat for the other months
f) Join them together


## How to make a Climate Graph



### Step 1:

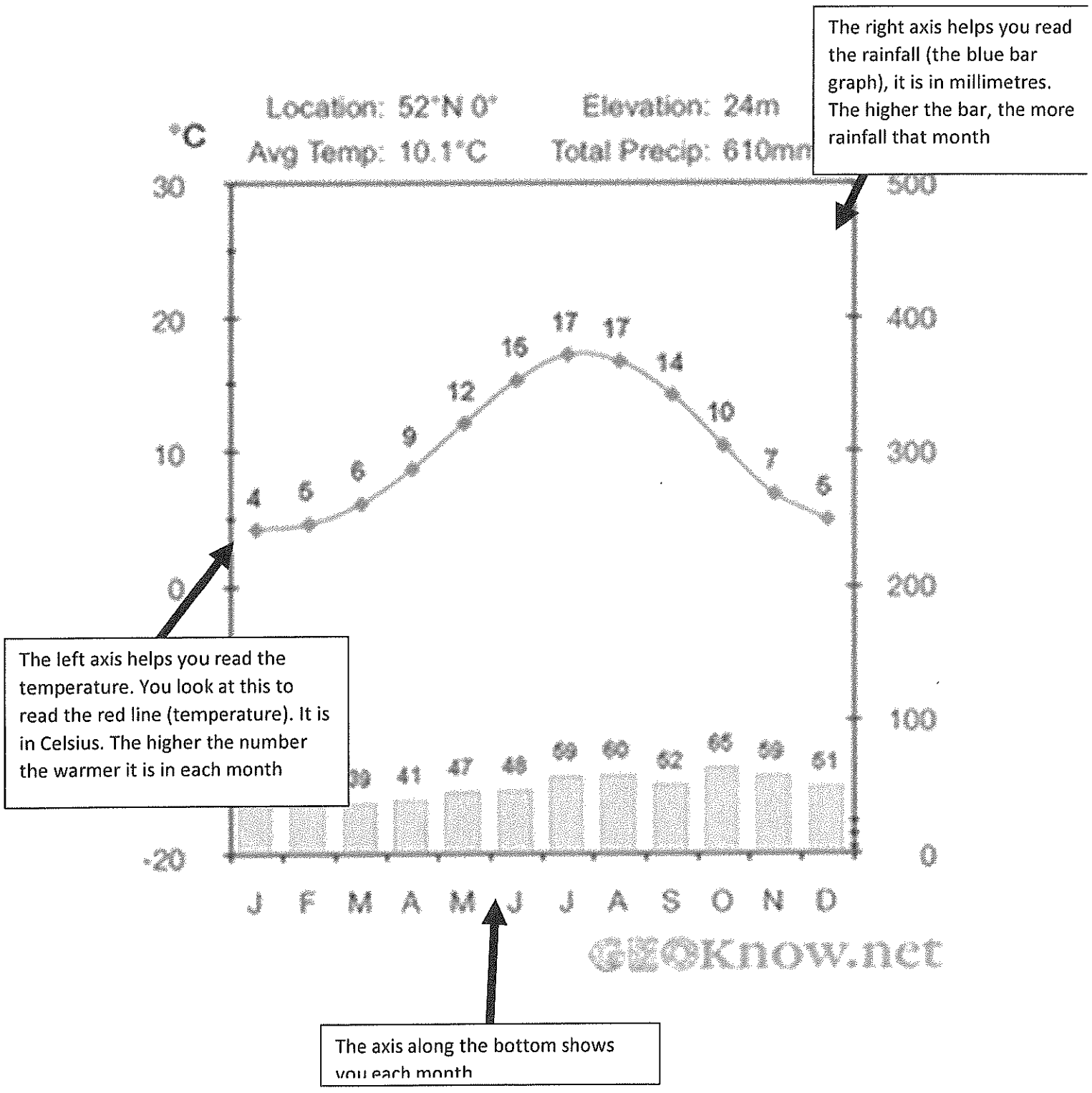
Have your axis sheet in front of you.
Decide which set of data you are using from the data sheet

### Step 2:


f) Start with **precipitation**, this is the blue bars on a climate graph.
g) Look at the rainfall January on your data table.
h) Using a ruler, draw January's rainfall as a bar on the graph.
i) Look at the axis- rainfall is on the right hand side of your graph. Draw your bar up to the number of the data.
j) Repeat for the other months!


For Temperature


g) **Temperature** is the red line on the climate graph
h) Make sure you're looking at temperature and not precipitation on your data table
i) Plot the point in the middle of the month
j) The left hand side of the graph has the temperature numbers on it
k) Repeat for the other months
l) Join them together




The right axis helps you read the rainfall (the blue bar graph), it is in millimetres. The higher the bar, the more rainfall that month

The left axis helps you read the temperature. You look at this to read the red line (temperature). It is in Celsius. The higher the number the warmer it is in each month

The axis along the bottom shows you each month

1

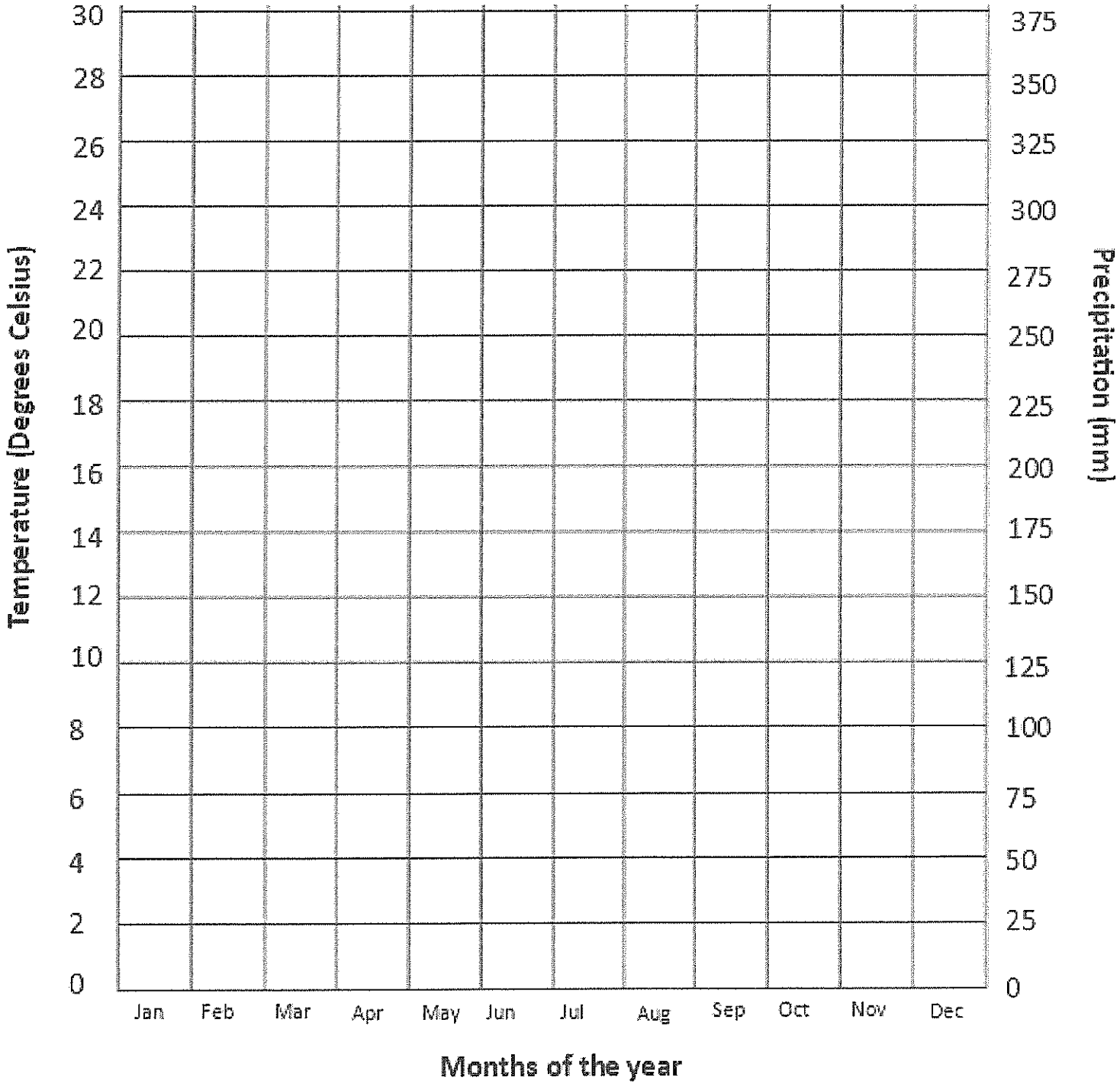
| | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall (mm) | 249 | 231 | 262 | 221 | 170 | 84 | 58 | 38 | 46 | 107 | 142 | 203 |
| Temp (°C) | 28 | 28 | 28 | 27 | 28 | 28 | 28 | 28 | 29 | 29 | 29 | 28 |

2

| | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall (mm) | 74 | 54 | 50 | 53 | 64 | 50 | 69 | 69 | 61 | 69 | 84 | 67 |
| Temp (°C) | 3 | 4 | 7 | 9 | 10 | 17 | 18 | 18 | 16 | 10 | 7 | 4 |

3

| | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall (mm) | 0 | 0 | 0 | 0 | 10 | 20 | 50 | 70 | 30 | 10 | 0 | 0 |
| Temp (°C) | 25 | 26 | 28 | 30 | 30 | 30 | 31 | 30 | 31 | 30 | 29 | 27 |



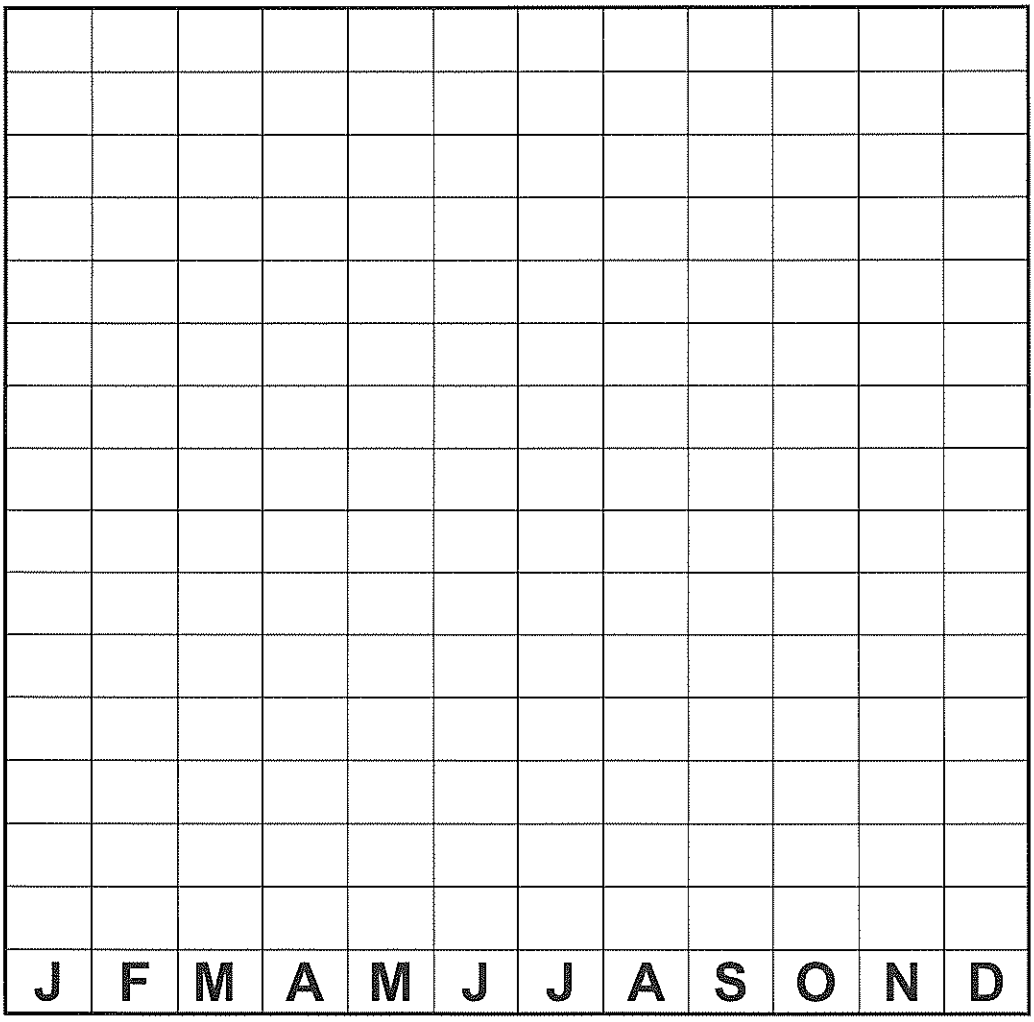

Choose table 1, 2 or 3 to graph.
Follow instructions

# Climate Graph for Cape York

Use the following data to construct a climate graph in the space provided.

| | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Precipitation (mm)** | 773 | 718 | 785 | 1012 | 313 | 131 | 58 | 39 | 35 | 189 | 470 | 797 |
| **Temperature (C)** | 27 | 27 | 27 | 27 | 26 | 25 | 25 | 25 | 26 | 26 | 27 | 27 |

**Cape York**




1. The highest temperature recorded was _____ in the month of _____
2. The lowest temperature recorded was _____ in the month of _____
3. The total yearly rainfall was _____
4. What hemisphere is this place in? _____ How do you know ? _____
5. Describe the climate of this place in your own words.

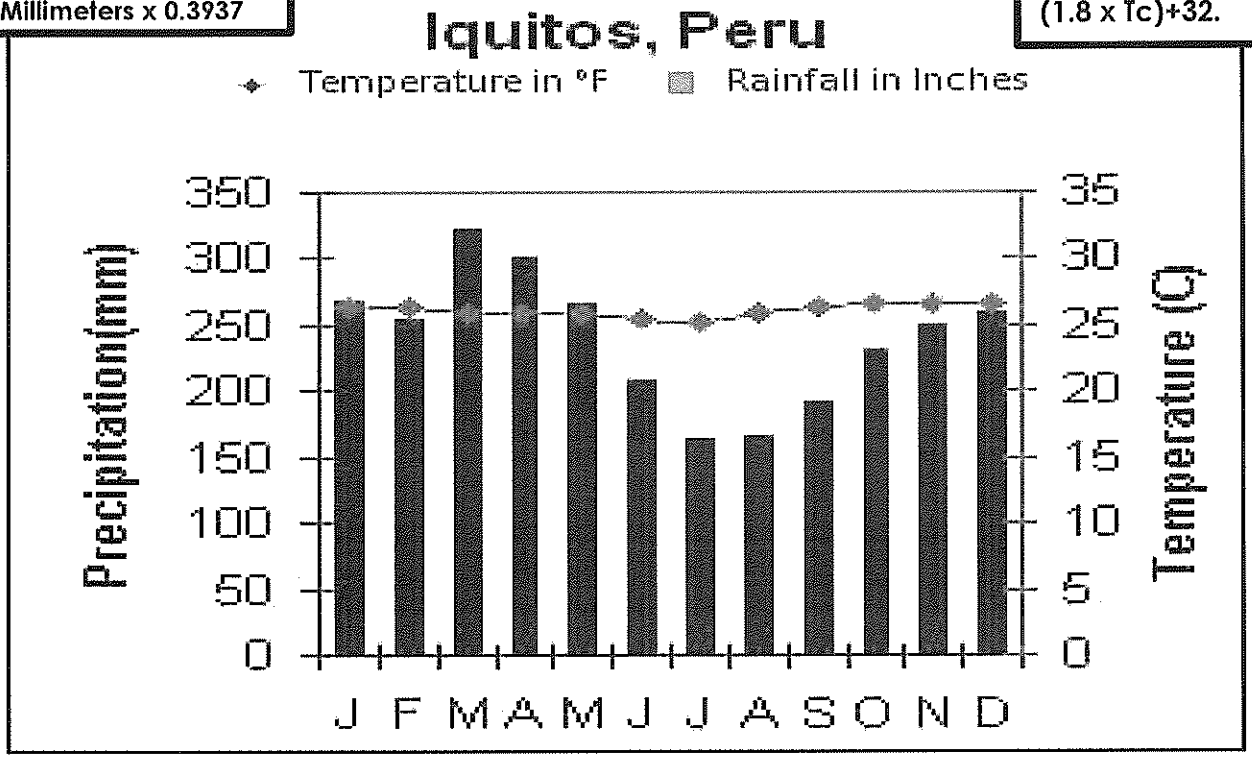
NAME: DATE: SECTION:

**Climate Graphs: Homework**

**Direction: Use the climate graph to answer the questions that follow.**

**Millimeters to Inches:**
**Number of Millimeters x 0.3937**

**Celsius to Fahrenheit:**
**(1.8 x Tc)+32.**




1. Complete the chart **(Remember to include labels!)**:

| Month | Amount of Precipitation | Amount of Temperature |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

2. For the month of May, what is the amount of precipitation in inches **(SHOW WORK)**?

3. For the month of June, what is the average temperature in Fahrenheit **(SHOW WORK)**?

4. For the month of November, what is the average temperature in Fahrenheit **(SHOW WORK)**?

5. What kind of climate do you think Iquitos, Peru has?
   A. Steppe ( Hot, dry climate with a distinct wet season in the summer)
   B. Rainforest (Very hot temperatures with a high amount of rain each year)
   C. Subarctic (Severely cold and bitter winters with short, cool summers)

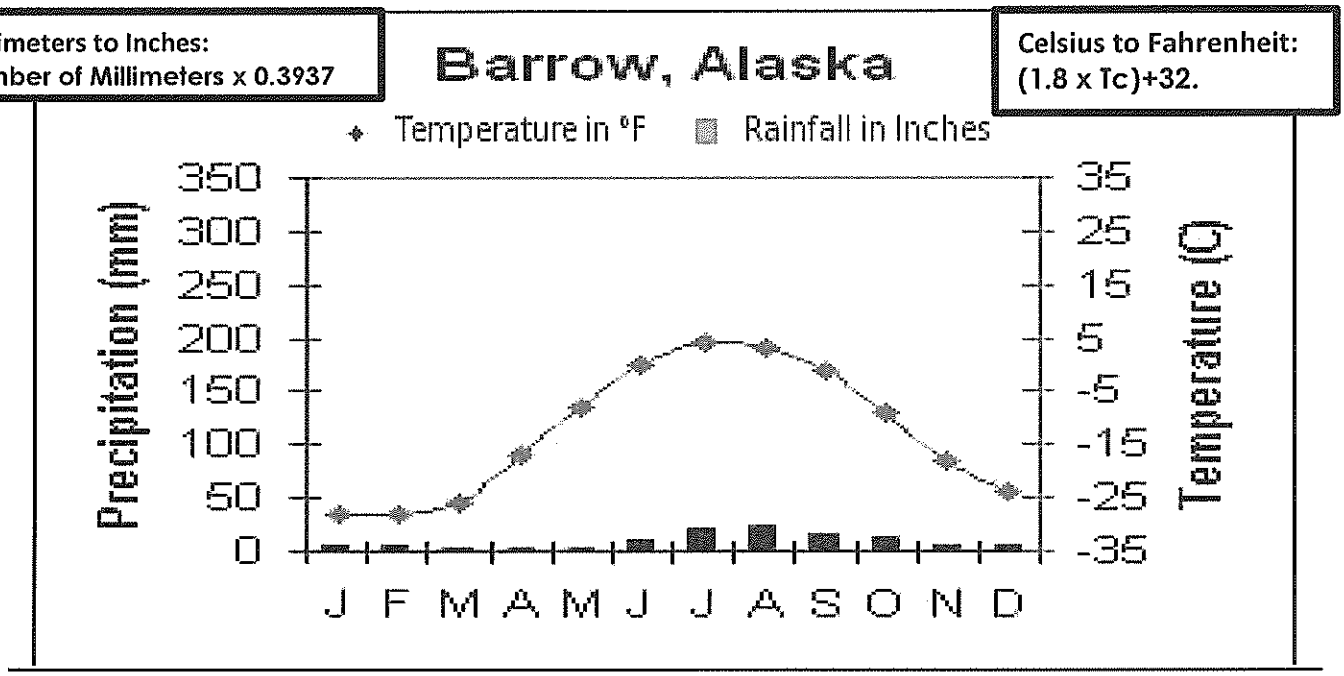
NAME: DATE: SECTION:

Climate Graphs: Homework

**Direction: Use the climate graph to answer the questions that follow.**

**Millimeters to Inches:**
**Number of Millimeters x 0.3937**

**Celsius to Fahrenheit:**
**(1.8 x Tc)+32.**




6. Complete the chart **(Remember to include labels!)**:

| Month | Amount of Precipitation | Amount of Temperature |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

7. For the month of September, what is the amount of precipitation in millimeters **(SHOW WORK)**?

8. For the month of August, what is the amount of precipitation in millimeters **(SHOW WORK)**?

9. For the month of June, what is the average temperature in Celsius **(SHOW WORK)**?

10. For the month of December, what is the average temperature in Celsius **(SHOW WORK)**?

11. What kind of climate do you think Barrow, Alaska has?
    a. Steppe ( Hot, dry climate with a distinct wet season in the summer)
    b. Rainforest (Very hot temperatures with a high amount of rain each year)
    c. Subarctic (Severely cold and bitter winters with short, cool summers)
12. Compare and contrast the climate graphs for Barrow, Alaska and Iquitos, Peru. In at least three to five sentences describe the similarities and differences of the two climate graphs.

# Climatic graphs

A climatic graph (see Figure 9.27) is a graph that shows average temperature and precipitation (rainfall) for a location over a 12-month period. It combines a line graph to show temperature with a column graph to show precipitation. Sometimes these specialised graphs are called climographs. Statistical information for the graph is provided in a climatic table (see Table 9.28).

## Drawing a climatic graph

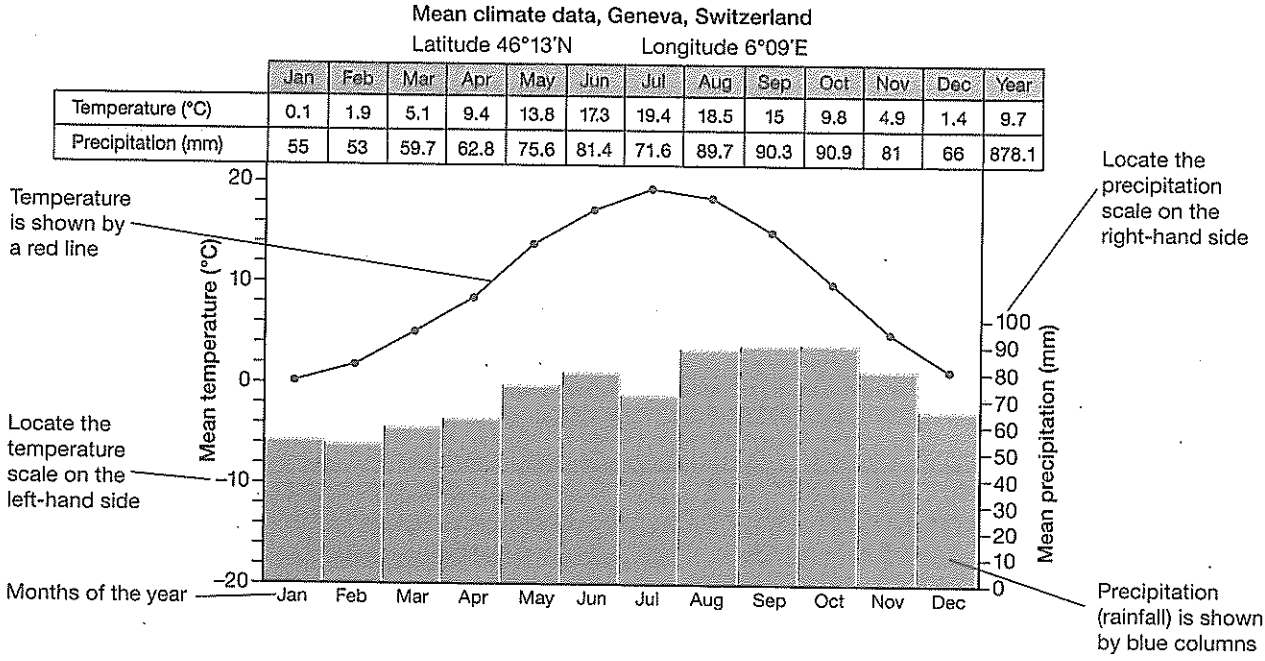
1 On a piece of graph paper, rule up the horizontal axis towards the bottom so that there are 12 spaces for the months of the year. Allow space for labelling. Write letters to represent the months in each space.
2 Rule up the two vertical axes. Label one for temperature (on the left) and one for precipitation (on the right). Mark in the units used (usually degrees Celsius and millimetres).
3 Work out the scale you will need for precipitation, which will begin at the base at zero. Make sure you leave room for the temperature line to go above the column graph without crossing into it. Record the scale on the axis.
4 Work out the scale you will need for temperature. You do not need to begin at zero. Make sure you don't squash the numbers up too closely or it will be difficult to interpret the graph. Record the scale.
5 Plot the rainfall data onto the graph. Rule a straight line across each column with a ruler. Colour in the columns in blue (to represent water). Do not leave gaps between columns.
6 Plot the temperature data. Mark a dot in the middle of ea column with a small point. Join the dots with a hand-dra curved line. Go over this line in red, ensuring that accura and neatness are achieved. There will be a gap at each en of the line. In January, refer back to the December figure and draw the line accordingly to fill the gap. In Decembe do likewise by looking at the January figure.
7 Complete the graph with a title and the latitude and longitude of the place.

**Table 9.28** Climate data for Athens, Greece

| Average temperature and rainfall | | |
|---|---|---|
| Month | °C | mm |
| *January* | 10.2 | 48.0 |
| *February* | 10.8 | 41.0 |
| *March* | 12.3 | 41.2 |
| *April* | 16.1 | 23.4 |
| *May* | 20.6 | 17.9 |
| *June* | 25.1 | 7.4 |
| *July* | 27.9 | 5.0 |
| *August* | 27.8 | 7.6 |
| *September* | 24.3 | 9.8 |
| *October* | 19.3 | 53.0 |
| *November* | 15.3 | 55.3 |
| *December* | 12.0 | 61.8 |
| **Year** | **18.5** | **371.4** |

Source: World Climate web

**Figure 9.27** Sample climate graph of Geneva showing the main features



## GeoSkills 9.15

Using the data shown in Table 9.28, draw a climatic graph for Athens, then answer the following questions.

1 Which month has the highest temperature?
2 Which month has the lowest temperature?
3 Which three months are the wettest?
4 What is the temperature range?
5 State the total annual rainfall.
6 Which month would be the best time to holiday in this location? Why?
7 In August 2004, Athens hosted the Olympic Games. Given the climate data, would you have selected August to hold the summer Olympics? Justify your answer. What other factors might be important in deciding when the Olympics will be held?

## Glossary

**temperature range** the difference between the highest temperature and the lowest

## GeoSkills 9.16

Look at the graphs in Figures 9.29 and 9.30 and answer the following questions.

1 In which hemisphere is each place located? How does the temperature graph reflect this?
2 Are they close to the equator, in the mid-latitudes or near the poles? What evidence in the temperature graph supports this?
3 Describe the seasonal distribution of rainfall for each city.
4 How many dry months does each city have?

# Interpreting a climatic graph

There are some general conclusions that can be reached when interpreting climatic graphs.

- **Hemisphere**: If the temperature increases midyear, then the warmest time of year is in the middle of the year and therefore the place is in the northern hemisphere. If the temperature decreases in the middle of the year, then the place has its coldest time of year in the middle of the year and therefore the place is in the southern hemisphere. If the line is almost horizontal, then the place is near the equator.
- **Closeness to the equator**: If the temperature is fairly high (mid-20s to high 20s in °C) and there is only a small range (less than 5°C) then the place is likely to be near the equator. In general, the further from the equator the place is, the greater the annual range of temperature. This is termed 'seasonality'. Places near the poles experience huge differences in temperature between summer and winter.
- **Seasonal distribution of rainfall**: Look at the graph over the six hottest months and see whether most rainfall (over 60 per cent) occurs during that period. This would reflect a summer maximum rainfall. Likewise, if more than 60 per cent falls in winter, then a winter maximum rainfall is indicated. If there is not more than 60 per cent in either summer or winter, then the rainfall is evenly distributed.
- **Dry conditions**: If a place experiences less than 25 millimetres of rainfall in any month, we term that month 'dry'. The greater the number of dry months, the more likely it is that the place is in a desert area.

**Figure 9.29** Colombo climate graph

**Mean climate data, Colombo, Sri Lanka**
Latitude 6°55'N Longitude 79°52'E

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (°C) | 26 | 26 | 27.1 | 27.7 | 27.8 | 27.3 | 27 | 26.9 | 27 | 26.6 | 26.1 | 26.1 | 26.8 |
| Precipitation (mm) | 84 | 64 | 114 | 255 | 335 | 190 | 129 | 96 | 158 | 353 | 308 | 152 | 2241.5 |

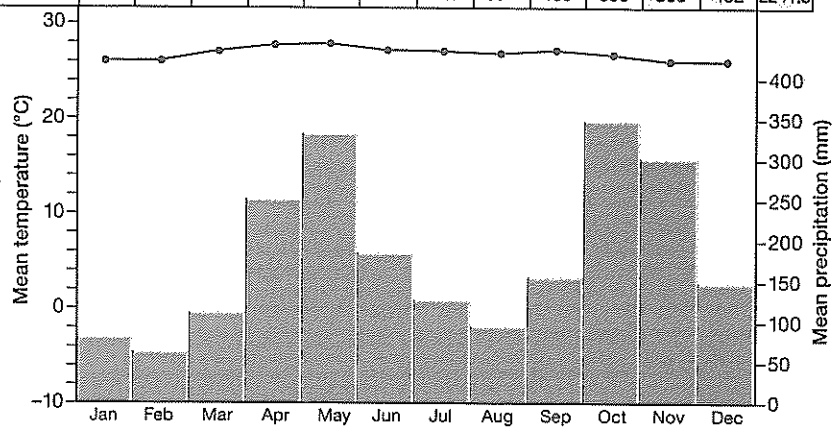
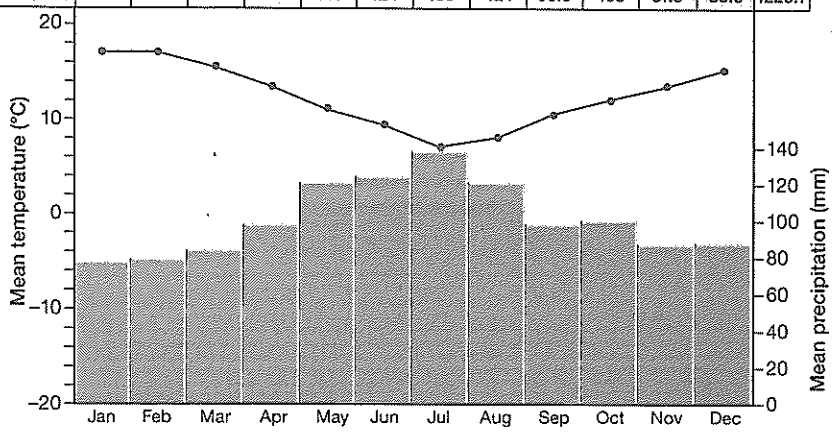



**Figure 9.30** Wellington climate graph

**Mean climate data, Wellington, New Zealand**
Latitude 41°18'S Longitude 174°46'E

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (°C) | 17 | 17 | 15.6 | 13.6 | 11.2 | 9.3 | 8.5 | 9 | 10.5 | 12 | 13.5 | 15.4 | 12.7 |
| Precipitation (mm) | 79 | 80 | 85.1 | 98.3 | 121 | 124 | 139 | 121 | 99.3 | 105 | 87.9 | 89.5 | 1229.7 |



# Population profiles

It is difficult to quickly analyse and compare population statistics when they are listed in a table (see Table 9.31). Graphing the figures allows patterns to be easily seen and compared.

A population profile is a graph of a standard style that represents the age and sex composition of a population. Sometimes these special bar graphs are called population pyramids, but this can be confusing as they can be a variety of shapes (see Figures 9.32 and 9.33), including pyramids.

Key elements of a population profile are as follows.

- Age groups are usually in five-year cohorts and are shown in the centre axis.
- The actual numbers in each age group or the percentages of the population in each age group are shown on the horizontal axis at the bottom.
- Females are usually drawn on the right side and males on the left side of the graph.

Figure 9.32 shows Australia's total population profile for 2015. It shows that 3 per cent of females and 2 per cent of males are in the over-74 age group. You can compare population profiles, as each profile represents 100 per cent of a particular population.

**Table 9.31** Singapore's population (000s), June 2013

| Age group | Males | Females | Total |
|---|---|---|---|
| 0–4 | 93 | 90 | 183 |
| 5–9 | 104 | 101 | 205 |
| 10–14 | 116 | 110 | 226 |
| 15–19 | 130 | 125 | 255 |
| 20–24 | 134 | 132 | 266 |
| 25–29 | 124 | 131 | 255 |
| 30–34 | 141 | 155 | 296 |
| 35–39 | 147 | 158 | 305 |
| 40–44 | 152 | 159 | 312 |
| 45–49 | 158 | 158 | 316 |
| 50–54 | 157 | 155 | 313 |
| 55–59 | 140 | 140 | 281 |
| 60–64 | 110 | 111 | 222 |
| 65–69 | 70 | 75 | 145 |
| 70–74 | 48 | 57 | 105 |
| 75–79 | 31 | 39 | 70 |
| 80–84 | 18 | 27 | 46 |
| 85 and over | 12 | 24 | 36 |

Note: Figures may not add up to total due to rounding.

Source: Department of Statistics, Singapore, 2014

**Figure 9.32** Australia's total population profile, 2015

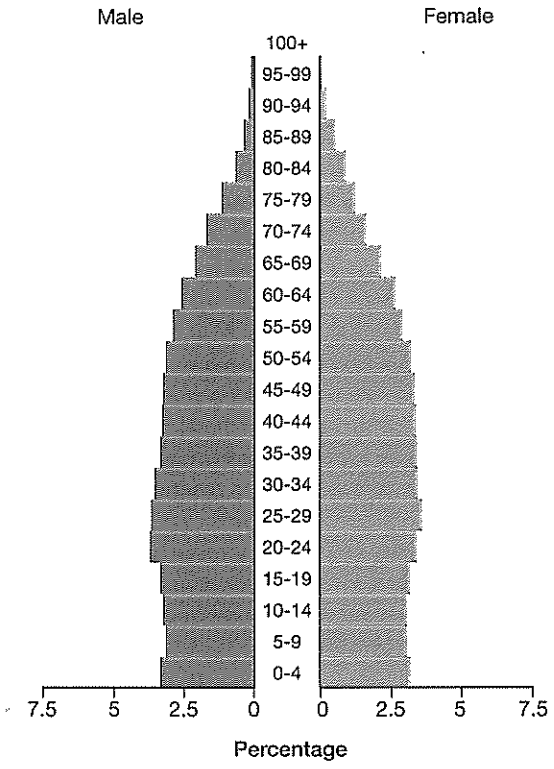
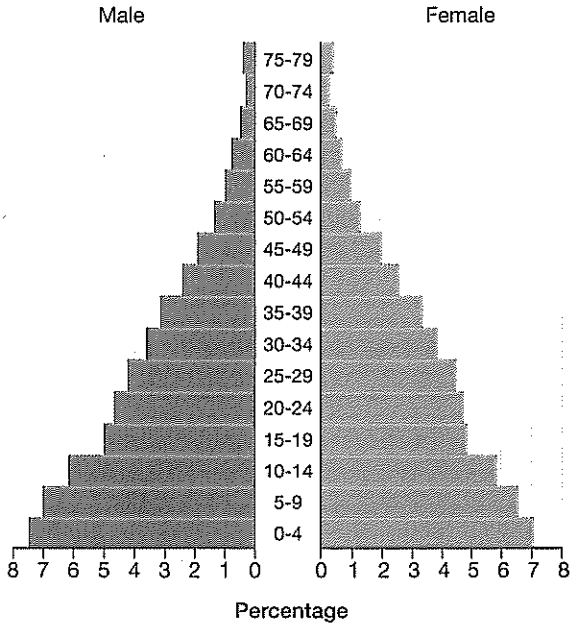



**Figure 9.33** Australia's Indigenous population profile, 2015




**Glossary**

**cohort** group of people at the same level, such as age

## GeoSkills 9.17

1 Describe the shape of the population profile of the:
   a total Australian population
   b Indigenous Australian population.
2 Compare Figures 9.32 and 9.33.
3 a Calculate the percentage of Australia's total Indigenous population who are in the:
   - under-15 age group
   - over-65 age group.

   b What implications does the percentage of dependent population have for governments?

## Interpreting population profiles

The shape of the profile can provide useful information. Australia (see Figure 9.32) has a profile with a narrowing base, illustrating low birth rates and consequently an ageing population. Australia's profile is typical of countries in the developed world.

Population profiles may show 'bulges' or 'dips' that result from the effects of significant events such as war and migration on the population. A bulge is the result of more than the usual number of people in a particular age group. A bulge may be caused by:

- immigration of a particular age group (people moving into the area)
- a 'baby boom' (a time when more than the usual number of people decide to have babies)

A dip (or waist) is the result of less than the usual number of people in a particular age group. This may be caused by:

- emigration of young people in search of work
- war, when men, in particular, are killed
- a 'baby strike' (a time when people decide not to have babies—for example, they may be dissuaded by government policy).

Profiles are one tool used to provide information to governments and other authorities so that appropriate services are provided for the population. For example, a bulge in the 0–4 age group will indicate a need for more kindergartens and we can predict a need for more primary schools.

## Glossary

**dependent population** people 0–14 years old or 65 years and over

**immigration** movement of people into a country as permanent residents

## Age structure

Population can be grouped into three broad categories according to their level of independence. These groups are:

- children (0–14 years)—dependent population
- adults (15–64 years)—economically active
- aged (65 years and over)—economically inactive and dependent.

A population is considered to be ageing once the proportion of people under the age of 15 drops below 30 per cent and the proportion of people over the age of 65 rises above 6 per cent.

## Sex structure

The sex ratio of a population is usually expressed as the number of males for every 100 females. It is normally in balance, although in the older age groups you will find more females as women have a longer life expectancy. Migration and war can affect the sex structure of the population.

## Drawing a population pyramid

Where raw data is provided, calculate percentages using this formula:

$$\frac{\text{total number in cohort, e.g. males 0–4}}{\text{total population}} \times 100$$

## GeoSkills 9.18

Refer to Table 9.31 to answer the following questions.

1 Construct a population profile for Singapore.
2 What percentage of males are in the 0–4 age group?
3 What percentage of females are in the 0–4 age group?
4 What percentage of the population is in the aged category?
5 Is Singapore's population young or old?
6 Compare the population profiles of Australia and Singapore, outlining similarities and differences in the populations aged 0–14 years and over 65.
7 Suggest reasons for the differences.

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**HINT**

The horizontal scale can show the actual numbers of people or percentages of the total. Before interpreting the graph, always check the unit of measurement being used.

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