GRADE 9

SOCIAL SCIENCE

UNIT 2

POPULATION CHANGE, RESOURCES AND MIGRATION

TOPIC 1:   POPULATION DENSITY AND DISTRIBUTION
TOPIC 2:   POPULATION TRENDS
TOPIC 3:   MIGRATION
TOPIC 4:   THE PULL OF THE CITY

ACKNOWLEDGEMENT

Table of content   **Page**

SECRETARY'S MESSAGE

Achieving a better future by individual students and their families, communities or the nation as a whole, depends on the kind of curriculum and the way it is delivered.

This course is a part of the new Flexible, Open and Distance Education curriculum. The learning outcomes are student-centred and allows for them to be demonstrated and assessed.

It maintains the rationale, goals, aims and principles of the national curriculum and identifies the knowledge, skills, attitudes and values that students should achieve.

This is a provision by Flexible, Open and Distance Education as an alternative pathway of formal education.

The course promotes Papua New Guinea values and beliefs which are found in our Constitution, Government Policies and Reports. It is developed in line with the National Education Plan (2005 -2014) and addresses an increase in the number of school leavers affected by the lack of access into secondary and higher educational institutions.

Flexible, Open and Distance Education curriculum is guided by the Department of Education's Mission which is fivefold:
- to facilitate and promote the integral development of every individual
- to develop and encourage an education system satisfies the requirements of   Papua New Guinea and its people
- to establish, preserve and improve standards of education throughout Papua New Guinea
- to make the benefits of such education available as widely as possible to all of the people
- to make the education accessible to the poor and physically, mentally and socially handicapped as well as to those who are educationally disadvantaged.

The college is enhanced to provide alternative and comparable pathways for students and adults to complete their education through a one system, many pathways and same outcomes.

It is our vision that Papua New Guineans' harness all appropriate and affordable technologies to pursue this program.

I commend all those teachers, curriculum writers, university lecturers and many others who have contributed in developing this course.

UKE KOMBRA, PhD

Secretary for Education

UNIT 2   INTRODUCTION

Dear Student,

Welcome to Unit 2 of Grade 9 Social Science course. In this unit you will study Population Change, Resources and Migration. The unit is made up of four topics listed below.

Topic 1:   Population Density and Distribution

Topic 2:   Population Trends

Topic 3:   Migration

Topic 4:   The Pull of the City

At the end of this unit you should be able to:

- Identify factors that cause population change and explain its impact on the environment.

- Describe social issues caused by population change

- Interpret and communicate information from population graphs and maps.

Each topic comprises of **Lessons** followed by **Practice Exercises** and finally **Answers** to the exercises. You must read and understand the content of the lessons well in order for you to do the exercises efficiently. You are required to **do your own corrections** after the completion of all the questions in each exercise. Answers to the **Practice Exercises** are provided at the end of each topic. All lessons in each topic must be covered thoroughly. You will then do the **Topic Test** in the **Assignment Booklet** and then you proceed to the next topic.

The lessons in each topic are written in simple language. If you have any problem understanding the lessons, please talk to your FODE Provincial Coordinator, ring or write to us.

We hope that you will enjoy studying this **Topic**.

We wish you all the best in your study!

STUDY GUIDE

Follow the steps given below and work through the lessons.

Step 1   Start with Topic 1, Lesson 1 and work through it in order.

Step 2   When you complete Lesson 1, you must do Practice Exercise 1.

Step 3   After, you have completed the Practice Exercises, you must correct your   work. The answers are given at the end of each sub-strand.

Step 4   Then, revise well and correct your mistakes, if any**.**

Step 5   When you have completed all these steps, tick the check- box for Lesson 1 on the content page, like this:

√ Lesson 1: Where is Papua New Guinea?

Then, go on to the next lesson. Repeat the process, till you complete all the lessons in a **topic**.

Assignment: Topic Test and Strand Test

When you have completed all the lessons in a Topic, do the test for that Topic in your Assignment Book. The Course Book (Topic 1) tells you when to do this.

Marking

The Sub-strand Tests in each **Assignment** will be marked by your **Distance Teacher**. The marks you score in each assignment will count towards the final result. If you score less than 50%, you will repeat that Assignment.

Remember, if you score less than 50% in three Assignments, your enrolment will be cancelled. So, do your work carefully and make sure that you pass all Assignments.

ALL THE BEST!

TOPIC 1

Population Density and Distribution

In This Topic You Will Learn About:

- **Population Density and Distribution**
- **Population Line Graphs**
- **Population Pyramid**
- **Over population and Under Population**

TOPIC 1:   INTRODUCTION

In this topic you will study Populatopn Density and Distribution. The topic is made up of four lessons. They are;

Lesson 1 :   What is Population Distribution and Density?

Lesson 2:   Population Line Graphs

Lesson 3:   Population Pyramid

Lesson 4 :   Overpopulation and Under Population

At the end of this topic, you should be able to:

- explain demographic terms: population structure, population density and distribution, over population and under population.

- explain the reasons and factors that influence population distribution and density of an area

- calculate population density of an area using given information and statistics

- read and interpret information from population structures and population pyramids

- contrast and compare the population structures of a developing and developed country

We hope you will enjoy this topic.

Your teacher

Lesson 1: What is Population Density and Distribution?

Welcome to lesson one of Unit 2. In this lesson you are going to learn about Population Density and Distribution. You will identify the factors that influence population density and distribution.

Your Aims

- define population density
- calculate population density
- identify factors that influence population density and distribution

Before you study population distribution and density, let us recap the meaning of population.

What is Population?

> **Population is the number of people living in an area**

The study of population is called **demography** and it is all about people, how many people are there, the type of places they live in, their environment and how fast they are increasing in numbers.

> Why is it important to know the number of people living in a country?

The number of people who live in a country and the skills and abilities they have are the most important resource for any country. If the government wants to plan properly, it must know all about these information. Most of this information is obtained through national census.

> A census is a count of all the people in a country.

In Papua New Guinea census are held once every ten years. This information is then used by the government in planning for the people.
With this brief information about population, let us now look at population density.

What is Population Density?

> **Population density is the number of people living on a square kilometre of land**

Population density here simply describes the number of people living in a particular area in relation to the amount of land available.
Now have a look at the table below. It shows the population statistics for Papua New Guinea in 2000.

POPULATION STATISTICS FOR PAPUA NEW GUINEA IN 2000

PROVINCE	TOTAL POP	LAND AREA	POP DENSITY
Western	153 304	98 189	2
Gulf	106 898	34 472	3
Central	183 983	29 998	6
NCD	254 158	240	1052
Milne Bay	210 412	14 345	15
Oro	133 065	22 735	6
Southern Highlands	546 265	25 587	23
Enga	294 031	11 704	23
Western Highlands	440 025	9 097	52
Simbu	259 703	6 112	42
Eastern Highlands	432 972	11 157	38
Morobe	539 404	34 500	16
Madang	365 103	28 886	13
East Sepik	343 181	43 426	8
Sandaun	185 741	35 820	5
Manus	43 387	2 100	21
New Ireland	118 350	9 557	12
East New Britain	220 123	15 724	14
West New Britain	184 508	20 387	9
AROB	175 160	9 384	15

You can see that some provinces have a lot more people than others. But it is not a good idea to compare the population of each province without thinking about the amount of land there is in each province. A province size or area is very important. It is better to describe the number of people in relation to the amount of land. This tells us how crowded the area is.

Calculating Population Density
To calculate population density of an area, you divide the total number of people by the number of square kilometres in the area.

Population Density   =   <u>**Total Population**</u>
                                                   Total land area

Now let us do an example together. Go back to the table above and identify Gulf's total population. **106 898** is the total population of Gulf. It has a total land area of **34,472** square kilometres.

Population Density   =   <u>106 898</u>
                                                   34 472
                                     =   3.10 (round off to the nearest whole number)
                                     =   **3 persons per square kilometre**

In the example above, there are 3 people living on every square kilometre of land in Gulf province. When there are a small number of people living on a square kilometre of land, demographers describe it as **sparsely populated. For** example Gulf.

When there are a lot of people living on a square kilometre of land, it is said to be **densely populated**. A good example of this is Port Moresby with 1052 per square kilometre.

Why is it that some provinces have more people than others but still have a lower population density compared to those with smaller population?

The amount of land area and the number of people living in it determines the population density. The bigger the land area with less people, there will be a small number of people living on a square kilometre and that is said to be sparsely populated. An example of a sparsely populated area is the Gulf Province. A place with a very small area of land and with a huge population will have many people on a square kilometre of land which means the area is densely populated, like Port Moresby.

However, a place like Morobe, has one of the biggest population in the country but still has a low population density. This is because; Morobe has a big land area.

In Papua New Guinea, our population density was 11 persons per square kilometre in 2000. In 2015 it increased approximately to 16 people per square kilometre. Comparing this with the rest of the world, Papua New Guinea is not densely populated like some parts of the world; however the population is increasing and so we will expect the density to increase as well.

The population of many places in the world today are not evenly distributed. This is true for Papua New Guinea as well. This leads us to our next point and that is population distribution.

What is Population Distribution?

> **Population Distribution refers to the way in which people are spread out across the earth's surface.**

People across the world today are unevenly spread throughout the globe. Certainly in some areas there are more people compare to other areas of the world. Let us take Papua New Guinea for example. The population of Papua New Guinea is concentrated mainly in central highlands, along the coasts and of course in our main towns and cities. Why is this so?

Now study the world maps on the next page to get the answer to the question above.

WORLD POPULATION DENSITY

Key
- over 200 people per sq km
- between 10 and 200 people per sq km
- under 10 people per sq km
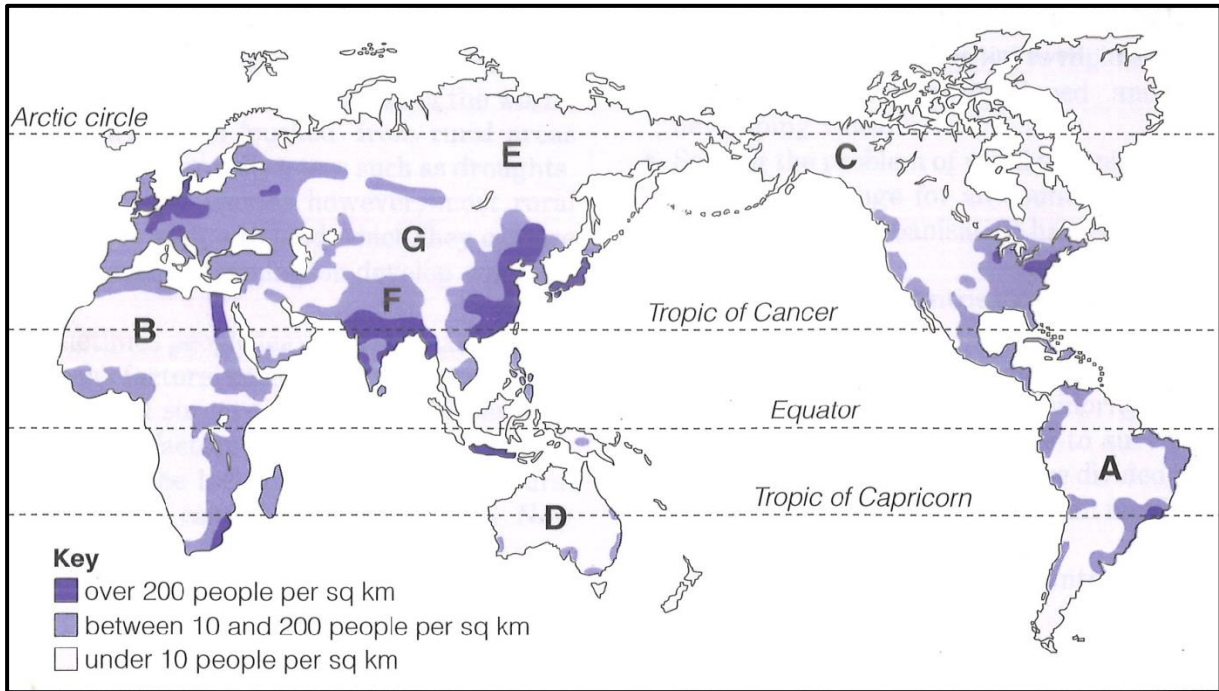
What do you notice?
Not all land mass is occupied by people. There are areas that are densely populated while others are sparsely populated. You will also notice that large areas of land are not inhabited (not occupied) at all.

Why is the population unevenly distributed?

Basically people live where there is an adequate supply of resources and are best suited to human occupation.

Now look at the map below. Compare it with the previous map. What conclusion can you draw from the two maps?

MAP SHOWING ENVIRONMENT OF THE WORLD

Key
- mountainous
- wet and hot
- moderate
- dry
- cold
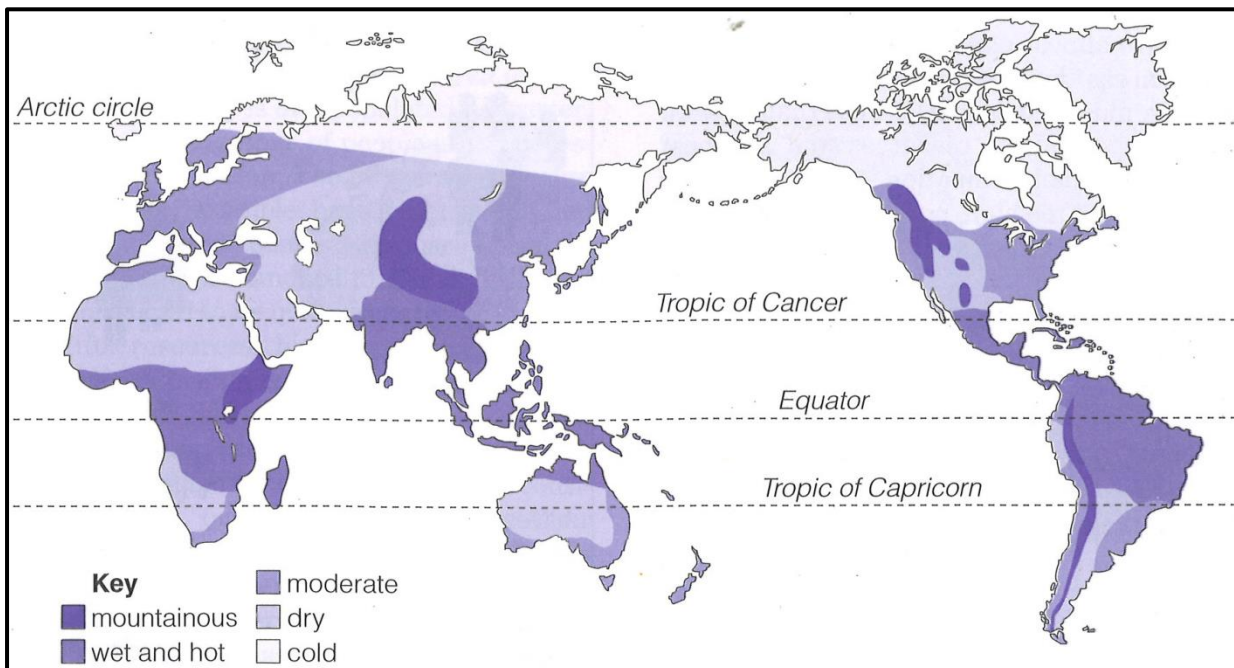
You can clearly see that not many people live where the environment is harsh and is unable to sustain life. People live where they can best meet their basic needs. They also choose to live where they can have easy access to vital services such as health, education, transport and many more.

The table below shows the environmental factors that influence the population distribution.

Factor	Lowest Population Density	Highest Population Density
Landform	High, steep, mountainous areas	Fertile highlands valleys, river basin and along the coasts
Climate	Very cold and hot desert areas	Temperate areas or tropical areas that is not too humid.
Resources	Areas with few resources	Areas with enough resources to support life.
Water	Areas with little water	Areas with plentiful water supplies

You have now covered some basic facts on population density and population distribution. Check the summary below to recap what you have learnt in this lesson.

Summary

You have come to the end of lesson 1. In this lesson you have learnt that:

- population density is the number of people living on a square kilometre of land.

- to calculate population density of an area, you divide the total number of people by the number of square kilometres in the area.

- population Distribution refers to the way in which people are spread out across the earth's surface.

- basically people live where there is an adequate supply of resources and are best suited to human occupation.

- factors the influence population density are landform, climate, resources and water.

NOW DO PRACTICE EXERCISE 1 ON THE NEXT PAGE

Practice Exercise 1

1.   Explain the following terms.

        Population Density

        _____

        Population Distribution

        _____

Study the population statistics table to answer these questions.

2.   Which province has the highest population in 2000?

        _____

3.   Morobe and Southern Highlands have just over 500 000 people in 2000. Why
        it is that Southern Highlands is densely populated than Morobe?

        _____

4.   Manus has a total land area of 2100 square kilometres. What would the
        population density be if the population doubles in 2020?

        _____

5.   Landform is a factor that influences population density. Explain how?

        _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC

Lesson 2   Population Line Graph

Welcome to lesson 2 of Topic 1. In your last lesson you looked at Population density and distribution. In this lesson you will study Population Line Graph.

Your Aims

- define line graph
- discuss the important use of line graph
- interpret information on a line graph

What is a line graph?

A line chart or line graph is a type of chart which displays information as a series of data points called 'markers' connected by line segments.

They have an x-axis (horizontal) and y-axis (vertical). Usually the x-axis shows the time period and the y-axis shows what is being measured. It is a basic type of chart common in many fields. It is similar to a scatter plot except that the measurement points are ordered (typically by their x-axis value) and joined with straight line segments. A line chart is often used to visualise a trend in data over intervals of time, a time series , thus the line is often drawn chronologically. In these cases they are known as run charts. Below is an example of a population line graph

POPULATION OF COUNTRY X 1900 - 1960

Population in millions

Years
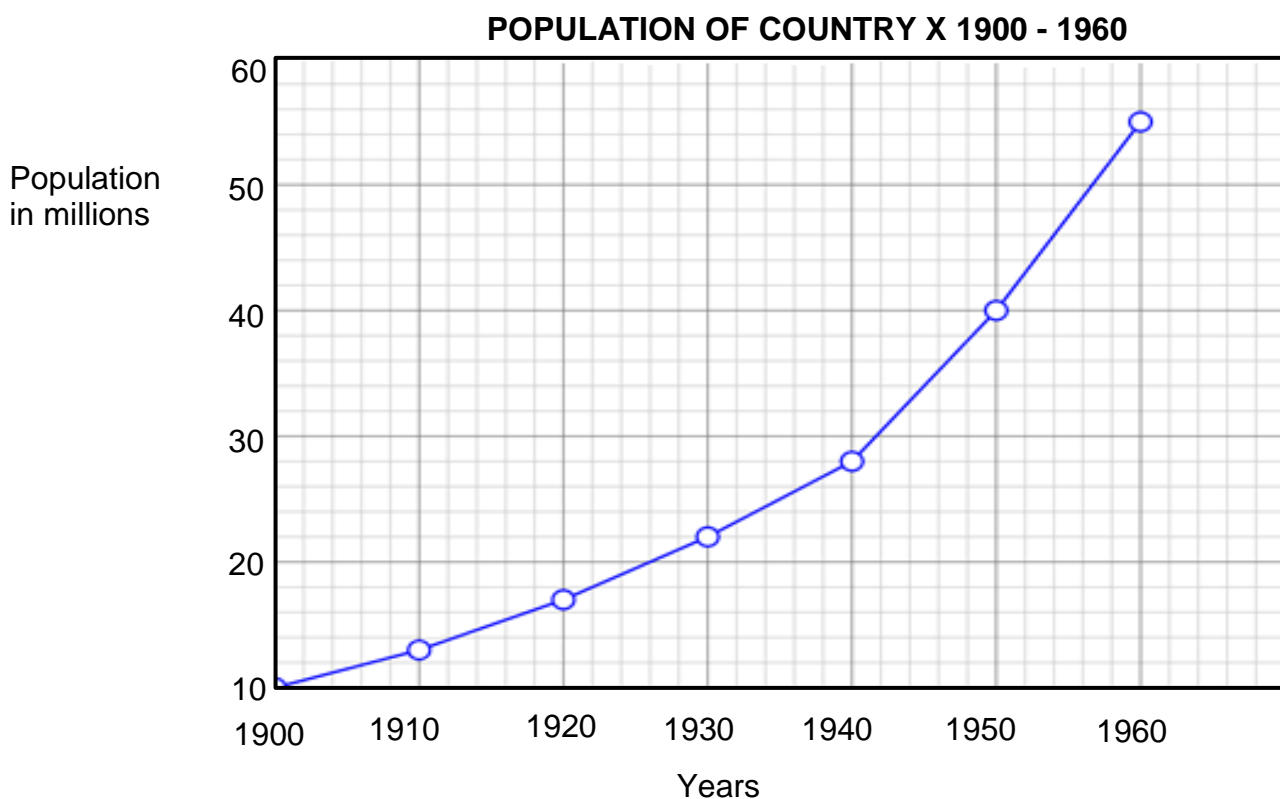
Importance of line graph

Line graphs can be used to show how information or data change over time. Line graphs can be used when you are plotting data that have peaks (ups) and troughs (downs). In other words, they highlight trends. Line graphs are useful in that they show data variables and trends very clearly and can help to make predictions about the results of data not yet recorded. They can also be used to display several dependent variables against one independent variable. When comparing data sets, line graphs are only useful if the axes follow the same scales. It is important to have no more than four lines on a single graph; any more than that and it becomes difficult to interpret.

Below is an example of a population line graph of Papua New Guinea.

POPULATION OF PAPUA NEW GUINEA IN MILLIONS
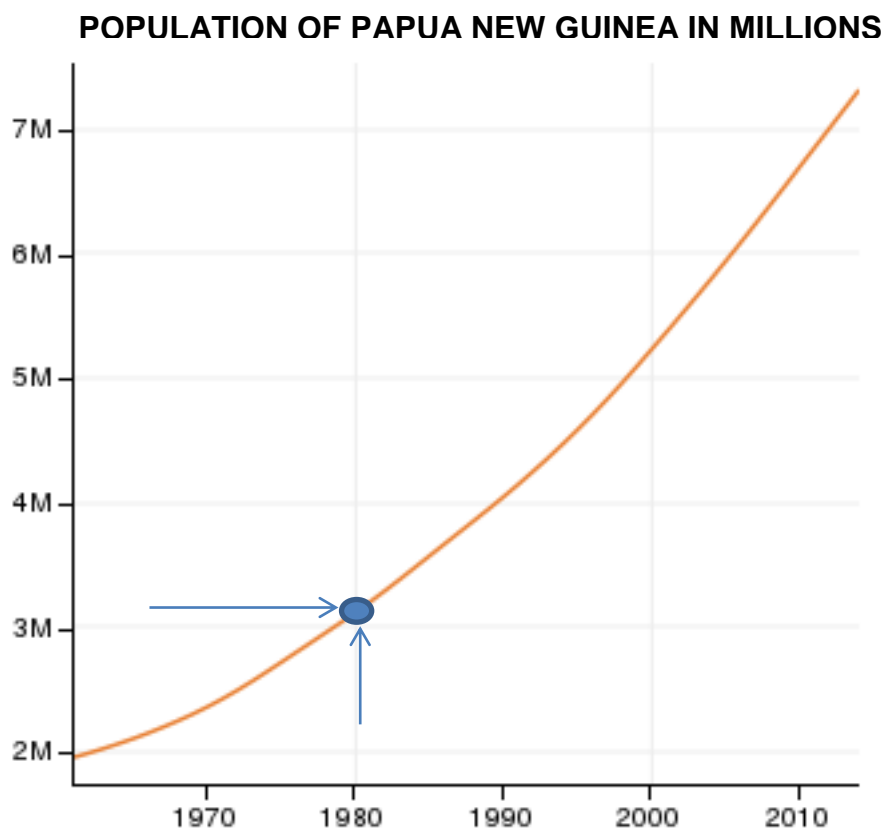
Interpreting information on line graph

A line graph is read by taking the reading from the intersecting points as shown by the arrows above. Look at the example above. What was Papua New Guinea's population in 1980? Obviously the answer is about 3.2 million. What was the overall trend in the population growth?

The line has been increasing steadily since 1980 and so we can conclude that the population has been increasing rapidly.

The population line graph above clearly shows that there is a rapid increase in the population which shows a very high birth rate and growth rate. This also indicates

that the population doubling time is short. We will discuss more on birth rate, death rate and doubling time later in this unit.

Summary

You have come to the end of lesson 2. In this lesson you have learnt that:

- a line chart or line graph is a type of chart which displays information as a series of data points called 'markers' connected by line segments

- a line chart is often used to visualize a trend in data over intervals of time – a time series – thus the line is often drawn chronologically.

- they can also be used to display several dependent variables against one independent variable.

- it is important to have no more than four lines on a single graph for easy interpretation of the graph.

- a line graph is read by taking the reading from the intersecting points

- line graphs are useful because they show data which are often changing and trends very clearly, and can help to make predictions about the results of data not yet recorded.

NOW DO PRACTICE EXERCISE 2 ON THE NEXT PAGE

Practice Exercise 2

1.   What is a line graph?

    _____

2.   Why is line graph useful?

    _____
    _____
    _____
    _____

3.   Refer to the graph below to answer the following questions.

PNG POPULATION 1970 – 2010
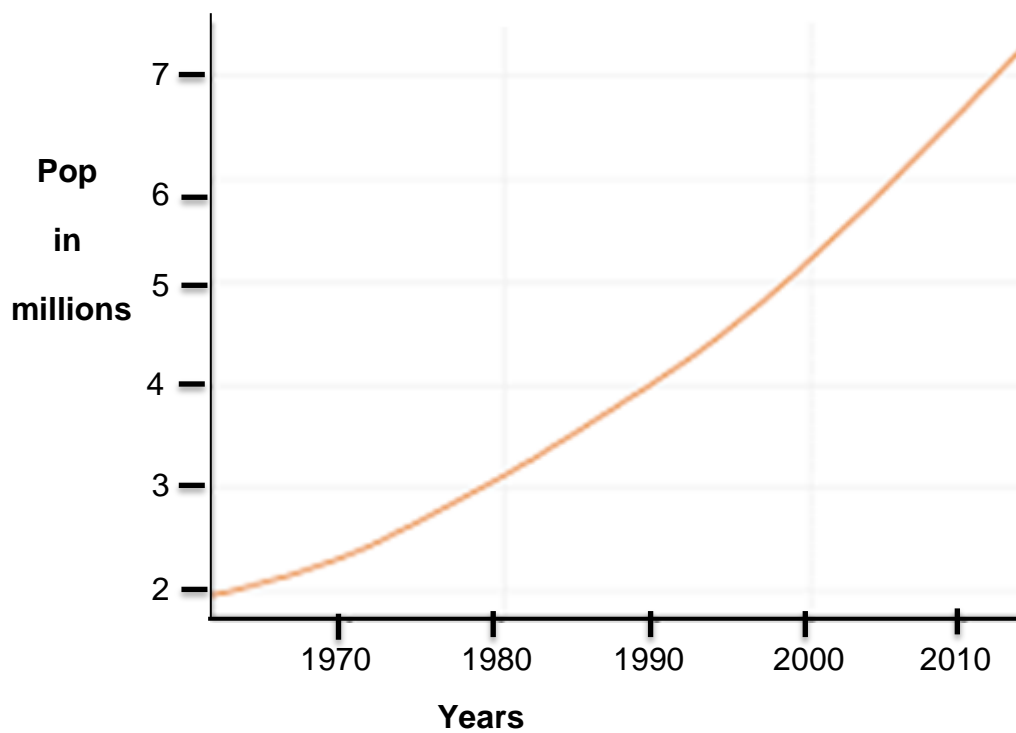
a) In what year did the population reach 7 million?

    _____

b) What is the trend in the population growth as indicated in the graph?

    _____

c) What conclusion can you draw from the graph in regard to birth rate?

    _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC

Lesson 3:   Population Pyramid

Welcome to lesson 3 of Topic 1. In your last lesson you looked at Population Line Graph. In this lesson you will study Population Pyramid.

Your Aims

- define population pyramid
- study the features of a population pyramid
- read and interpret information on a population pyramid

What is a population pyramid?

> **A population pyramid is a special type of bar graph that shows the age structure or age distribution of a population.**

Features of population pyramid

A population pyramid is also called age picture diagram and is made of many horizontal bar graphs laid one on top of the other. Each horizontal bar is divided into males and females, and it represents the proportion of the total population in a particular age group.

The age groups are marked at regular intervals on the vertical axis, either between the male and female sections of the pyramid or to the side of the pyramid. See examples below.

POPULATION PYRAMID FOR A DEVELOPING COUNTRY

POPULATION PYRAMID FOR A DEVELOPED COUNTRY
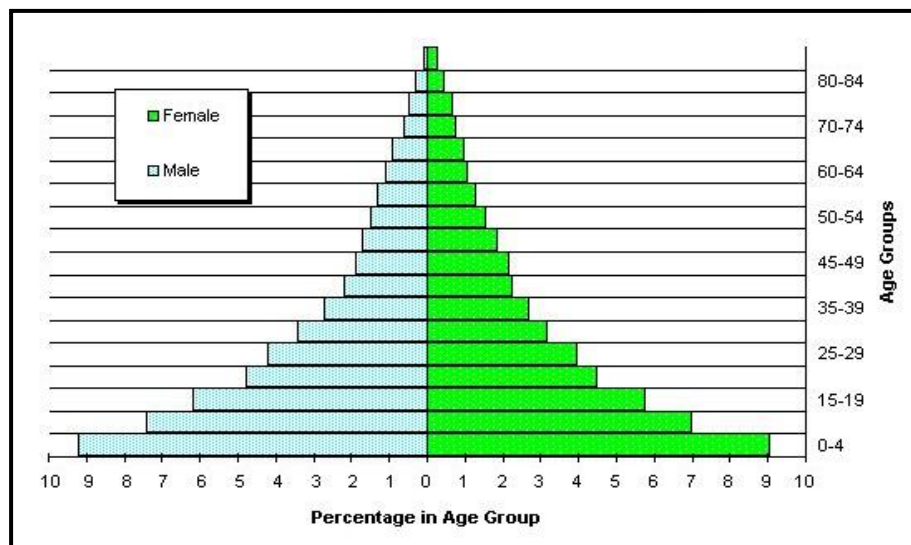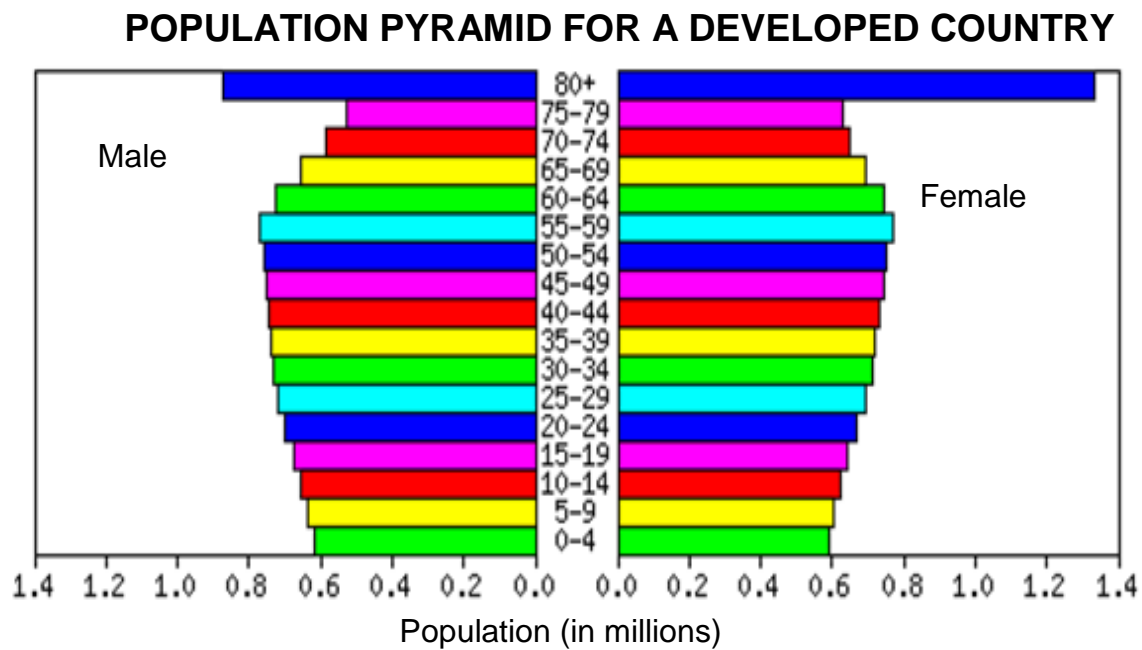
Percentage scales are marked along the horizontal axis, for both the males and the females so that the proportion of each sex of any age group can be calculated.

Why are population age structure graph shaped like a pyramid?

The graph is shaped like a pyramid because not everyone born at a particular year reaches their old age. Some die along the way and as years go by only a few would reach their very old age giving the age structure graph its pyramid shape.

How to read a population pyramid

Population Pyramids are used to show the distribution of males and females across age groups.

To read a pyramid, first look at the legend to see what is being measured. Next, look at the horizontal-axis to identify the units of measurement, and then up the pyramid and across to the vertical-axis to identify the age group. It also should be looked at as a pyramid, as the shape indicates the type of population growth that is occurring. This can be indicative of future trends in different parts of the life course for certain geography. The purpose of an age pyramid is to show what age groups by sex account for what portion of a population.

Now let us look at an example together. Study the population pyramid of Australia's Aboriginal population and answer the question below,

AUSTRALIA'S ABORIGINAL POPULATION
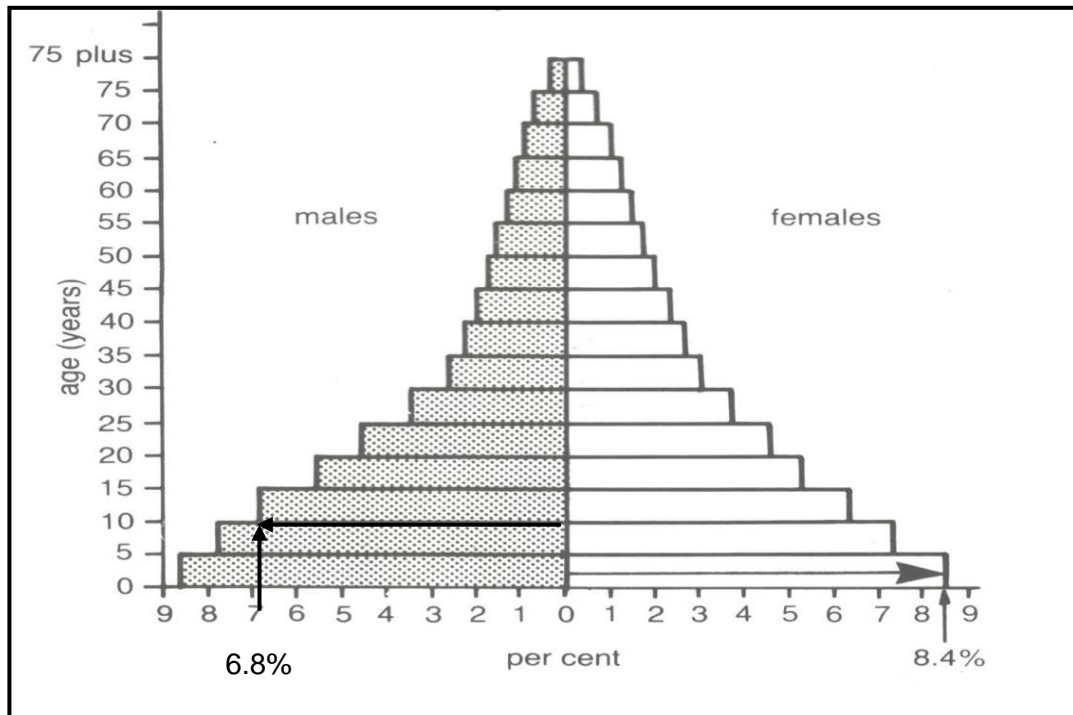
What proportion of Aboriginal population consists of girls aged between 0 and 4 years?

> ➢ Find the horizontal bar for the 0-4 age group.
> ➢ How far along the percentage scale does the bar extend on the female side?
> ➢ The answer is 8.4% of the total Aboriginal population consists of girls aged between 0-4.

Let us try another one. What proportion of Aboriginal population consists of boys aged between 10-14 years? If you follow the step above correctly your answer should be 6.8%

Interpreting Information on Population Pyramid

Remember that the shape of a population pyramid can give you a lot of information about a country in regard to its population. Basically the following information can be obtained from a population pyramid.

> ➢ Life expectancy
> ➢ Birth and death rates
> ➢ Dependency load
> ➢ Working population (labour force)

Have a look at the two pyramids on the next page.

PYRAMID A	PYRAMID B
Typical of Developing Countries - **High Death Rate** - **High Birth Rate** - **Low Life Expectancy**	**Typical of Developed Countries** - **Low Death Rate** - **Low Birth Rate** - **Longer Life Expectancy**
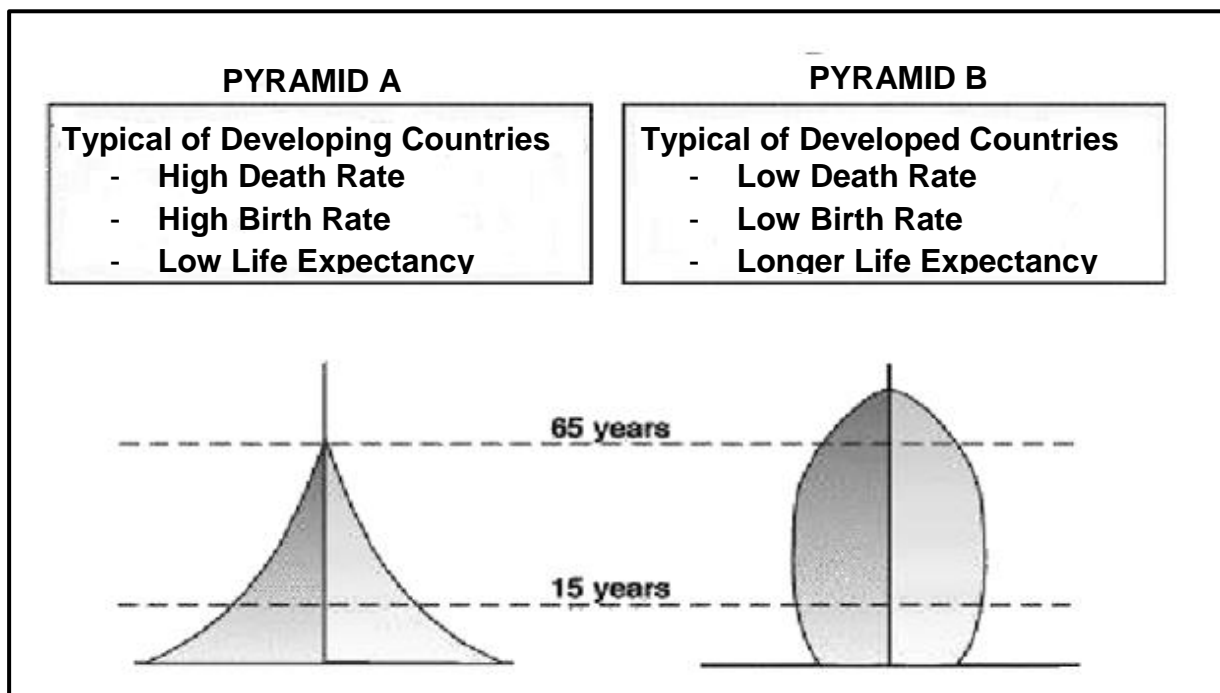
Pyramid A is a typical developing country's population pyramid and Pyramid B is a typical Developed country's population pyramid.

Generally a typical developing country's population pyramid has the following features.

1. Has a wider base. This shows a large number of growing population (children) which means that the birth rates are high.
2. Has a narrow top. This shows that not many people reach their very old age (low life expectancy) which means that the death rate is high.
3. Has a high dependency load of young children and few of old people.

A typical developed country's population pyramid has the following features.

1. Has narrow base. Shows a smaller number of growing population (children) which indicates that the birth rates are low.
2. Has a wider top. This shows that many people are able to reach their very old age thus indicating lower death rates and a higher life expectancy.
3. Has a low dependency load of young children and high of old people.

> **Dependency Load refers to the number of people who are not part of the working population (labour force) of a country. This includes mainly the children under the age of 14 and old people who are 60 yes and above.**

However, in some urban areas in developing nations, like Papua New Guinea, dependency load tend to be higher because it is not just the children and the old people that make up the load but unemployed adults as well.

The main points of the lesson are in the summary below.

Summary

You have come to the end of lesson 3. In this lesson you have learnt that:

- a population pyramid is a special type of bar graph that shows the age structure or age distribution of a population.

- the following information can be obtained from a population pyramid.

    1. Life expectancy

    2. Birth and death rates

    3. Dependency load

    4. Working population (labour force)

- typical developing county's population pyramid has the following features.

    1. Has a wider base. This shows a large number of growing population (children) which means that the birth rates are high.

    2. Has a narrow top. This shows that not many people reach their very old age (low life expectancy) which means that the death rate is high.

    3. Has a high dependency load of young children and few of old people.

- a typical developed country's population pyramid has the following features.

    1. Has narrower base. Shows a smaller number of growing population (children) which indicates that the birth rates are low.

    2. Has a wider top. This shows that many people are able to reach their very old age thus indicating lower death rates.

    3. Has a low dependency load of young children and high of old people.

- dependency Load refers to the number of people who are not part of the working population of a country. This includes mainly the children and the old people.

NOW DO PRACTICE EXERCISE 3 ON THE NEXT PAGE

Practice Exercise 3

1. What is a population pyramid?

    _____

2. What kind of information can you obtain from a population pyramid?

    _____

    _____

    _____

    _____

3. Describe a typical developing county's population pyramid.

    _____

    _____

    _____

    _____

4. What does it indicate when a population pyramid has a wider base?

    _____

    _____

    _____

5. Which nations would have larger dependency load of old people?

    _____

    Refer to the population pyramid of Australian Aboriginals to answer questions 6 and 7

6. What percentage of the Australian Aboriginal population are females aged 75 years and above?

    _____

7. What percentage are males between the age 30 and 35?

    _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC

Lesson 4:   Over-population and Under-population

Welcome to Lesson 4. In the previous lesson, you have learnt about the structure of the population pyramid and its components. In this lesson you will learn about over-population and under-population.

Your Aims

- define overpopulation

- identify factors that influence over population

- define under population

- identify overpopulated and under populated areas of Papua New and the world.

_____

What is Overpopulation?

> **Overpopulation is when a country has more people than its resources can support.**

In other words, there are too many people in an area but not enough food and other basic needs for that population. However, there are areas that are densely populated but cannot be classified as being overpopulated because there are sufficient resources to support the whole population.

Resources are things around us that can be used to improve living standards.
This does not depend only on the land and its soil fertility for food production and the availability of minerals and forest. It also depends on the ability of the people to make use of resources. The people must have the knowledge, skills and the technology to produce the food and other materials to satisfy their needs and wants.

Let us now look at the factors that influence over population.

Factors Influencing Over Population

There are many contributing factors for the population explosion which eventually results in overpopulation in many parts of the world. Here are some reasons for over-population:

- The increase in agricultural skills and food production methods
- The increase in quantity and quality of food produced
- Clean water and sanitation
- The general increase in the standard of living
- Increased medical knowledge, good medical facilities and quality medicine
- The increase in quality leisure time

The reasons you have just learnt made it possible for babies to live longer unlike the past where many of them would have died before reaching the age of 5 years. Many more live to have more children. The improved life made people to live longer and eventually the area or country is crowded. We can simply say that there is a **high birth rate** and a **low death rate**. Therefore, there are many people born than die. The world's resources will continue to be depleted as the population continues to increase.

> **This population pressure eventually leads to unsustainable use of the limited resources we have.**

THE MAP SHOWING THE OVERPOPULATED AREAS
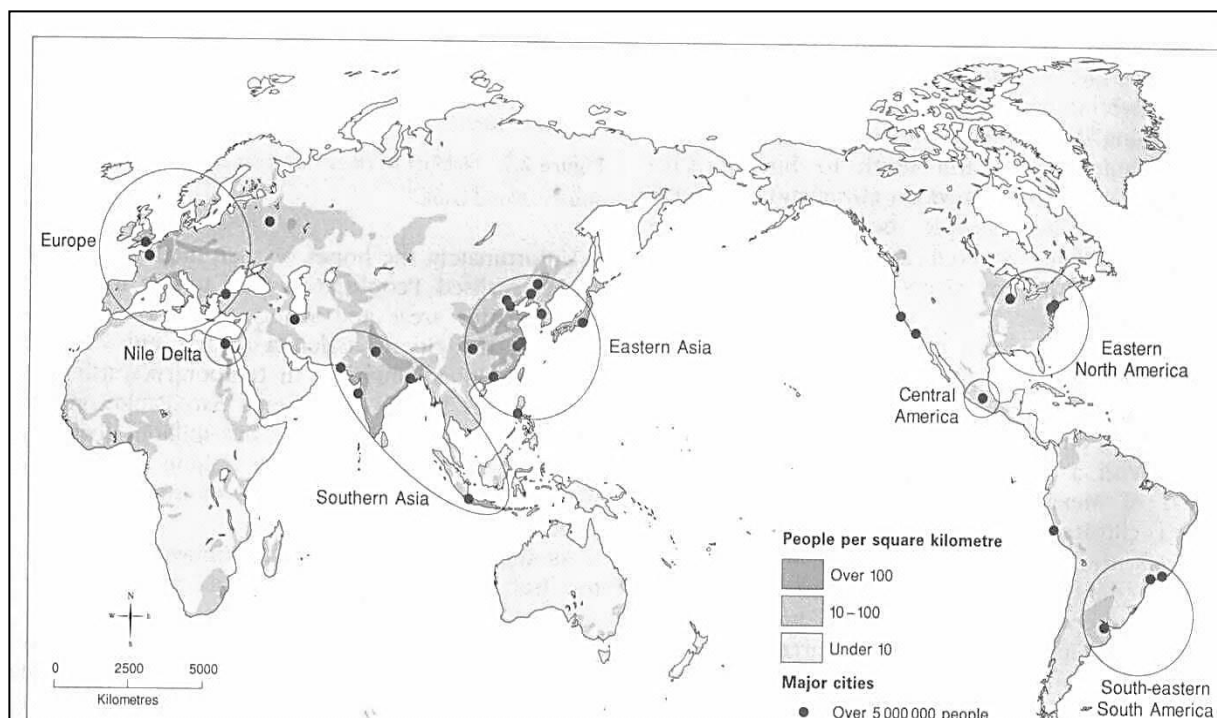
Effects of Overpopulation

The effects of overpopulation are quite severe. They are listed below.

- Decrease in Natural Resources.
- Degradation of Environment
- Conflicts and Wars
- Rise in Unemployment
- High Cost of Living

Some solutions to Overpopulation

- Better Education
- Making People Aware of Family Planning
- Tax Benefits or Concessions
- Knowledge of Sex Education

Now turn to the next page and do activity one.

Activity

Refer to the map on page 26 to answer the questions below. Check your answers at the end of the summary.

1.   Which regions in the world are regarded as over populated?

      _____.

2.   How many cities in South America have over 5 million people?

      _____

3.   Name the country and the city in Central America that has over 5 million people? Country _____ City _____.

4.   How many over populated cities are in the developing countries?

       _____

You will now look at Under Population.

What is under population?

> **Under Population is where there are too few people to develop fully the economic potential of an area or nation.**

Sparsely populated or low population density areas

There are areas in the world that are sparsely populated. This means that there are less people living in a large area of land. Where the people live depends very much on the resources available in their surroundings. Many live in small groups in isolated locations, where they can find water and food. Although the land is big, resources are scarce so people happen to locate themselves where there are resources.

Generally the following factors influence under population. They include:

   1. Fertility Rate
      The fertility rate in many developed and developing countries has dropped to about two children per woman due to factors like literacy, economic development or urbanization (increasing the cost or standard of living) making the idea of having big families impractical. Changed attitudes toward contraception and an improvement in the social role of females have also affected population growth.

   2. Emigration
      Emigration is the movement of individuals from one country to another with the intention of permanently settling in their destination. Many factors contribute to this type of movement.

   3. Disease

Disease and illness has always caused a decline in the population.

4. Famine
   Famine is the scarcity of food caused by factors like crop failure as a result of pest and extreme weather conditions.

Take a look at the photographs below. They show features of under populated areas in different parts of the world.

Areas in the world that are sparsely populated.

a) Deserts and semi-deserts

b) Savanna areas

c) Swamps and river plains.
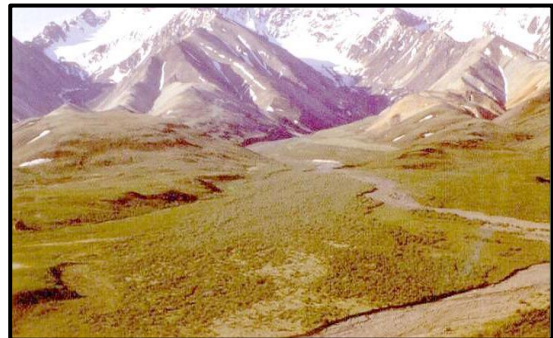
d) Arctic and sub arctic areas

e) Mountainous areas

Obviously, no one would want to live up there. It is too steep, too cold and of course land is unsuitable for farming.

Densely populated but can support the population

There are areas in the world that are densely populated but can be able to support the huge number of people. We can consider or label them as under populated.

New York City USA, a densely populated city

Overpopulation and under populated areas in Papua New Guinea

1. Over populated

Papua New Guinea has population of about 7 million people. There are areas in P.N.G. which have a very high population density therefore are over populated. These areas include Simbu, Daru Island, Trobriand Island, Manus Island, Tari basin and N.C.D.

Some of these areas may have the land area to fit the population. However it may not support the population if the resources are scarce and cannot support the population.

2. Densely Populated but under-populated.

Some areas in P.N.G can be regarded as densely populated but can support its population so these areas can also be referred to as under-populated. These areas include the Whagi Valley, Asaro Valley and Gazelle Peninsula.

3. The under populated areas (Sparsely populated areas)

These are areas with people living in clusters of isolated hamlets often in locations where they can have excess to water and other resources. Maybe close to Government services. Most of the land here is either too wet or to dry for cultivation. These areas will include Western Province, Gulf and some parts of the East Sepik Province.

Summary

You have come to the end of lesson 4. In this lesson you have learnt that:

- overpopulation occurs if an area has a high population and limited resources for that population.

- some areas with big populations are considered under populated because there are sufficient resources.

- populations are normally concentrated in areas where resources are sufficient and readily available.

- places with insufficient resources are sparsely populated and have low population density.

- deserts, semi-deserts, wetlands, mountainous regions and very cold region are usually under-populated.

- generally fertile valleys along big river system have big population.

- cities in developed nations can have big population but can support it so it cannot be classified as being overpopulated.

- many factors like medicine, good food, clean water, good life-style increases the birth rate and decreases death rate which results in big population increase.

- the current world population is about 6 billion which will double by the year 2050.

- a big population has a big strain on the land and other resources.

- in P.N.G. the Highlands, N.C.D and Gazelle peninsula are highly populated while places like Western Province is under-populated.

NOW O PRACTICE EXERCISE 2 ON THE NEXT PAGE

Answers to activity

1.   Temperate regions/Tropical regions

2.   4 cities

3.   Country: USA   City: Mexico

4.   1 city

Practice Exercise 4

1.   The fertile land along the river systems of Ganges of India and Hwan ho (Yellow river) of China are areas of high population concentration. Name a river valley in North Africa where there is a high population density.

_____

2.   People of the vast desert and semi-deserts do not have permanent settlements. They move around looking for pastures for their herds which they rely on for survival. What is this lifestyle?

_____

3.   Places such as Manus do not have   natural resources, apart from marine resources to support their population. Which resources do this people rely on today?

_____

4.   Name 2 other provinces in P.N.G. apart from and East Sepik that are sparsely populated?

_____

5.   Which important resource will run out before 2050 that will put more strain in the increasing population?

_____

.

| NOW CHECK YOUR ANSWERS AT THE END OF TOPIC 1 |

ANSWERS TO PRACTICE EXERCISE 1- 4

Exercise 1

1. a) Population density is the number of people living on a square kilometre of land.

    b) Population Distribution refers to the way in which people are spread out across the earth's surface.

2.   Southern Highlands Province with 546 265.

3.   Southern Highlands has a small area of land compare to Morobe.

4.   41 people per square kilometre

5.   Land areas with fertile soil, suitable climate and clean fresh water are densely populated. Land areas that lack basic necessities in life (fertile soil, suitable climate and fresh water) are sparsely populated. People live where they can best satisfy their needs.

Exercise 2

1.   A line chart or line graph is a type of chart which displays information as a series of data points called 'markers' connected by line segments.

2.   They are useful because they show data that is often changing and trends very clearly and can help to make predictions about the results of data not yet recorded.

3.   a)   The population reached 7 million in 2011.

        b)   Population is growing rapidly.

        c)   The growth rate between the years 1980 to 2010 has been increasing rapidly each year. That means Papua New Guinea has a high birth rate.

Exercise 3

1.   A population pyramid is a special type of bar graph that shows the age structure or age distribution of a population.

2.   Life expectancy, Birth and death rates, Dependency load and Working population (labour force).

3.   Generally a typical developing county's population pyramid has the following features.

    •   Has a wider base. This shows a large number of growing population (children) which means that the birth rates are high.

- Has a narrow top. This shows that not many people reach their very old age (low life expectancy) which means that the death rate is high.

- Has a high dependency load of young children and few of old people.

4.   A wider base simply indicates that the pyramid belongs to a developing nation. It shows that there are more children than adults (a growing population). This means that the birth rate is high and a high dependency load of young children.

5.   Developed nations.

6.   0.3 – 0.4 %

7.   2.7 - 2.9%

Exercise 4

1.   Nile Delta

2.   Nomadic herding

3.   Human Resource

4.   Gulf and Western / fly

5.   Arable Land

TOPIC 2

Population Trends

In This Topic You Will Learn About:

- **Population Change**
- **Life Expectancy**
- **Diseases and Epidemics**
- **Comparative Study**

TOPIC 2:   INTRODUCTION

In this topic you will study Population Trends. The topic is made up of six lessons. They are;

    Lesson 5 :   Population Change

    Lesson 6:   Life Expectancy

    Lesson 7:   Diseases and Epidemics

    Lesson 8 :   Population and Social Problems

    Lesson 9:   Population and Sustainability

    Lesson 10   Comparative Study – Papua New Guinea and China

At the end of this topic, you should be able to:

- explain demographic terms: population growth, birth rate, death rate and natural increase
- calculate the natural increase and the growth rate of selected countries
- compare birth and death rates of developing and developed countries
- identify and recognise the growth patterns of countries in the developing and developed world
- discuss the reasons and the causes for population change
- discuss the effects of population change

We hope you will enjoy this topic.

Your teacher

Lesson 5:   Population Change

Welcome to lesson 5. In this lesson you will look at factors that cause population to change.

Your Aims

- define population growth, population change, birth rate, death rate and natural increase
- identify factors that cause population to change

Population of any place does not remain the same throughout the years. It will either increase or decrease. In fact population is always increasing but only in very rare cases it may decrease and that may occur through natural or man-made disasters such as war, famine, landslides, earthquakes, tsunami, an epidemic and extreme weather conditions.

> **Population growth is the increase in the number of individuals in a population of an area.**

> **Population change refers to an increase or a decrease in a population of an area**

Causes of Population Change

There are factors that can cause a population to either increase or decrease. Factors that can cause an increase in a population are births and immigration.

A decrease in a population is caused by these factors; deaths and emigration.

A total population will not change if the total number of people who died and those who migrated out (emigrated) is the same as the number of babies born and those who migrated in (immigrated) in that same year.

A population increases when there are more births and immigration then deaths and emigration. On the other hand a population decreases when there are more deaths and emigration then births and immigration.

In fact population across the globe has been constantly increasing then falling. Only in rare cases when disasters and diseases cause a fall in the population.
Figures of births and deaths in a country are given as proportions of their population.

See the definition in the boxes below.

> **Population growth rate (PGR) is the increase in a country's population during a period of time, usually one year, expressed as a percentage of the population at the start of that period. It reflects the number of births and deaths during the period and the number of people migrating to and from a country.**

The rate may be positive or negative. The growth rate is a factor in determining how great a burden is imposed on a country by the changing needs of its people for infrastructure like, schools, hospitals, housing or roads, resources like, food, water, or electricity and jobs.

> **Birth rate is the number of births per one thousand people per year.**
> **Death rate is the number of deaths per one thousand people per year.**

A natural increase is also given in proportion called rate of natural increase.

> **Natural Increase is the difference between the birth rate and the death rate.**

Knowing the birth rate, death rate and natural increase, we can now calculate population growth rate.

Look at the example below.

In 1990, Papua New Guinea had thirty five live births for every one thousand people, (**a birth rate of 35 / 1000**).

In the same year, there were twelve deaths for every one thousand people, (a **death rate of 12/ 1000**)**.**

The natural increase is calculated by subtracting the death rate from the birth rate. This meant that in 1990, there were twenty three more births than deaths for every 1000 people. The difference between the birth rate and the death rate of a country or place is called the **natural increase**. In this case the natural increase is 23 per 1000 people in 1990.

Now turn to the next page to see how growth rate is calculated.

Country: Papua New Guinea (1990)

.

Birth Rate	= 35 per one thousand
Death Rate	= 12 per one thousand
Natural increase	= Birth rate – Death rate 23 per one thousand
Growth Rate	= Natural Increase x 100% = $\dfrac{23}{1000}$ x 100
Growth Rate in 1990	= 2.3%

It is important to know the rate at which the population is growing. This can assist the government to plan well for the future. The time taken for a country's population to double depends on the growth rate.

Countries with higher growth rate have a faster doubling time. A doubling time is the number of years it takes for a country's population to double. A simple calculation for doubling time is shown below.

Doubling time   = $\dfrac{70}{\% \text{ growth rate per year}}$ ⟵————   Average life expectancy or Rule of 70

Doubling time   = $\dfrac{70}{2}$ ⟵————   Growth rate

=   35 years

If a country has a consistent growth rate of 2 per cent per year then it would take 35 years for its population to double as indicated in the example above.

Activity 1

1.   Calculate the doubling time of Papua New Guinea if it has a growth rate of 3 per cent. Work out the answer in the space provided below. Check your answers at the end of the summary.

I am sure birth rate, death rate, growth rate and life expectancy will not be the same for all the countries in the world.

You are right. I can recall that in lesson two on population pyramid
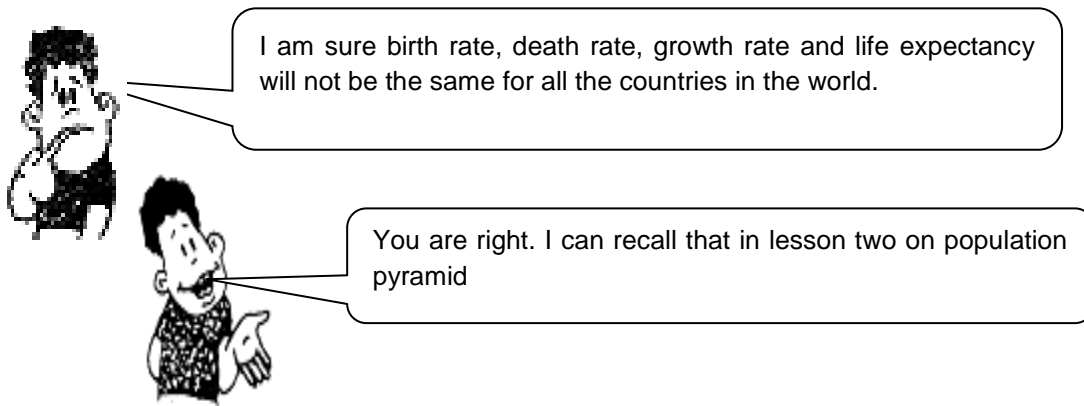
Lesson two on population pyramid in this unit clearly indicates that developing countries do not have the same birth rate, death rate, growth rate and life expectancy as the developed countries. This is due to the fact that developed countries have a higher standard of living and better services compare to the developing nations. Obviously their doubling time will be longer (it will take more years for the population to double itself) due to lower growth rates. Developing countries generally have a shorter doubling time because of higher growth rates.

The table below shows the comparison of the population factors of developed and developing nations.

Country	Birth Rate (per 1000)	Death Rate (per 1000)	Natural Increase (per 1000)	Growth Rate	Life Expectancy	Income per Capita (kina)
Brazil	36	8	28	2.8	60-65	1 809
UK	14	12			70-75	7 192
Ghana	48	17			45-50	913
USA	16	9			70-75	21 677
India	33	14			50-56	200
PNG	35	13	22	2.2	50-55	1 287

Activity 2

Calculate the natural increase and growth rates of the countries in the table above. The first and the last one have been done for you. Check your answer at the end of the summary.

Summary

You have come to the end of lesson 5. In this lesson you have learnt that:

- population growth is the increase in the number of individuals in a population of an area.

- population change refers to an increase or a decrease in a population of an area.

- factors that can cause an increase in a population are birth and immigration.

- a decrease in a population is caused by death and emigration

- population growth rate (PGR) is the increase in a country's population during a period of time, usually one year, expressed as a percentage of the population at the start of that period. It reflects the number of births and deaths during that period and the number of people migrating to and from a country.

- birth rate is the number of births per one thousand people per year. Death rate is the number of deaths per one thousand people per year.

- natural Increase is the difference between the birth rate and the death rate.

- the natural increase is calculated by subtracting the death rate from the birth rate.

- a doubling time is the number of years it takes for a country's population to double.

Answer to Activity 1

Doubling time = 23.3 years

Answer to Activity 2

Country	Natural Increase (per 1000)	Growth rate (%)
UK	2	0.2
Ghana	31	3.1
USA	7	0.7
India	19	1.9

NOW DO PRACTICE EXERCISE 5 ON THE NEXT PAGE

Practice Exercise 5

1.   What is population growth?

      _____

      _____

2.   Identify the two factors that increase population.

      _____

      _____

3.   What are the two causes for decrease in population?

      _____

      _____

4.   How is natural increase calculated?

      _____

      _____

5.   How long will it take for a country with 1% growth rate to double its population?

      _____

Refer to the table on page 39 to answer question 6.

6.   Describe birth rates, death rates, natural increase and life expectancy of developed and developing countries by writing either high of low in the appropriate column. Birth rate has been done for you. Complete the rest.

	Developed countries	**Developing countries**
Birth Rates (high or low)	**low**	**high**
Death Rates (high or low)		
Natural Increase (high or low)		
Life Expectancy		

CHECK YOUR ANSWER AT THE END OF THE TOPIC

Lesson 6   Life Expectancy

Welcome to lesson 6. In this lesson you will study Life Expectancy.

Your Aims:

- define life expectancy, ageing population, and dependency load
- identify factors that influence life expectancy
- discuss the life expectancy in developed and developing countries
- identify the effects of having high dependency load.

The term life expectancy has been mentioned in the last two lessons and so it is not a new word to you. Revise the meaning below.

> **Life expectancy is the average expected length of life: the number of years that somebody can be expected to live.**

Higher life expectancy results in an ageing population.

> **An ageing population is a shift in the distribution of a country's population towards older ages, usually from 60 years and above.**

It is a situation that occurs when the median ages (middle age) of a country or region rises due to rising life expectancy and /or declining birth rate. This may be true for a developed country but not a developing country. When this happens, a country will have an increased in dependency load of old people.

> **Dependency Load refers to the number of people who are not part of the working population (labour force) of a country. This includes mainly the children under the age of 14 and old people who are 60 years and above.**

This is a ratio that is used to show how much strain there is on the working class to get income and support not only children under the age of 14 and over 60 but "also" those who are unemployed and cannot find work. The unemployed also add to the dependency load especially in developing countries like Papua New Guinea and other Pacific island countries.

Life expectancy is influenced by a number of factors. Let us now look at these factors.

Factors influencing a higher Life Expectancy

An increase in the life expectancy of a country is a result of

- good health services
- improved nutrition
- good safety environment and
- living healthy and positive lifestyles

These factors can only be achieved in countries that have a stable economy with higher living standards.

Factors influencing a lower Life Expectancy

Factors that contribute to a lower life expectancy include

- poor health services
- poor nutrition
- harsh and unsafe environment
- living an unhealthy and unpleasant lifestyles

The factors above are experienced in countries that

- are struggling economically
- have an unstable and corrupt government
- have lower living standards

Comparison of life expectancy in developed and developing countries

The world has generally experienced an increase in the average life expectancy of about 46 years to 65 years in the last 20 years. How high or low the life expectancy is depends on the factors mentioned above. Generally developed countries tend to have higher life expectancies compare to developing countries.

The increases in life expectancy that occurred in the first half of the 20th century in developed countries were the result of rapid declines in mortality, particularly infant and maternal mortality that was caused by infectious diseases in childhood and early adulthood. Access to better housing, sanitation and education, a trend to smaller families, growing incomes, and public health measures such as immunization against infectious diseases all contributed greatly to this transition.

In many developed countries, this shift started approximately 100 to 150 years ago. In a number of countries, such as Japan, the transition started later but proceeded much more quickly. In many developing countries, the transition started even later and has not yet been completed. In developed countries, improvements in life expectancy now come mainly from reductions in death rates among adults.

Turn to the next page and compare the two population pyramids. Which pyramid show a higher life expectancy?
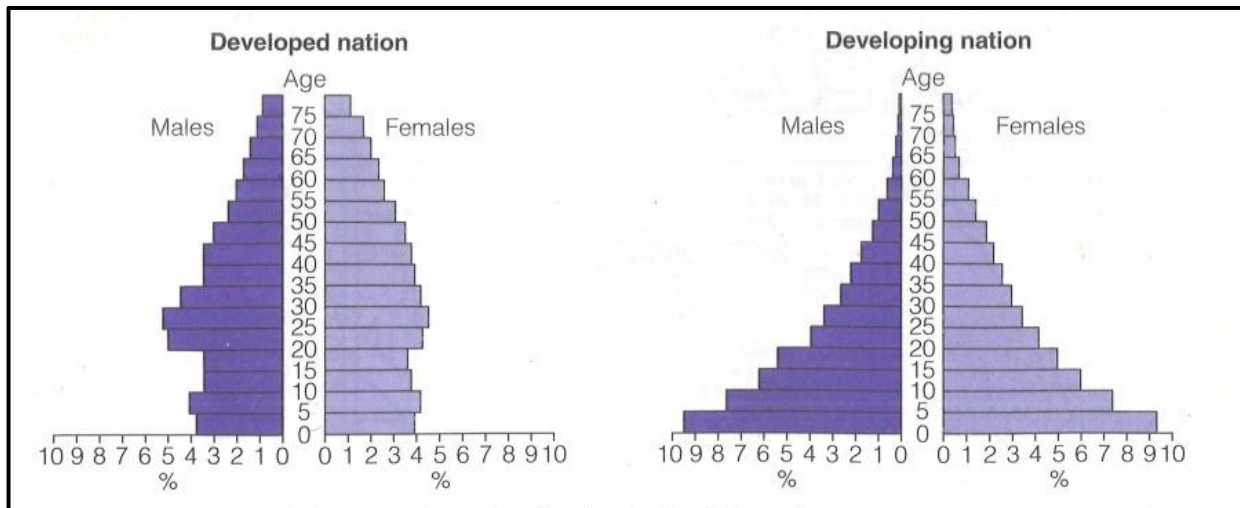
Remember that the ageing population starts at about 60 years and above.

You will notice that the developing nation has a narrower peak. The developed nation has a wider peak. This shows that a lot more people in developed nations live up to their old age then in developing nations.

It is clearly shown that adult mortality rate is lower in developed nations thus resulting in higher life expectancy. On the other hand, adult mortality rate is higher in developing nation thus resulting in a lower life expectancy.

Effects of Having High Dependency Load

What can you say now about the dependency load? The graph shows that developed nations have a higher dependency load of ageing population (old people) because of the higher life expectancy while developing nations have a large dependency load of young children due to higher birth rates.

In Papua New Guinea, care of the old is not yet a problem to us because they remain part of the extended family unit and are respected as elders in the community. The number of old people may not be as many as in the developed nations; however we have a big dependency load of young children and the unemployed. Altogether our dependency load exceeds the total dependency load of developed nations. This is true for many developing nations.

High dependency load is a big problem in individual families of many developing nations. It puts burden on one or two people in the family to make ends meet for the whole family. Sometimes this leads to arguments and violence in the family.

In developed nations the ageing population is fast increasing. It has become a problem in some countries. In some parts of the world, 16 to 18 percent of the population is already age 65 or older. This puts a strain on the government to put measures in place to cater for the aging population. Services such as pension schemes and special homes for the aged are provided. Other measure such as the Social Security is used in places like the USA. Here workers' pay taxes throughout their careers so that when they retire, usually around the age of 65, they can receive

money from the federal government to support themselves. Picture on the next page shows an example of a retirement home.

A retirement home in the USA

In many parts of the world, including the United States, older people who cannot work and have health problems live in long-term care facilities such as nursing homes, where they receive care 24 hours a day. But many families are unable to bear the costs of nursing homes and medical care for the elderly and health insurance is unable to cover the expense. Other countries face similar problems, and multinational efforts are underway to explore new methods to finance the care of the world's older persons, soon to number one billion.

Some developing countries are now beginning to experience problems of caring for the old. Perhaps Papua New Guinea will also face these problems in the future.

Now do the activity below

Activity

Refer to the population pyramids on page 44 to answer the questions below.

1.   Which gender lives longer? Male or female
      _____

2.   A developing nation's pyramid has a wider base and a very narrow peak. What does that indicate?
      _____
      _____

Check your answer at the end of the summary.

Summary

You have come to the end of lesson 6. In this lesson you have learnt that:

- life expectancy is the average expected length of life: the number of years that somebody can be expected to live.

- an ageing population is a shift in the distribution of a country's population towards older ages, usually from 60 years and above.

- dependency Load refers to the number of people who are not part of the working population (labour force) of a country. This includes mainly the children under the age of 14 and old people who are 60 years and above**.**

- an increase in the life expectancy of a country is attributed to
    - good health services
    - improved nutrition
    - good safety environment and
    - living healthy and positive lifestyles

- factors that contribute to a lower life expectancy include
    - poor health services
    - poor nutrition
    - harsh and unsafe environment
    - living an unhealthy and unpleasant lifestyles

- developed countries tend to have higher life expectancies compare to developing countries.

- adult mortality rate is lower in developed nations thus resulting in higher life expectancy. On the other hand, adult mortality rate is higher in developing nation, resulting in a lower life expectancy.

- developed nations have a higher dependency load of ageing population (old people) because of the higher life expectancy while developing nations have a large dependency load of young children due to higher birth rates.

- high dependency load is a big problem in individual families of many developing nations. It puts burden on one or two people in the family to provide for the whole family. Sometimes this leads to arguments and violence in the family.

- higher dependency load in developed nations puts a strain on the government to put measures in place to cater for the aging population.

Answers to Activity

1.   Female

2.   This shows a high birth rate, a high death rate and a high dependency load of children.

NOW DO PRACTICE EXERCISE ON THE NEXT PAGE

Practice Exercise 6

1. Define the terms below.

   a. Life expectancy

   _____

   _____

   _____

   b. Dependency load

   _____

   _____

   _____

2. What was the direct effect of the low adult mortality rate in developed nation?

   _____

3. Which age group in the population of a developing country dominates the dependency load?

   _____

4. Make a list of the factors that contribute to a prolonged life span.

   _____

   _____

   _____

6. Explain why ageing population is not really a big issue in Papua New Guinea as compared to the developed nations?

   _____

   _____

   _____

NOW CHECK YOUR ANSWERS AT THE END OF TOPIC

Lesson 7   Diseases and Epidemics

Welcome to lesson 7. In this lesson you will look at Disease and Epidemics as a factor that can decrease a population of a place.

Your Aims

- define epidemics and infectious diseases
- identify examples of infectious diseases and epidemics
- discuss the effects of diseases and epidemics on population change.

You learnt in lesson 5 that population change is caused by death, birth and migration. In this lesson we will look at epidemics and infectious diseases as a factor that can cause deaths and consequently lead to a decrease in population.

What is an epidemic?

> **An epidemic is the rapid spread of an infectious disease to a large number of people in a given population within a short period of time**.

Now I know what an epidemic is. Disease is not a new word to me but I wonder what infectious disease is referring to.

> **Infectious diseases are disorders caused by organisms such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease.**

Some infectious diseases can be passed directly or indirectly from one person to another. Some are transmitted by bites from insects or animals. Others are acquired by consuming contaminated food or water or being exposed to organisms in the environment.

Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild complaints of infections may need rest and home remedies, while some life-threatening infections may require hospitalisation.

Many infectious diseases, such as measles and chickenpox, can be prevented by vaccines. Frequent and thorough hand-washing also helps protect you from infectious diseases.

There are many infectious diseases. Below are some examples of infectious diseases.

Malaria	Tuberculosis	Chicken pox	HIV/AIDS
Measles	Ebola	Chikungunya	Cholera
Typhoid	Flu	Leprosy	Plague

An infectious disease becomes an epidemic when it spreads to many people in a short period of time.

Here below are top ten epidemics that have occurred in the earth's history.

1   **Tuberculosis (TB)**

TB is caused by bacteria that spread through the air; this disease attacks the lungs and causes internal weakness, chest pains, night sweats, and terrible fits of coughing. In the 19th century, tuberculosis killed an estimated one-quarter of the adult population of Europe, and by 1918 one in six deaths in France were still caused by TB. Today, the disease is still around, affecting nearly 8 million people a year and leading to the death of about 2 million of those infected.

Chest x-ray of patient with tuberculosis

2.   **The Great Influenza Epidemic of 1918**

Though it only survived for a year, this strain of virus was responsible for the deaths of 50 to 100 million people, as it was able to quickly spread from country to country as troops and soldiers returned home from WWI from all around the globe. Symptoms were common to those in today's influenza virus, but excessive fluid build-up in the lungs as a result of the complications from the flu is what ultimately caused the death of millions**.**

Stricken patients of Spanish flu

3.   **The Black Death**

Black Death is also known as the Bubonic Plague. It is considered to be the first true pandemic on earth, and it cut populations in half throughout parts of the world like Asia and Europe in the fourteenth century. Symptoms of Black Death include swollen lymph glands, fever, cough, bloody sputum and difficulty in breathing. The underlying

Symbol of Black Death

cause or epidemic strain is still being debated today. Thanks to developments in medicine, any resurfacing cases can be easily treated in early stages, so the immense loss in population as seen six centuries ago is unlikely.

4.   **Yellow fever**

This disease is related to malaria in that it spreads from person to person through infected mosquitoes. Responsible for taking millions of lives and wiping out entire colonies and villages during the time of Napoleon's reign, yellow fever still persists in areas of Africa and South America. While some infections are less severe than others, it is a life-threatening disease that can cause severe internal bleeding and liver failure, which is marked by the yellowing of the skin, prompting this disease's name. The most famous Yellow Fever epidemic occurred in 1793 in the United States in Philadelphia, when over 4,000 people died in a span of only four months. Today, the disease still exists, and there are an estimated 200,000 cases of yellow fever, causing 30,000 deaths worldwide each year.

Yellow Fever Vaccination, 1930

5.   **Small pox**

Dating back to the 1500's, the smallpox epidemic, stemming from the variole virus, has ravaged entire populations. It caused the death of nearly 90 million Native Americans when the Europeans brought it over to the Americas. Symptoms include body aches, high fevers, and a serious rash that results from fluid-filled bumps that leave extensive scarring on the skin. The disease killed an estimated 400,000 Europeans per year at the end of the 18th century, even though a vaccine was created in 1796. In spite of the vaccine; breakouts of this disease persist, most recently in the late 1960s, when two million people died in countries all over the globe.

Effects of Smallpox on the skin

6.   **Cholera**

This disease was common in India for centuries and moved on to the rest of the world in the 19th century. Most often spread through contaminated water and food. Cholera causes flu-like symptoms like vomiting, diarrhoea, cramping, and severe dehydration, which eventually leads to the death of those who cannot keep properly hydrated as their immune system fights the disease. Unfortunately, outbreaks are still occurring today, with an estimated three to five million cases and 120,000 deaths reported each year. The largest and most recent cholera outbreak began in Haiti in 2010. It has already claimed over 7,000 lives and has yet to be eradicated. Cholera became an epidemic in Papua New Guinea in 2010 but quick response from the health department halted the spread of the disease.

Cholera patients receive treatment

7.   **Malaria**

This mosquito-borne illness is one of the longest-surviving threats to our livelihood, as records of the disease go back nearly 4,000 years – and cases are still being recorded today. The largest Malaria epidemics spread throughout many different countries in World War I and World War II, killing over 100,000 American soldiers alone.

Female Anopheles Mosquito, the transmitter of Malaria

8.   **AIDS**

AIDS is one of the "youngest" diseases on this list, AIDS spread widely throughout the world in the 1980's, and since that time it has taken the lives of more than 25 million people. This disease is caused by the Human Immunodeficiency Virus (HIV) which is contracted and spread through contact with bodily fluids and quickly attacks the immune system. There is still no cure for AIDS, although medications like highly-active anti-retroviral therapy treatments have been used to lessen its symptoms and extend the life of those affected by about 4 to 12 years.

Symbol of global AIDS Awareness

9. Epidemic Typhus/Camp Fever

This disease caused by tiny microbes carried by bodily lice. This devastating disease spread easily in close, cramped quarters and poverty-stricken cities dating back to the 1600s. Symptoms start with a headache, nausea, and fever, but when left untreated, lead to heat exhaustion, effects on blood circulation, and other complications leading up to organ failure. This epidemic spread throughout Europe during the Thirty Years War in the 1600s and claimed over 10 million lives, but it regained strength and caused several million deaths in Russia, Poland and Romania during World War I.

Mass Grave – Typhus Epidemic

10. Polio

This disease is suspected to have been around for thousands of years. It usually spreads through contaminated food and water, and targets the human nervous system, which causes symptoms that usually affect the legs and lead to paralysis. In the United States, outbreaks peaked in 1952, when 57,628 cases were reported throughout the nation. Though there is no cure for this disease, a vaccine was developed in the 1950s that has proved effective for decades. Since this is a disease only carried by humans, widespread vaccinations are expected to remove any traces of the disease in future generations.

Doctors treat young patient with polio

Effects of diseases and epidemics on population change.

Diseases and epidemics have tremendous effects on the population. When an epidemic strikes a population with massive loss of lives it leads to a sharp decline in the total population of that place in a short period of time. Some infectious diseases may take a little while to spread because of the invention of anti-biotic and immunisation. However there are some that are deadly and can easily spread in a short time resulting in massive loss of lives. When this happens a population will obviously decrease.

An epidemic can become a concern for the government and businesses in a country as it threatens the working population of the country and eventually leads to a decline in the economy. In most cases both the government and the business community work together to eradicate or minimise the infections.

This is evident in Papua New Guinea and in many other countries in the case for epidemic such as HIV and AIDS, Ebola, Cholera, TB, Malaria and many more.

An epidemic is sometimes difficult to contain as migration of people from infected areas can easily spread the disease to uninfected areas. A severe epidemic requires the government and other international organisations such as WHO (World Health Organisation), Medicine San Frontiers (Doctors Without Borders), Red Cross and many others to minimise loss of lives and restore normalcy to affected areas.

The 2014 Ebola epidemic in Western Africa which includes Sierra Leon, Nigeria, Guinea and Liberia was one of the worse epidemics in the African continent. It became a global threat that it prompted a number of developed countries and international organisations including health volunteers across the globe to swiftly put measures in place to eradicate the disease and prevent the spread to other parts of the world. Thousands of lives was lost, families and economy were also affected in these countries. This is how bad an epidemic can be to a country and its population.

Summary

You have come to the end of lesson 7. In this lesson you have learnt that:

- an epidemic is the rapid spread of an infectious disease to a large number of people in a given population within a short period of time.

- infectious diseases are disorders caused by organisms such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They're normally harmless or even helpful, but under certain conditions, some organisms may cause disease.

- some infectious diseases can be passed directly or indirectly from one person to another. Some are transmitted by bites from insects or animals. And others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment**.**

- an infectious disease becomes an epidemic when it spreads to many people in a short period of time.

- an epidemic that results in loss of lives leads to a decrease in a population.

- an epidemic is sometimes difficult to contain as migration of people from infected areas can easily spread the disease to uninfected areas.

- a quick response to any epidemic from the government, charity and health organisations can minimise loss of lives, restore normalcy in affected areas in short time and prevent the spread to other areas.

Practice Exercise 7

1. Define these two terms.

   a. Infectious disease

   _____

   _____

   _____

   b. Epidemic

   _____

   _____

   _____

2. How are infectious diseases spread?

   _____

   _____

   _____

   _____

3. What is the immediate effect of epidemics on the population of a place?

   _____

4. What is the name of the disease that is caused by tiny microbes carried by body lice?

   _____

5. When does a disease become an epidemic?

   _____

   _____

6. Which of the diseases mentioned in this lesson killed thousands of people in Western Africa in 2014?

   _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC.

Lesson 8   Population and Social Problems

Welcome to lesson 8. In this lesson you will study population and social problems that are associated with it.

Your Aims

- define social problems
- identify and explain social problems associated with population change
- state how governments can address social problems

Despite the number of epidemics that has occurred throughout the world's history, the population has not become steady or decreased. It is in fact growing rapidly across the globe. Population increase comes with its effects. Social problems are one of these effects and are common in many over populated areas of the world. These are mainly towns and cities in both developing and developed nations.

Now let us define social problem.

> **Social problems, also called social issues, are undesirable conditions in a place that people believe should be corrected**.

The common social problems associated with population change include

1. Rural Urban Migration
2. Higher dependency load
3. Overcrowding
4. Unemployment

These problems may be similar amongst developing nations as these nations are still going through the developing stages. Let us briefly go through each of the social problems above.

1.   Rural urban Migration

Movement of people from rural areas into urban areas (rural urban drift) has been on the rise especially in the developing world. People who move into urban areas have their own reasons for migrating however they become a burden in the cities when they cannot fit in well in urban settings. They either add to the dependency load or resort to living in squatter settlements.

New squatter settlement in Hohola, Port Moresby

2.   **Higher Dependency Load**

Having a higher dependency load is common in many developing nations. This indicates the number of dependents that depend on the working population for basic necessities. The bigger the dependency load, the stressful it becomes for one or two employed family members to manage the whole family. This is a burden and at times leads to resentment and violence in the family when what is earned is insufficient. It is experienced particularly in extended families in urban areas.

3.   **Overcrowding**

The continuous movement of people into urban areas will see a rapid increase in the urban population particularly in the developing cities of the world. This may pose problems in these cities where land mass and other necessary resources are scarce. Where land mass is small and there is a higher population, obviously that area will have a high population density. Too many people living in a small area of land will lead to overcrowding. In Papua New Guinea many of these people live in squatter settlements with very poor living conditions.

Many low cost houses in the suburbs of Port Moresby and Lae were occupied by simple public servants in the 1960s and the 1970s. These people have been living there with their children and since then the number of people living in each house has doubled or tripled. There are approximately two to three generations of people living in the same house. The houses have deteriorated to a point where some of them are unsuitable for human occupants. Further, the environments around these homes are dirty and unclean, and pose greater health risks too. This increases the chances of epidemics amongst the people.

Building of shacks next to the main family home is now a common sight in these suburbs. The suburbs are more like ghettos or shanty towns.

Furthermore these people have left their home villages for many years and their children and grandchildren have simply forgotten their culture and traditions.

Below are two photographs showing examples of small houses or shacks built next to the main family home.

Houses in Hohola suburb, Port Moresby

4.   **Unemployment**

Before we look at unemployment as a social issue in relation to population change, familiarise yourself with the following terms.

Unemployed – not having a paid job although able to work.
Unemployment – refers to joblessness (the condition of having no job).
Number of unemployed – number of people who are unemployed in an area, often given as a percentage of the total work force.

Unemployment is not an issue in rural areas however it is a common problem in urban areas in both developed and developing nations. In developed nations it becomes a financial burden to the government; however the unemployed citizens are often supported financially by their governments through measures such as social welfare or unemployment benefit. For example, in Australia, the government pays what is known as 'dole'. This is money paid to their unemployed citizens for their basic necessities. Despite of this, developed nations still have homeless people living on the streets in some of the big cities in the world. This clearly indicates that poverty still exist in some of the well-developed nations in the world.

Many developing nations do not have the financial capacity to address the unemployment issue like the developed nations. People who move from rural areas to urban areas in the hope of finding jobs sometimes do not find one at all. These people resort to living in squatter settlements or end up living with relatives in towns and cities. When life becomes hard in the city, they engage themselves in immoral and lawless activities such as prostitution, break and enter, armed robbery, pick pocketing, illegal sale of drugs and alcohol to support their lives..

How can unemployment be addressed by the government?

Unemployment is a common issue that affects a lot of countries and so their respective governments will have to find solutions to these issues.

Below are some measures taken by some developed nations to address unemployment.

1.   Through the social security services the government developed the Unemployment Compensation Program which provides monetary support for people who have lost jobs. In some developed nations like Australia and Britain dole (money) is paid to the unemployed.

2.   The Employment Service Program provides training and job-finding services for people seeking work.

3.   They create more jobs by providing a favourable business environment for both locals and foreign investors.

As a developing country, Papua New Guinea does not have the capacity to cater for the unemployed as yet, however some measures have to be put in place to reduce unemployment and its effects. Some of these include,

1. Providing better services in rural areas to encourage people to remain in their villages.

2. Creating more jobs by providing a favourable business environment for both locals and foreign investors.

3. Providing training for the people to be able to perform specialized skills that are often occupied by expatriates. In this way we avoid paying large amount of money to contract officers from overseas and at the same time provide employment for our local people.

4. Engaging the unemployed youths in towns and cities in worthwhile activities to occupy their time so that they do not get themselves into mischief.

5. Encouraging self-employment schemes for the unemployed youth to enable them to start their own business or small scale firm, which can also generate employment for many others.

6. Providing a relevant education system that will equip people to be successful in their own communities. This can be done through formal employment or informal sectors (self-employed).

The few measures above are some ways in which we can do to alleviate (reduce) the effects of unemployment.

Now do the activity below.

Activity

Write your answer in the space provided. Check your answers at the end of the topic.

1.   What is rural urban drift?

    _____

    _____

2.   Describe the living conditions in squatter settlements in Papua New Guinea.

    _____

    _____

3.   What is a dole?

    _____

    _____

4. State why overcrowding can be unhealthy.

_____

_____

Recap the main points in this lesson below.

Summary

You have come to the end of lesson 8. In this lesson you have learnt that:

- social problems, also called social issues, are undesirable conditions in a place that people believe should be corrected.
- the common social problems associated with population change include
  1. Rural Urban migration
  2. Higher dependency load
  3. Overcrowding
  4. Unemployment
- rural urban migration leads to population decrease in rural areas and population increase in urban areas.
- the unemployed youths sometimes engage themselves in anti-social behaviours which then contribute to lawlessness in the society.
- higher dependency load is common in developing countries. It indicates the number of dependents that depend on the working population for basic necessities.
- overcrowding can be a health hazard.
- unemployment is the number or proportion of unemployed people.

Answers to Activity

1. Movement of people from rural areas to urban areas.

2. Living condition in squatter settlements is often very poor. The houses are made of off cut timber and scrape metals. Sanitation is poor and chances of epidemics are high due to unhygienic conditions.

3. Money paid to the unemployed.

4. Diseases can spread easily.

NOW DO PRACTICE EXERCISE 8 ON THE NEXT PAGE.

Practice Exercise 8

1.   What are Social problems?

        _____

        _____

2.   List the four social problems stated in this lesson.

        i.   _____

        ii.   _____

        iii.   _____

        iv.   _____

3.   Name an example of a service provided by some developed countries to address the issue of unemployment?

        _____

4.   What can rural urban migration do to the total population of urban areas?

        _____

5.   What is dependency load?

        _____

        _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC.

Lesson 9   Population and Sustainability of Resources

Welcome to lesson 9. In this lesson you will study Population and Sustainability of Resources.

Your Aims

- define sustainable resources
- identify resources which are in short supply
- explain sustainable practices of these resources

Let us begin with the meaning of sustain, sustainable and sustainable resources

> **Sustain - to last for a long period of time without becoming less or damaged.**

> **Sustainable - using of natural resources and energy in a way that does not harm or damage the environment.**

> **Sustainable resources are resources that can be replaced soon after they are consumed.**

Effect of Increasing Population on Resources

The world's population has not decreased. It is increasing and will continue to increase because of better health services and good nutrition. On the other hand the world's resources are becoming scarce as the population grows.

Both natural and man-made resources are used for the production of goods to meet the demand of the growing population. Some of the natural resources that are being used are fast depleting (becoming scarce / short supply).

Before we look at how each resource is depleting, remember this important fact.

> **The earth and all the natural things that are in it are interdependent. This means that they depend on each other or work together to sustain life for all living things including human beings. If one part is changed, it affects all the others. Any change that occur can bring negative or positive effects**

Interdependence of things in nature covers a wide range of topics. We will not discuss all of them however, we will only look at how growing population is contributing to the depletion of resources.

Below are the main resources that are depleting (becoming scarce).

1. Forests
2. Land
3. Food
4. Water
5. Air

1.   Forests

Throughout history, our forests have been threatened by the pressure of population increase and the increasing demand for resources. Forests have been cleared for;

- farming,
- logging
- infrastructures such as roads, bridges and buildings
- settlements
- mining
- recreations

Study the graph below on the destruction of Papua New Guinea's forest.

FOREST CLEARED AND DEGRADED IN PAPUA NEW BETWEEN 1972- 2002
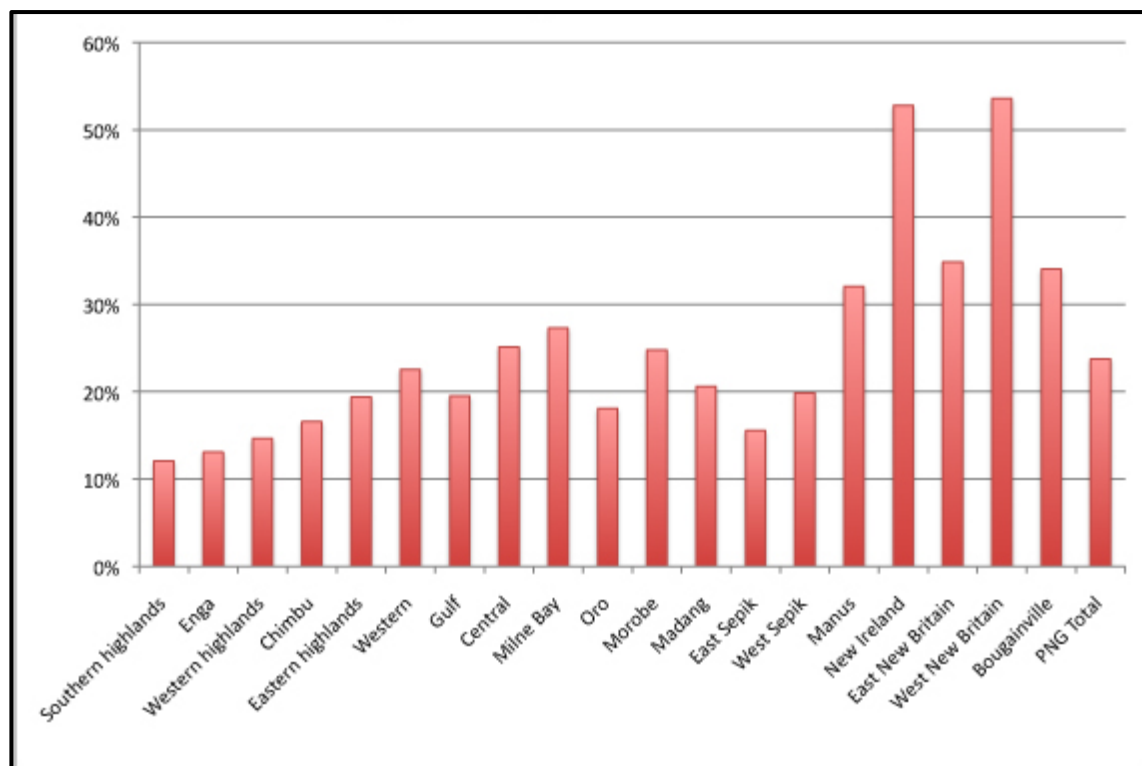
The graph above shows the percentage of forest in each province in Papua New Guinea that has already been destroyed. The figures given in the graph have increased because more logging companies are currently in our country logging our forests.

The destruction of the world's forests is creating a threat to the very existence of our planet. The effects of the destructions include

- erosion and loss of soil fertility
- decrease carbon sinks (carbon sinks are things in nature that absorb carbon dioxide. Forests and oceans are the main carbon sinks)
- increase carbon dioxide
- global warming
- loss of wildlife
- loss of hunting grounds and
- loss of medicinal plants

The destruction of forests will continue as long as population continues to grow. This will lead to its depletion if we do not use it wisely.

2. Land

Land is a valuable resource that can neither increase or decrease in amount. The amount of land on the surface of the earth is fixed. Furthermore, not all land is arable. Arable land is a scarce resource and only a small percentage of the world's land is suitable for cultivation.

The pie graph below shows the percentage of land that has been cultivated, that which could be cultivated and those that are unsuitable for cultivation in the world.

The pie graph indicates that only one third of the total land is arable. Two thirds of the land is harsh and is not suitable for cultivation.

The amount of land available for people to use becomes less as the population grows. The land that was once enough to cater for a small number of people is now very scarce as more people scramble for the same amount of land.

The amount of arable land can decrease if we do not use the land in a sustainable way. A piece of land 50 years ago may be forested with all its natural inhabitants.

LAND AND CULTIVATION IN THE WORLD
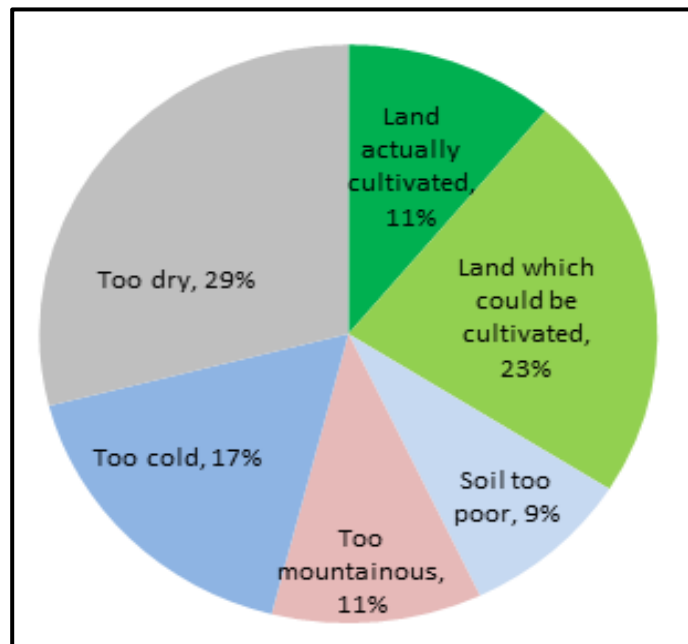
The same piece of land could be bare today as a result of unsustainable ways of using land. It is important to use land wisely so that it is not polluted and is sustained for the future generations.

Now turn to the next page to do the activity.

Activity

Refer to the pie graph on the previous page to answer the questions below. Check your answers at the end of the summary

1.   What is the total percentage of land that is unsuitable for cultivation? _____

2.   Say true or false for the statements below.

   a) Arable land can lose its fertility if used unwisely. _____

   b) What people do to the forests does not affect the land. _____

   c) Climate is a non-living part of the environment and so is not affected by human activities on the land. _____

You will now look at Food as a depleting resource.

3.   Food

The population 'explosion' of this century has made people asked if the world can be able to produce enough to feed the ever increasing population. To feed all the people, two problems have to be solved.

   1. The problem of increasing food production.
   2. The problem of unequal distribution of the world's food resources.

Problem 1:   Increasing Food Production

To increase food production more forests will be cleared and more land will be cultivated to plant more crops. Remember that there is not much arable land left. Clearing more land can be part of the solution to food production but another way is by increasing crop yield. Yield refers to how much food an area of land can produce. The introduction of better seeds, fertilizers, pesticides and irrigation systems has increased the yield of the farms. This is called the 'Green Revolution' and it has helped to feed the increasing world population. The use of chemicals in farming can be harmful to the environment. Genetically engineered plants are now used to produce higher yields.

Problem 2:   Unequal Food Distribution

Despite the increase in food production in the world, millions of people are without enough food to eat. At the same time, there are millions who have more food than they need. This shows that the distribution of the world's food resources is unevenly distributed.

To improve food distribution, more land is needed for farming and in addition more even distribution is needed on an international, national, provincial and local level. These things both rely on income. Therefore the answer to feeding the world's population includes improving income levels and the living standards of the world's people.

4.   **Water**

Water is essential for life. Three quarter of the earth's surface is water. However water is a scarce resource because only 0.1 per cent of the world's water can be used to satisfy people's need. Also not everyone has equal access to this water. Papua New Guinea has an abundance of water unlike many dry areas in the world. Many rivers like the one shown below can be found in many different parts of Papua New Guinea.

Arafundi River, Angoram, East Sepik

The abstraction of natural resources and the use of machines and chemicals in many industries today pose a threat to the availability of fresh clean water because they can be easily polluted if harmful chemicals are not disposed properly.

Air

Air we breathe is a very vital resource that cost you and I nothing. In many parts of Papua New Guinea, especially in rural areas, there is so much fresh air around that we don't even think about it. It is not the same everywhere. In some large industrialised cities of the world, the air is so polluted by gases and smoke from factories and car exhausts that some people have breathing problems.

The depletion of the important natural resources discussed above can affect people and their environment.

Let us now look at sustainable practices of using these resources.

What are sustainable practices?

> **These are ways in using resources in a sustainable way.**

Using forest in a sustainable way

The following are some ways in using forests in a sustainable way.

- Using sustainable method (selective logging – only selected trees are cut) for harvesting logs than clear felling where all trees in an area are cut at one time.

- Replant trees that are cut with new trees (reforestation).

- Control burning of forest.

- Using appropriate farming method such as shifting cultivation to reduce the rate of deforestation and pollution.

- Avoid overgrazing

- Monitoring logging companies to make sure that they follow the laws and regulations the country has put in place to manage our forests.

Using land in a sustainable way

Some ways of using land in a sustainable way

- Replant trees that are cut with new trees (reforestation) and use suitable farming method to avoid soil erosion , loss of soil fertility and deforestation

- Dispose harmful waste in a proper manner to avoid land pollution

- Avoid over grazing

Using food in a sustainable way

The production of food to feed the world population will continue to increase as the population continues to grow. The ability of the natural environment to continue provide food and other necessities depends on how well we can sustain our natural environment. The unwise use of the environment will obviously result in the depletion of food resource in the world.

. Below are some things we can do to sustain food production.

- Use our environment wisely. Remember, we stated at the beginning that when we change one part of the environment, it will affect the other parts as well. When land, forest, air and ocean are affected, food production will also be affected.

- Equal or fair distribution of food resource will reduce poverty and wastage

- Avoid wasting food and preserve food that can be preserved for later use.

Using air in a sustainable way

The amount of air in the atmosphere is fixed. It can neither increase or decrease, however, the amount of quality air present in the atmosphere is depleting. We can reduce the depleting rate by doing the following things.

- Stop burning of fossil fuels in industries.
- Practice sustainable use of natural resource

- Avoid unnecessary bush fires
- Produce alternative clean energy for industries and motor vehicles

Being conscious of the state of our planet earth, we all can play our part to sustain our resources to support the ever growing population of the earth.

Summary

You have come to the end of lesson 9. In this lesson you have learnt that:

- sustainable resources are resources that can be replaced soon after they are consumed.

- she world's resources are becoming scarce as the population grows.

- natural resources are fast depleting (becoming scarce / short supply).

- the earth and all the natural things that are in it are interdependent. This means that they depend on each other.

- our forests have been threatened by the pressure of population increase and the increasing demand for resources. Forests have been cleared for

    - farming
    - logging
    - infrastructures such as roads, bridges and buildings
    - settlements
    - mining
    - recreations

- arable land is a scarce resource and only a small percentage of the world's land is suitable for cultivation.

- the amount of land available for people to use becomes less as the population grows.

- to feed all the people, two problems have to be solved.

    1. The problem of increasing food production.
    2. The problem of unequal distribution of the world's food resources.

- The ability of the natural environment to continue to provide food and other necessities depends on how well we can sustain it.

- Water is a scarce resource because only 0.1 per cent of the world's water can be used to satisfy people's need.

- The amount of air in the atmosphere is fixed. It can neither increase or decrease, however, the amount of the quality of air present in the atmosphere is depleting.

Answers to activity

1.   66%   2.   a) T   b)   F   c)   F

NOW DO PRACTICE EXERCISE 9 0N THE NEXT PAGE

Practice Exercise 9

1. Define the following terms.

   a) Sustain

   _____

   _____

   b) Sustainable resource

   _____

   _____

   c) Depletion

   _____

   _____

   d) Interdependence

   _____

   _____

2. What effect does the world's growing population has on the resources?

   _____

   _____

3. What happens to the arable land when population continues to grow?

   _____

   _____

4. What are the two problems involved in feeding the world's population?

   (i) _____

   (ii) _____

5. What percentage of the world's water is safe to use?

   _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC

Lesson 10 Comparative Study – Papua New Guinea and China

Welcome to Lesson 10. In this lesson you will compare population structures of Papua New Guinea and China.

Your Aims:

- Compare for differences and similarities between the population structures of Papua New Guinea and China.

China and Papua New Guinea differ in many aspects in their population structures however there are also similarities in the structures.

Let us begin by looking at China's population and population structure.

China, is a communist nation in East Asia, and is the world's most populous country. Its large landscape includes grassland, desert, mountain ranges, lakes, rivers and 14,500km of coastline. Beijing is the capital city, but the largest city in China is Shanghai, and is covered with skyscrapers. It is China's global financial centre. The iconic Great Wall of China runs east-west across the country's north.

Before 1949, most of the land in China was owned by the Landlords. The farmers had to give half of their land to the landlords as rent and also to pay taxes to the government. These farmers do not have much land because a long tradition of dividing land amongst sons had resulted in small farms. They had no money to spend on improving soils, seeds and irrigation and famines occur almost every year. Infant mortality was high and one in every five children died from diseases or starvation and the average life expectancy was only thirty years.

Infant mortality is the number of babies who die in their first year of life

In 1949, after the revolution, the communists set up the Peoples' Republic of China and began to improve health, education and living standards. With better medicines, hygiene and diet, fewer children died and people lived longer. The result has been a big rise in population since 1950.
This of course led to all sorts of problems in catering for the needs of the huge population. To prevent this, the government introduced a strict family planning policy, called the one child policy in 1978.

Listed here are some advantages of China's One Child Policy.
- Free education for your one child
- Allowances to help bring up your one child
- Priority housing
- Pension benefits

The Disadvantages of China's One Child Policy are:
- The ones who do not comply are looked down upon in society,
- At least half their income will dissolve in monetary fines due to the One-Child Policy.
- Families that do not comply with the policy do not get all the benefits that other families do.
- These benefits include: Good schools and government jobs and benefits
- Many couples who have a baby girl sometimes kill or abandon their child

In 2013 China scrapped its one-child policy, allowing all couples to have two children for the first time since the strict family planning rules were introduced more than three decades ago. It has now fully implemented a policy of allowing each couple to have two children as an active response to an ageing population. "The change of policy is intended to balance population development and address the challenge of an ageing population,"

In 2015 it has a population of 1374.62 billion. The other country that has a population over a billion is India. The population of China represents 19.48 percent of the world´s total population which possibly means that one person in every 5 people on the planet is a resident of China.

The graph below represents a steady growth of China's population since 2008

CHINA'S POPULATION SINCE 2008

Papua New Guinea is in the south western Pacific, which includes the eastern half of New Guinea and its offshore islands. It is a country of immense cultural and biological diversity, known for its beaches, coral reefs, active volcanoes, and dense rainforest. The population of Papua New Guinea in 2014 was 7.48 million. It represents 0.10 percent of the world´s total population which arguably means that one person in every 995 people on the planet is a resident of Papua New Guinea.

By 2016 Papua New Guinea's population is projected to increase by 153 985 people and will reach 7 907 530 in the beginning of 2017. The natural increase is

expected to be positive, as the number of births will exceed the number of deaths by 153 985. The population of Papua New Guinea is changing mainly due the natural reasons only (births and deaths) as there are few migrations going on.

Papua New Guinea's population density is 16.8 people per square kilometre as of February 2016. Density of population is calculated as permanently settled population of Papua New Guinea divided by total area of the country. Total area is the sum of land and water areas within international boundaries and coastlines of Papua New Guinea. The total area of Papua New Guinea is 462 840 km2.

The graph below represents a steady growth of PNG's population since 2006

PNG'S POPULATION SINCE 2008

SOURCE: WWW.TRADINGECONOMICS.COM | WORLD BANK

Population Pyramid

A population pyramid illustrates the age and sex structure of a country's population and may provide insights about political and social stability, as well as economic development. The population is distributed along the horizontal axis, with males shown on the left and females on the right. The male and female populations are broken down into 5 year age groups represented as horizontal bars along the vertical axis. The youngest age groups are at the bottom and the oldest at the top. The shape of the population pyramid gradually evolves over time based on fertility, mortality, and international migration trends.

Below is a table that shows the Age Structure of China in 2014.

Age structure	Percentage	Male Population (millions)	Female Population (millions)
0-14 years	17.1 %	124,340,516	107,287,324
15-24 years	14.7%	105,763,058	93,903,845
25-54 years	47.2%	327,130,324	313,029,536
55-64 years	11.3%	77,751,100	75,737,968
65 years and over	9.6%	62,646,075	68,102,830

Below is a table that shows the Age Structure of Papua New Guinea in 2014.

| Age structure	Percentage	Male Population (millions)	Female Population (millions)
0-14 years	35%	1,165,911	1,125,104
15-24 years	19.7%	652,548	635,411
25-54 years	36.2%	1,226,213	1,146,951
55-64 years	5.2%	173,019	169,329
65 years and over	3.9%	134,396	123,848

Below is the population pyramid of China.
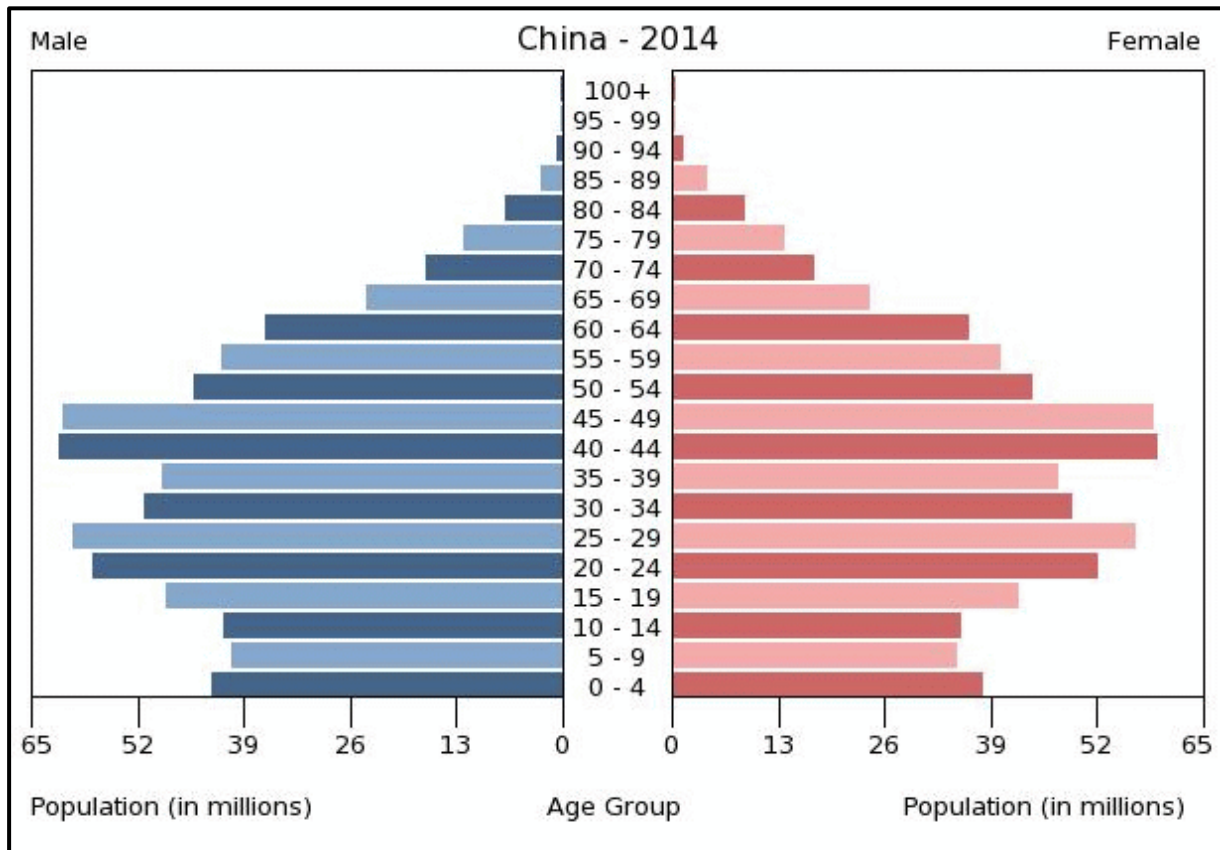
The population pyramid of China shows a declining children population with a huge productive or workforce population. However the pyramid focus shows an aging population with a small workforce population in the future. China's pyramid is similar to many developed countries all over the world. With the abolition of the one child policy, we do not know how the graph will look in the future.

What type of service would the government of China be looking at improving in the next decade?

Below is the population pyramid of Papua New Guinea
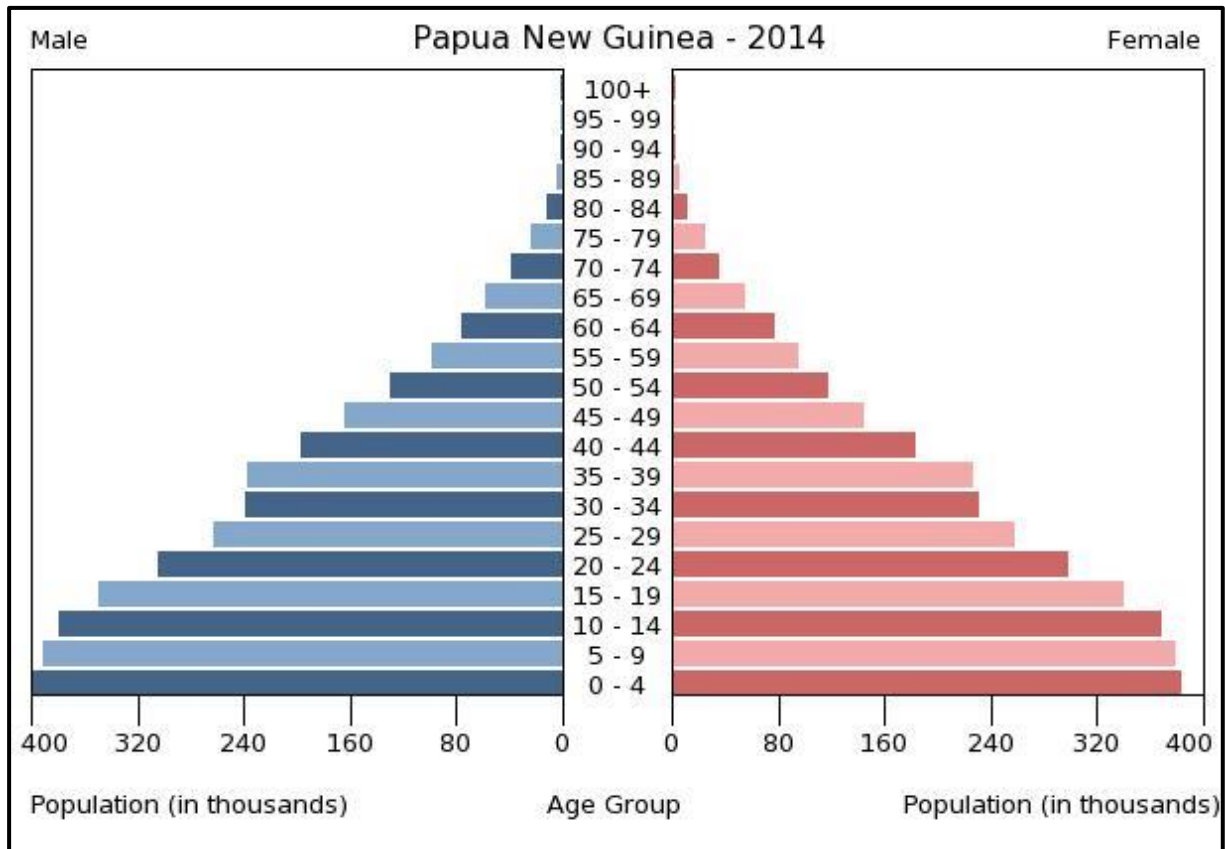
The population pyramid of PNG has a very large base with decreasing steps upwards. This is very typical of developing countries which have high birth rates and relatively high death rates. Such countries such as ours have a very large dependency load of young children, poor health care and low levels of education

Dependency ratio of population is the ratio of people who are generally not in the labour force, (the dependents) to those in the workforce of a country (the productive part of population). The dependent part includes the population under 15 years old and people aged 65 and over. The productive part of population accordingly consists of population between 15 and 64 years.

Summary

You have come to the end of lesson 10. In this lesson you have learnt that:

- countries with a very big landmass are likely to have a big population compared to a small land area.

- China has the largest population in the world

- China has introduced two national population policies.

- both China and PNG's population continues on a steady growth.

- China's population is an aging one

- Papua New Guinea's population has a high dependency load

NOW DO PRACTICE EXERCISE 10 ON THE NEXT PAGE

Practice Exercise 10

1. Why did the Chinese government introduce the one child policy?

   _____

   _____

2. Why did China decide that it was time now to remove the one child policy?

   _____

   _____

3. Look at the population pyramids of PNG and China and answer this question. Is it PNG or China that has a huge number of individuals between the ages of 0-14?

   _____

4. Write a paragraph describing the problems that PNG might face in the future relating to the way its population is shown.

   _____

   _____

   _____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC

ANSWERS TO PRACTICE EXERCISES 5-10

Practice exercise 5

1. The increase in the number of individuals in a population of an area.

2. Birth and Immigration

3. Death and emigration

4. To calculate natural increase, subtract the birth rate from the death rate.

5. 70 years

6.

	Developed countries	Developing countries
Birth Rates (high or low)	low	high
Death Rates (high or low)	low	high
Natural Increase (high or low)	high	low
Life Expectancy	high	low

Practice exercise 6

1. a) The expected length of life or the number of years a person is expected to live.

   b) Dependency Load

2. Longer life expectancy

3. Children age 14 and below

4. Good health services
   Improved nutrition
   Good and safe environment
   Living healthy and positive lifestyle

5. Because the old people remain part of the extended family unit and are respected as the elders of the community

Practice exercise 7

1. a) Infectious diseases are disorders caused by organisms such as bacteria, viruses, fungi or parasites.

   b) A rapid spread of an infectious disease to a large number of people in a given population within a short period of time is called an epidemic.

2. Infectious diseases are spread by being exposed to organisms in an environment, transmitted by insects or animal bites, or through the consumption of contaminated food or water.

3. Epidemics with high number of deaths can cause a population in an area to decline sharply.

4. Typhus or camp fever

5. A disease becomes an epidemic when it spreads rapidly to many people.

6. Ebola

Practice exercise 8

1. These are undesirable conditions in a society that needs to be corrected to restore order in the community.

2. Rural urban migration, higher dependency load, overcrowding and unemployment

3. Social Security Services and Employment Service Program

4. Increase population of urban areas

5. Total number of people including children, old and unemployed people who depend on others for basic necessities.

Practice exercise

1,   a) To last for a long period of time without becoming less or damage
      b) Resources that can be replaced soon after they are consumed
      c) Becoming scarce or in a short supply
      d) depending on each other to sustain life

2. World's resources are becoming scarce as the population continues to grow.

3. Amount of arable land for people to use becomes less.

4.   i) Increasing food production
      ii) Unequal distribution of the world's food resources

5. 0.1%

Practice exercise 10

1. Because there was a huge increase in population after the communist party improve china's living standards.

2. Because China is faced with an aging population without young productive people

3. China

4.   Countries with young populations like PNG will face problems such as lack of good education, high unemployment, greater dependency load of young children and anti-social behaviours.

TOPIC 3

Migration

In This Topic You Will Learn About:

- **Types of Migration**
- **Prehistoric Migration**
- **Migration in the Pacific**
- **Case Study: Migration in the Pacific**

TOPIC 3: INTRODUCTION

In this topic you will study Migration. The topic is made up of four lessons. They are;

Lesson 11 : Types of Migration

Lesson 12: Prehistoric Migration

Lesson 13: Migration in the Pacific

Lesson 14 : Case Study: Migration in the Pacific

At the end of this topic, you should be able to:

- define and explain demographic terms: migration and urbanisation
- explain reasons why people move or migrate to other places
- describe the types of migration-voluntary and forced migration
- write a report on a case study of one type of migration
- apply mapping skills to illustrate the Pacific and pre-historic migration

We hope you will enjoy this topic.
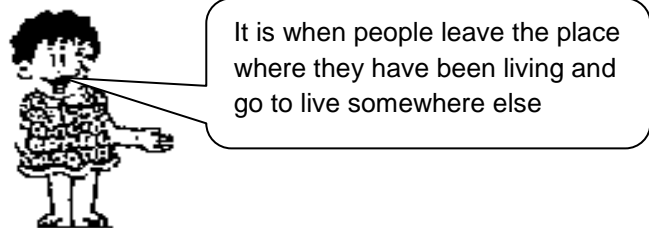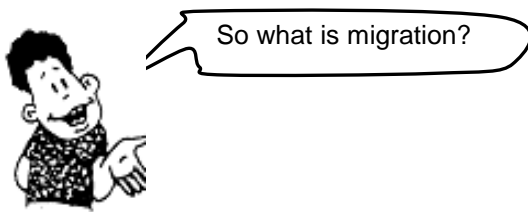
Your teacher

Lesson 11:   Types of Migration

Welcome to Lesson 11. In this lesson you will study migration..

 Your Aims:

- define migration
- identify different types of migration
- discuss reasons why people migrate

People are born, people die, and people move from one place to another. The most common movement of human beings is the daily journey from home to the gardens, the factory, and the office or to the school and returning home at night. Many people do move to a new home for long periods of time, even permanently. This change of location can either be long term or short term.

So what is migration?

It is when people leave the place where they have been living and go to live somewhere else

What is Migration?

Migration is the movement of people and usually refers to a permanent change or semi-permanent change of home.

Permanent Change is change that will take place for a long time and Semi-Permanent is change that will take place only for a short time.

Remember, **migration** is about:

- movement of people from one place to another
- Migration can be permanent, for a longer period of time or temporary, that is only for a short time.

Types of Migration

People have been on the move throughout history. In Papua New Guinea, for example; Our ancestors were simple hunters and gatherers who were always moving from one place to another. Sometimes this movement resulted in them permanently changing their homes. This group of people were migrants who migrated for many reasons.

> **A migrant is a person who alone, or with a group, makes a permanent or semi-permanent change in their residence or home.**

Migration affects the distribution of people over a given area as well as the total population of a region and the population structure of a country or city. This means that, more people can at the same time move into an area which will then increase the population of that area or simply decrease the population of that given area when more people move out to other places. These movements were done within countries but sometimes led to people moving from one country to another.

Internal Migration refers to the movement of people within a country.
Most people find internal migration within a country easier than external migration because when they move within a country, they are able to find the same languages, food, music, people whom they are able to understand and customs they are familiar with after they move. Movement within a country also involves shorter distances while external migration involves longer distances.

An example of internal migration is when a person from your area moves to Port Moresby, the capital city of Papua New Guinea. This movement is short distance movement because he is moving from one province to another province within Papua New Guinea.

Now let us take a closer look at the map below which shows the different types of internal migration within Papua New Guinea.

INTERNAL MIGRATION IN PNG, 1990
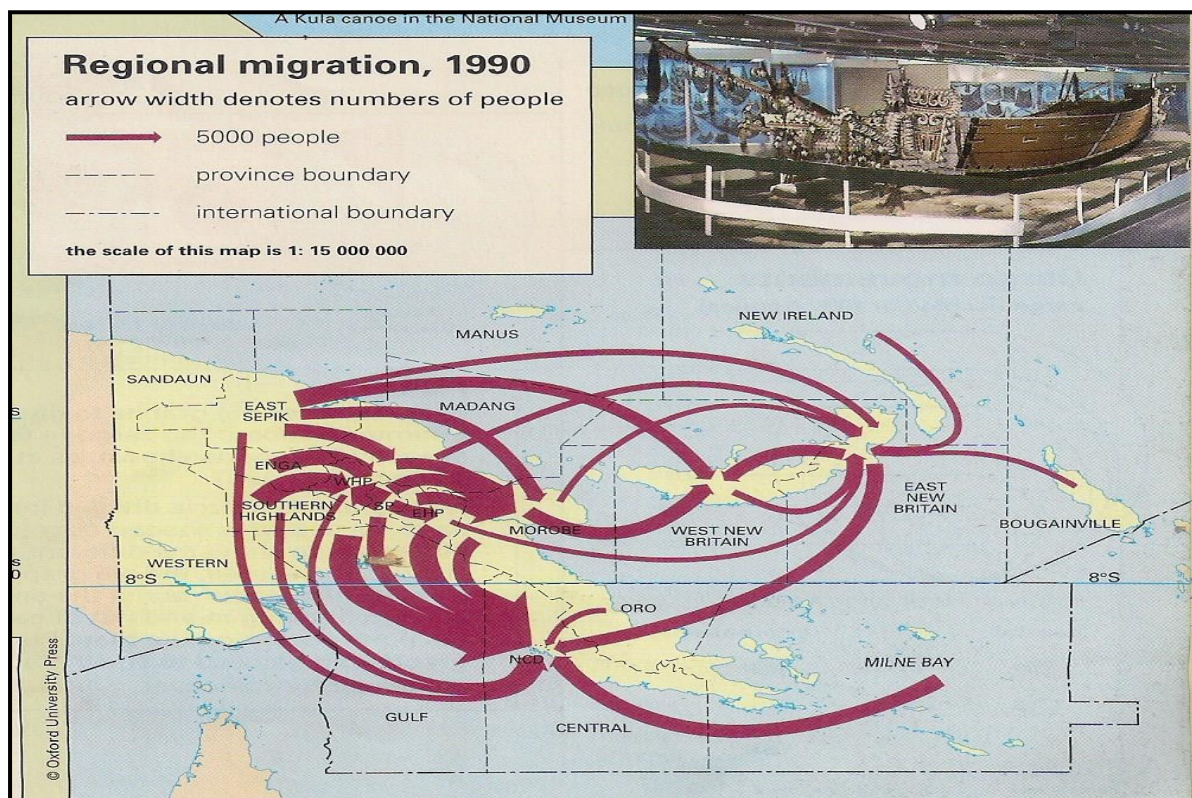
Now turn to the next page and do Activity 1. Check your answers at the end of the summary.

Activity 1

Use the map on page 80 to answer the following questions. Check your answers at the end of the summary.

1.   According to the map, which Province receives the highest number of migrants from other Provinces and why? _____

2.   Which two provinces have more emigrants to Port Moresby in 1990?

      _____

External Migration involves movement across national boundaries and between, countries. For example, when a person from your area goes to Australia, it will be classified as external migration. External migration is movement of people between countries.

The other two concepts that are important to understand migration are *immigration* and *emigration*. These two processes either increase or decrease the total population of a given place.

Emigration means moving out or to leave a place, especially a native country, to go and live elsewhere while IMMIGRATION means to enter or come into a new country for the purpose of settling there.

Let us take a closer look at Global Migration Pattern by studying the Map below.

GLOBAL MIGRATION PATTERN

ANNUAL NET MIGRATION

500,000   100,000   10,000
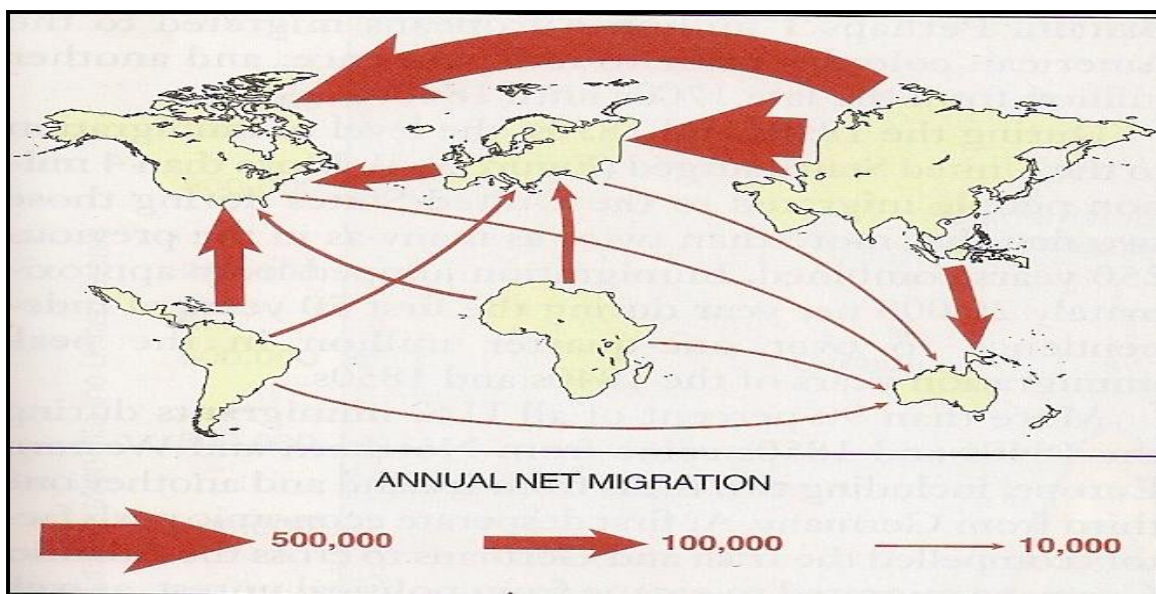
Map showing movements of international migrants from one continent to another. The thickness of the arrow shows the number of migrants that are on the move.

Now do Activity 2 below. You can correct your answers at the end of the summary.

Activity 2

Use the map on Global Migration Patterns on the page 81 to answer the following questions.

1.   Which continents had the highest number of immigrants?

      i)   _____

      ii)   _____

2.   Which continent had the largest number of emigrants?

      _____

3.   Which continent had the smallest number of emigrants? _____

People migrate globally for various reasons. Sometimes they are *forced* to move while at other times, they just *decide* to move. Because people have different reasons for migrating, the ways they have migrated is grouped into *three types*.

Let us look at each of them closely.

1.   **Voluntary Migration**

Voluntary migration is when a migrant has chosen to move on their own free will. That is they *choose* to move. People may choose to emigrate for a range of reasons, including family reunion, employment and lifestyle. Voluntary migration usually occurs because people want better living standards or greater personal freedom.
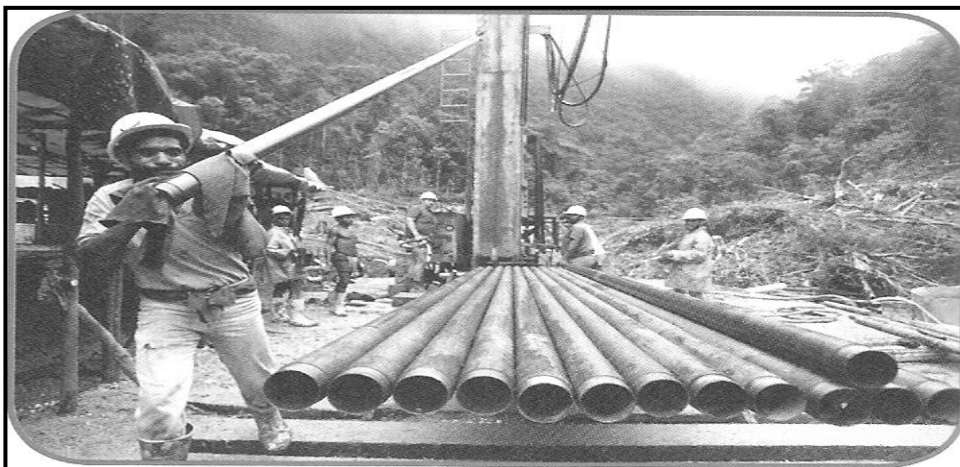

Sometimes people voluntarily migrate to look for better job opportunities. As shown here, these Papua New Guineans have moved to take jobs with an oil drilling company in Southern Highlands.

2.   Forced Migration

Forced migration is when people have no choice but to move from an area due to a variety of reasons both natural (due to a disaster.) and man-made (such as slavery).People can be forced to move because their lives are in danger like tribal warfare in Papua New Guinea or they are taken against their will to work as labourers in plantations.
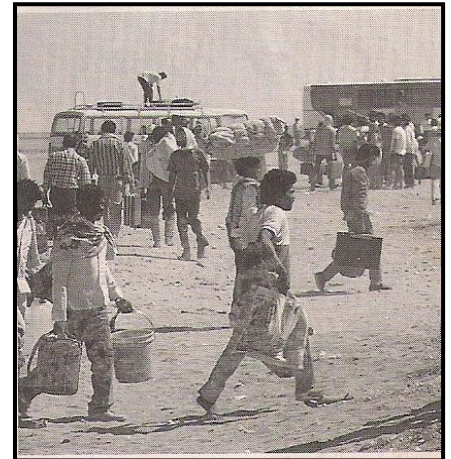
Study the photographs below. They show examples of forced migration around the world.
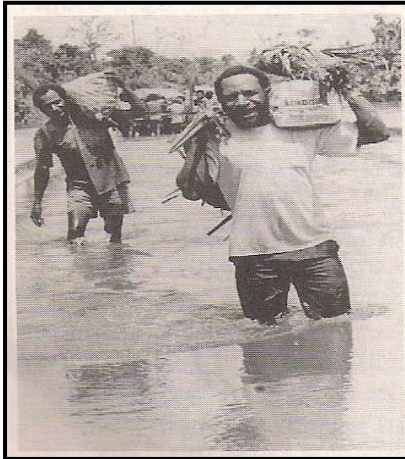
These people are moving because of the flood in Lae
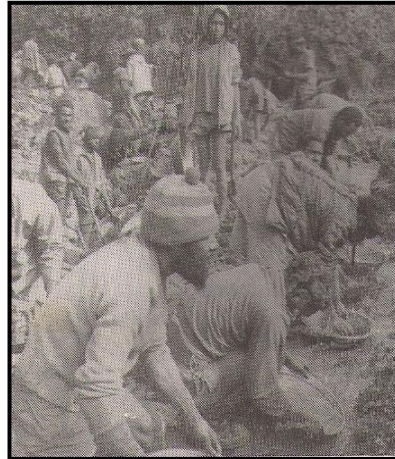
These people have moved to a mining site to search for alluvial gold in Porgera, Enga

These people have moved because of war in India

3. Rural-Urban Migration

Rural-urban migration (rural-urban drift) involves migrants from rural areas moving into urban areas. When people leave their villages and move into the town or city areas, this is called rural- urban migration. This type of movement increases the urban population but decreases the rural population and because of this type of movements, the urban areas (towns and cities) increase in size which is called urban population growth in developing countries.

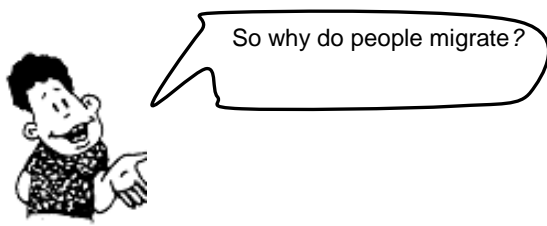Now do Activity 3 below. Check your answers at the end of the Summary.

Activity 3

Look at the photographs above and for each say whether it is an example of a forced or voluntary migration.

        Photograph 1:_____

        Photograph 2:_____

        Photograph 3:_____

Why do People Migrate?

Internal and external migrations occur for many reasons. These reasons can be classified as **push** and **pull factors**.

Push factors are those factors which push or force people to move to new areas to live while **pull factors** are those factors that attract migrants to a new location. These are the reasons why people migrate from place to place.

Given below are some examples of Push and Pull factors.

Push Factors	Pull Factors
- Not enough jobs - Few opportunities - Primitive conditions - Desertification - Famine or drought - Political fear or persecution - Slavery or forced labor - Poor medical care - Loss of wealth - Natural disasters - Death threats - Lack of political or religious freedom - Pollution - Poor housing - Landlord/tenant issues - Bullying - Discrimination - Poor chances of marrying - Condemned housing (radon gas, etc.) - War	- Job opportunities - Better living conditions - Political and/or religious freedom - Enjoyment - Education - Better medical care - Attractive climates - Security - Family links - Industry - Better chances of marrying

Turn to the next page to recap the main points of the lesson.

Summary

You have come to the end of lesson 11. In this lesson you have learnt that:

- migration is movement from one location to another.

- migration can be permanent or can be semi-permanent.

- a migrant is a person who moves for various reasons

- migration affects the total population of a country by either increasing or decreasing it.

- migration can be done within countries (internal) or can be done from country to another country (external)

- migrants move from their homes because of voluntary reasons or they are forced to move.

- push factors force people to move while Pull factors attract people to move.

ANSWERS TO ACTIVITES

Activity 1

i) Port Moresby because they were looking for better living standards, job opportunities, social services.

ii) Eastern Highlands and Gulf

Activity 2

1 . i) Europe   ii)   North America

2.   i) Asia   3. i)   Africa, South America, Europe

Activity 3

1.   forced migration

2.   voluntary migration

3.   forced migration

NOW DO PRACTICE EXERCISE 11 ON THE NEXT PAGE

Practice Exercise 11

1.   List 5 examples of Push Factors.

   (i) _____

   (ii) _____

   (iii) _____

   (iv) _____

   (v) _____

2.   List 5 examples of factors that attract people to leave their villages ?

   (i) _____

   (ii) _____

   (iii) _____

   (iv) _____

   (v) _____

Read the abstract below and then answer the Questions that follow.

   After grade 10, your uncle who lives in Port Moresby comes to the village and takes you with
   him to Port Moresby to continue your grade 11even though, there is a secondary school at
   your village.

3.   What type of migration is described in the text? Explain your answer.

   _____

   _____

4.   Explain how migration can increase a countries population?

   _____

5.   What are the 3 different types of migration?

   (i) _____

   (ii) _____

   (iii) _____

NOW CHECK YOUR ANSWERS AT THE END OF TOPIC

Lesson 12:   Prehistoric Migration

Welcome to Lesson 12. In this lesson you will learn about the prehistoric migration.

Your Aims:

- define prehistoric migration
- identify the migration that occurred during prehistory
- identify the migration routes on a map
- identify the reasons for these migrations

People of all ages around the world have always been on the move, whether it was movement that involved a permanent change of home or movement that was done for temporary reasons. Our ancestors' migration patterns have always been hard to keep track of from the beginning of time. They were simple hunters and gatherers and were always on the move for various reasons from place to place. The type of movement or migration that our ancestors were involved in is called **prehistoric migration**. Our knowledge of prehistoric migration comes from sources such as fossils.

So what is Prehistoric Migration?

Well, it is the movement of people when people before written records were made.

What is Prehistoric Migration?

Prehistoric Migration is the movement of people before written records of history was done.

The ancestors of human beings may have appeared on earth about 25 million years ago. However the oldest fossil remains of human beings found so far is about two million years old. These fossils were basically found in Ethiopia, a country in the continent of Africa. Fossilised remains found in widely separated places tell us that early humans may have migrated over large areas of land far and wide.

From Africa the first humans migrated to the continent of Eurasia then spread across to Asia about 1 million years ago. In recent prehistory migration, the unoccupied lands of the Americas, Australia and Oceania were also settled by waves of migration. It is believed that the movement of people into Sahul (Australia and New Guinea) began at least 50 000 years ago.

More recent migration spread right across the Pacific to Micronesia and Polynesia as well. It is believed that people from Asia began moving across the northern land bridge in to the Americas about 50 000 years ago.

MAP OF POSSIBLE MIGRATION OF EARLY PEOPLE
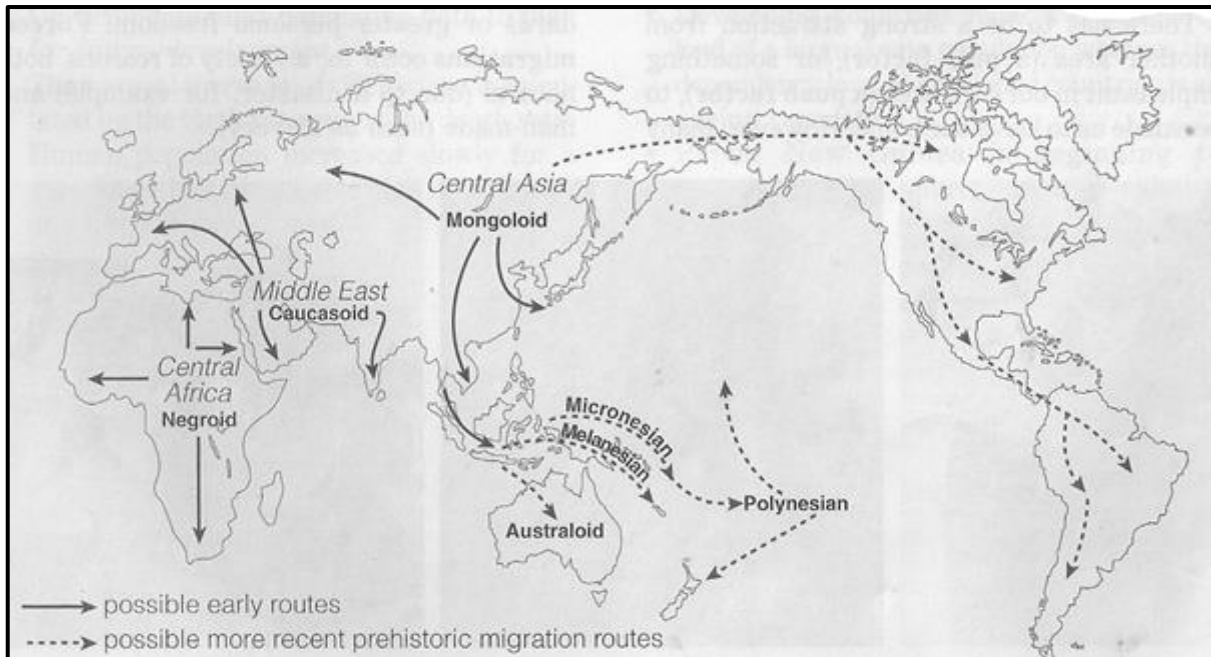
As more people migrated, they pushed earlier arrivals further south until both American continents were settled by different groups of people living different lifestyles as shown by the map below.

MAP OF THE FIRST INHABITANTS OF NORTH AMERICA
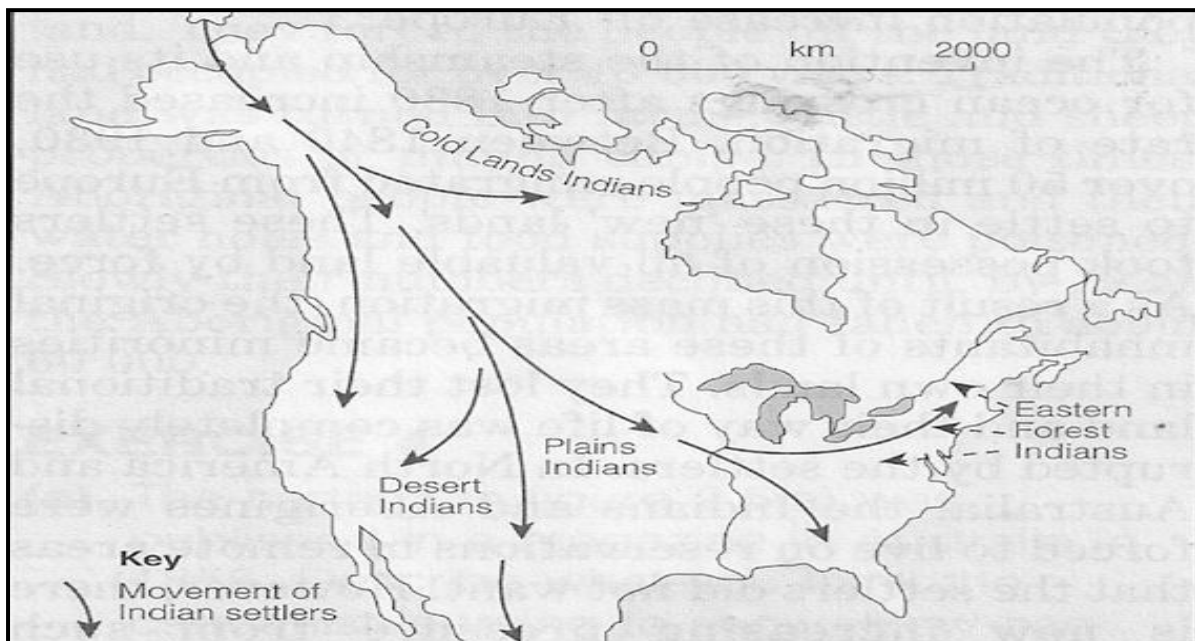
The map above shows where the first inhabitants of North America came from, and where they settled. These people began to change the natural landscape they found there.

For example, the forest people built permanent stockaded (fenced) villages. They hunted in the forest, fished in the rivers and cleared the forest to grow crops. Their lives depended on the buffalo, following the herds as they moved across the plains in search of food and water. Later the horse, which was introduced to the North America by the Spanish, also became an important part of their lifestyle.

The lives of the Plain Indians centred around the buffalo

An Eastern Forest

Early humans migrated due to many factors such as changing climate, landscape and inadequate food supply. From the beginning migration occurred because the early humans were hunters and gatherers. They travelled long distances in search for food, water, shelter and security.

This migration of people to different places has led to the mixing of different ethnic groups. Since the first group of people migrated to vast areas, there always came the effects this movement had on the migrants. For example, when the group of Africans moved into the Asian continent, there were discoveries made in Asia about certain food crops, animals or simply the way of life. From Asia when they moved into Europe, they brought with them a mixture of African and Asian way of life and items and whatever they took with them.

Up to 500 years ago, migrations were mostly voluntary. Since then migration has been either voluntary acts by individuals or forced group movements (against the will of the people who were being moved). Many of this second wave of migrations were movements of large number of people. This early migrations contributed to the population and the development of the first cities in different continents. These first cities or towns provide a clue as to its early settlers, where they migrated from and what they brought with them.

Summary

You have come to the end of the lesson 12. In this lesson you have learnt that:

- prehistory is a period before any written records were made.

- prehistory migration is movement of people before any written records were done

- the first humans from Africa migrated to Europe then to other parts of the world

- the early humans were hunters and gatherers, who only hunted and gathered food from the surrounding environment.

- prehistoric migration occurred for various reasons like searching for food, running away from warfare or because of climatic problems

---

NOW DO PRACTICE EXERCISE 12 ON THE NEXT PAGE

Practice Exercise 12

Refer to lesson note to answer the following questions. Check your answers at the end of the topic.

1.   From which country and continent did the first human being migrate from?

        (i) continent: _____

        (ii) country: _____

2.   Give two reasons that would have caused this early migration

        (i)_____

        (ii)_____

3.   Give an example of voluntary migration.

        _____

4.   Prehistoric migration occurred even before written records were kept, what is one way we are able to know of our ancestors' migration routes?

        _____

    ┌───┐
    │   **NOW CHECK YOUR ANSWERS AT THE END OF TOPIC3**   │
    └───┘

Lesson 13:   Migration in the Pacific

Welcome to Lesson 13. In the previous lesson you have learnt about prehistoric migration. In this lesson, you will learn about migration in the Pacific.

Your Aims

- identify the current trends or patterns of migrations in the Pacific
- discuss reasons for current trends of migrations in the Pacific
- list and explain advantages and disadvantages of these types of migration
- discuss types of migration in Papua New Guinea

Migration in the Pacific

Let us now look at migrations in the Pacific.

Migrations in the Pacific are mostly **international emigration.** More than one in ten Pacific Islanders are international emigrants now living in the United States, Canada, Australia or New Zealand.

Who is an international emigrant?

An international emigrant is someone who has migrated out of his or her home country to settle in another country.

Many people from small Pacific island countries have migrated to developed countries such as New Zealand, the United States, Australia and Canada in search of better jobs and better living standards. This has led to greater population of the small Pacific Island countries living overseas than those who are left behind in their home countries . For example, there is almost three times more Niueans in New Zealand than those living in Niue.

MIGRATION PATTERNS IN THE PACIFIC OVER THE PAST 20 YEARS
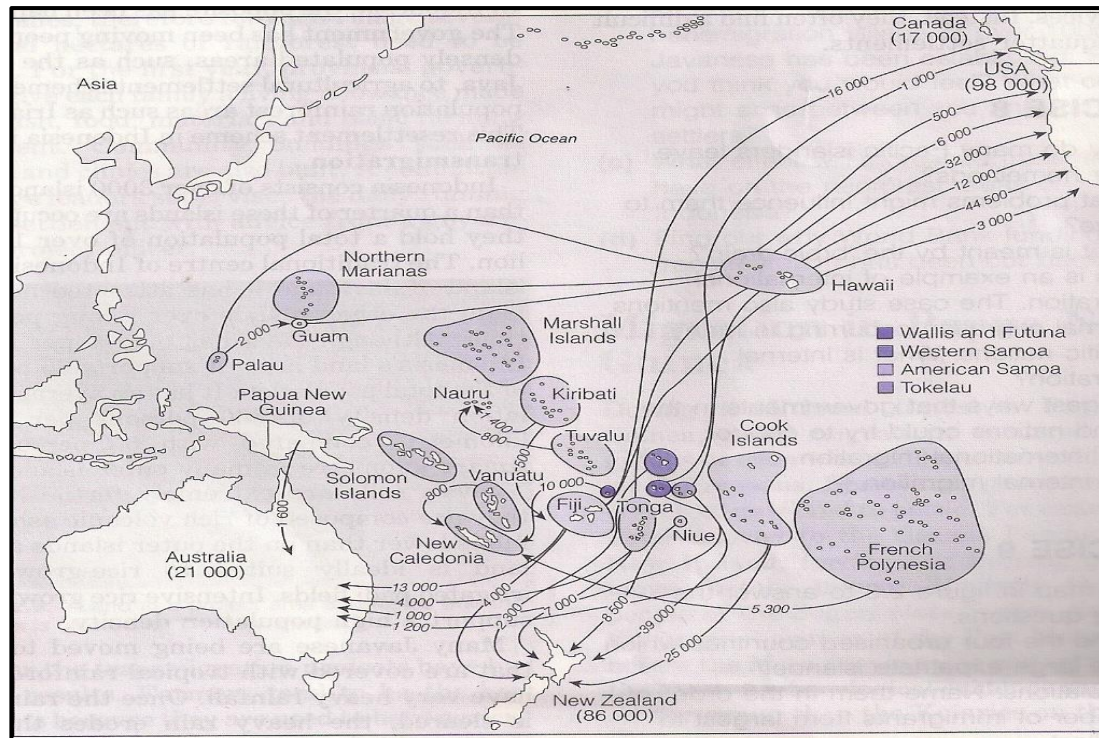
Map showing migration patterns from the South Pacific Islands over the past 20 years

In their home countries, the islanders can live on the food crops they grow, but there are not many opportunities to gain cash income. Most Pacific nations are very small and very remote. It is hard for them to produce anything in large quantities for export on to the world market. Even if they could, exporting the products would be very costly because of the remote locations.

These nations are surrounded by water and have abundance fish supply. However, they do not have the necessary resources in place to develop the fishing industry to improve their economy. The Japanese, Koreans and the Americans benefit the most from these resources. These countries have become dependent on foreign aid and on their people who are living overseas. When island migrants decide to become naturalize citizens of the overseas countries, the financial assistance offered to their home countries decreases and may even stop completely.

There are advantages and disadvantages of international migrations. The advantages are;

- Many are able to gain better jobs and gain good cash income.
- Have better standard of living
- Better education for their children and themselves.
- Able to participate equally in sports such as rugby league, rugby union, or soccer, which eventually become their professions.

Pacific Islanders in Australia

The disadvantages include:

- Many well educated and skilled people leave their home island nations to work overseas therefore causing what is known as 'brain drain',

- Many who are left behind are young, old and unskilled who are not able to develop their country,

- The populations of island nations are usually smaller that aid received are very small for any large scale development.

- Some of these migrant settlers often end up in culture shock (difference in culture) and therefore easily end up in law and order problems.

- Migrant settlers often end up in racial tensions with people of the new country.
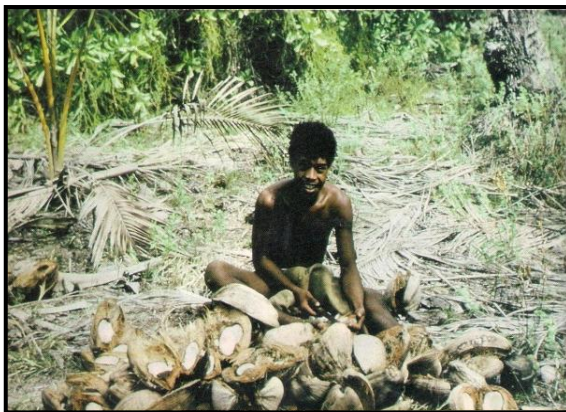
Cutting copra, Kiribati. Copra is Kiribati's main export   Small Pacific Island sinking

Migrations in Papua New Guinea

When we compare Papua New Guinea to the many smaller nations of the Pacific, migrations here are mostly **internal.**

Papua New Guineans have migrated during the traditional times. Often we hear oral history of our villages which have been shifted from one location to another. For example, the Tolais in Gazelle Peninsula today have moved in from New Ireland hundreds of years ago, to occupy these lands. Gazelle Peninsula was originally inhabited by the Bainings who were then forced inland by the Tolais.

The Bainings of East New Britain, Papua New Guinea

A Tolai of East New Britain

Are you aware that migrations have also occurred on a larger scale before independence?   Most of these were internal, however few were international migrations controlled by the colonial governments.

Many colonial governments needed labourers to work on cocoa and copra plantations. Therefore the Highlands Labour Scheme was established and managed by this government. Many strong Highlands men were recruited to work on these coastal plantations.

These schemes also recruited men to work on gold mines in Wau and Bulolo. Between 1870 and 1900 before the Highlands labour scheme was established, men from Milne Bay were recruited by British colonial government to work on sugar plantations in Queensland. Men in Gazelle area and New Ireland were recruited by German colonial government to work on sugar plantations in Samoa.

MAP SHOWING LABOUR MOVEMENT BEFORE INDEPENDENCE
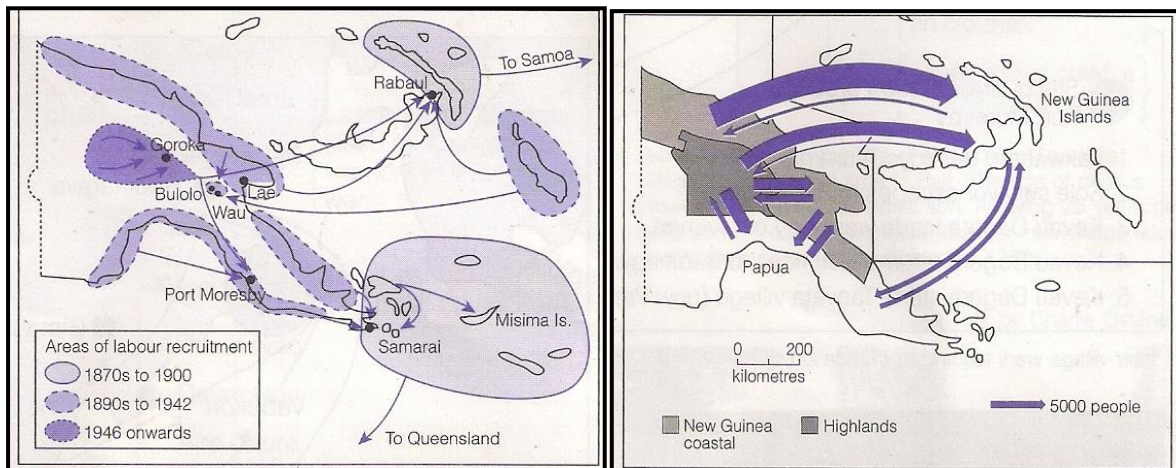
History of migration caused by labour recruitment   Map of inter-regional migration in PNG, 1971

Today the common type of migration in Papua New Guinea continues to be internal. However, some are external which consist of expatriates living and working in Papua New Guinea or Papua New Guineans working overseas.

Most of these foreigners are contract workers and so are only short-term migrants who return to their own countries at the end of their contracts. For example, the Filipinos in Papua New Guinea.

What is the pattern of internal migration in Papua New Guinea currently? Where do people come from and where do they go? Many people think only of the rural to urban migration. However, this is only one aspect of the internal migration, migrants includes all sorts of people: poor people looking for jobs; business people; well-educated people transferred; even students moving for studies. Thus is the rural to urban migration. This would include people moving to work on plantations estates, agriculture blocks and in mining areas.

So now you have learnt about migrations in the Pacific and Papua New Guinea. Migrations are either international or internal depending on the situation in the country.

Now do the activity below. Check your answers at the end of the topic.

Activity

Use maps showing labour movement before independence to answer the following questions.

1.   What could have been the reasons for migrations to Wau and Bulolo?

        _____

2.   Where were the labourers recruited from Milne Bay and New Ireland taken to?

        _____

3.   What would have been the reasons for these migrations?

        _____

4.   Mass movement of people occurred between the Highlands and the coast. What would have been the main reason for this migration?

        _____

5.   Name the labour scheme that was involved in the migration mentioned above?

        _____

Recap the main point of this lesson in the summary on the next page.

Summary

You have come to the end of lesson 13. In this lesson you have learnt that:

- Migrations in the Pacific excluding PNG are mostly international.

- Many migrate to United States, Canada, Australia and New Zealand.

- Most migrate in order to gain cash income and enjoy better living standard.

- There are advantages and problems of international migrations.

- Some Islanders who migrate internally, from rural to urban area in order to search for better lifestyle, often end up having difficult life in squatter settlements.

- Migrations in Papua New Guinea are mostly internal, from rural areas to other rural and urban areas.

- Migration in Papua New Guinea has occurred traditionally, before independence and is still happening today.

ANSWERS TO ACTIVITY

1. To work on gold mines in Wau and Bulolo.

2. To Queensland and Samoa

3. To work on Sugar plantations.

4. To work on cocoa and copra plantations.

5. Highlands Labour Scheme (1949 to 1974)

Practice Exercise 13

1. Why do many Pacific Islanders leave their homelands?

   _____

2. What problems might influence them to leave?

   _____

3. What is meant by '**brain drain'?**

   _____

4. State two advantages and two disadvantages of these migrations.

   (a) Advantages:

   (i)_____

   (ii)_____

   (b) Disadvantages

   (i)_____

   (ii)_____

5. What type of migration is common in Papua New Guinea today?

   _____

6. Relating to the above, name some groups of people who often migrate?

   _____

7. Study the Map showing migration patterns in the Pacific to answer this
   question.

   (a) Name the four urbanized/developed countries which have the large
   expatriate islanders populations. Name them in order of number of
   immigrants from largest to the smallest.

   (i)_____

   (ii)_____

   (iii)_____

(iv)_____

8. Why do you think so many people have migrated from the Polynesian nations but not so many from Papua New Guinea?

_____

_____

CHECK YOUR ANSWERS AT THE END OF THE TOPIC.

Lesson 14: Case Study- Migration in Fiji

Welcome to lesson 14. In the previous lesson you have learnt about migration in the Pacific and Papua New Guinea. In this lesson you will learn about a case study on migration in Fiji.

Your Aims

- define military coup

- identify the type of migration that has occurred as a result of the coup

- explain the consequences of this type of migration

Before we look at the case study, let us first look at some brief facts about Fiji.

Fiji in brief

Fiji is made up of a group of islands, in the Melanesian region of the Pacific. Fiji consists of mountainous volcanic islands. Viti Levu and Vanua Levu are the two main islands including 800 smaller ones.

Fiji was first sighted and discovered by Captain Tasman in 1643, Captain Cook landed in 1774. Later in 1874 it was made to become a British crown colony. By then the Western Pacific High Commission was set up for the Pacification (peace) and control of the labour trade. By 1879 Britain found the land in Fiji suitable for growing sugar and so began recruiting Indians to work on sugar plantations. By 1950's there were more Indians in Fiji than the Fijians themselves. Indians dominated commercial life, while Fijians owned most of the land.

When Fiji became independent in 1970, any migrant who was born in Fiji before 5th May automatically became a citizen of Fiji. A lot of Indians became naturalized Fijians.

Native Fijian

Fiji Indian Mahendra Chundhry

PACIFIC MAP SHOWING FIJI'S LOCATION
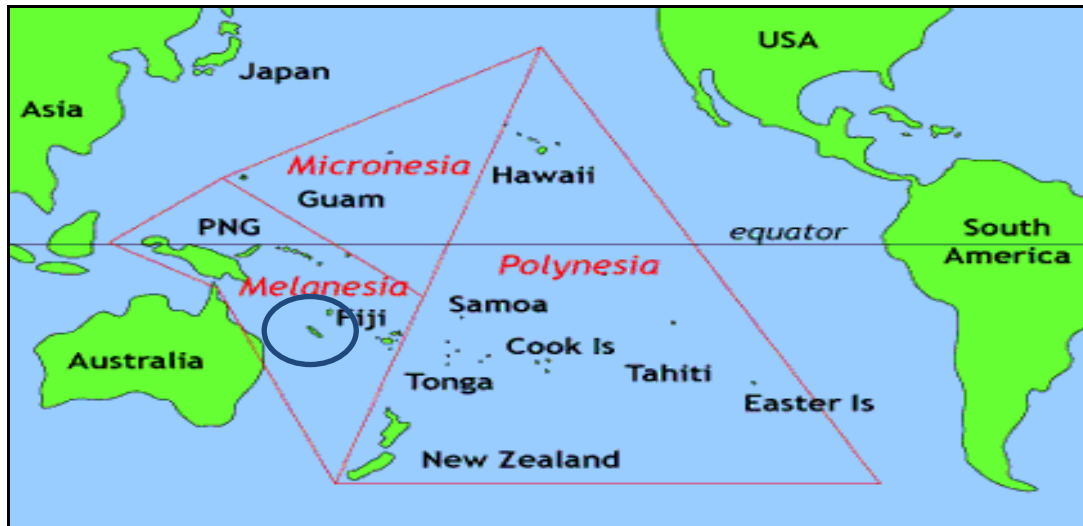
Let us now look at Migration.

Case Study: Migration in Fiji

Migration in Fiji also occurred because of the military coup. Firstly, what is military coup?

Also referred to as coups d'état' (koo-day-tah) is a sudden violent seizure of power from a government by the military, headed by its leader the Commander of the Defense force. Other examples of coup in the history are:

- January 2000, Ecuador - President Jamil Mahuad was overthrown in the first military coup in Latin America in a decade.

- April 2002, Venezuela - President Hugo Chavez was overthrown by the military and then reinstated two days later after international criticism.

- August 2008, Mauritania - Military coup deposed Prime Minister Sidi Mohamed Ould Boubacar and President Sidi Ould Sheik Abdellahi.

Military coup in Fiji

Fiji became independent in 1970 from Great Britain. In 1987, with the election of the new government, the Indians won the majority of seats. These imbalances of population and the declining power of the Council of Chiefs led to the first military takeover of the Fijian government in 1987. This was led by the Major General Sitiveni Rabuka.

Major General Sitiveni Rabuka

The second coup of the similar nature was executed by George Speight. He over threw the government of Mahendra Chundhry in May of 2000. Twenty seven members and the Prime Minister Mahendra Chundhry were taken hostage by George Speight and his seven gun men for almost two months (56 days). This was the worse coup ever in Fiji's history.

George Speight

The 1987 and the 2000 coup were both relating to the racial differences between the Fijians and Indians. The Fijians especially felt threatened by the increasing population of the Indians and their representation in the government.

Indians were hardworking people and owned most businesses in towns. They also had better standard of living than the Fijians. This prompted these coups to eventuate in order that the decisions made should be in favour of the indigenous people.

The third coup of Fiji came about in 2006. This was led by Commodore Frank Bainimarama. This coup according to insiders in Fiji was not for power or personal wealth but to rid the country of corruption.

In the five years following the 2001 elections, the government of Prime Minister Laisenia Qarase did nothing except for individual members' desire to build their personal wealth. Also people involved in the 2000 coup that were jailed and later released were also offered ministerial positions in the government. Many people believed the government was corrupt and would lead the country into economic problems.

Commodore Frank Bainimarama believed that if other countries and Australia stopped interfering and support him, he would bring about many changes needed to benefit the people of Fiji. This coup was also meant to put an end to all Fiji coups.

As a result of these coups many Fijians especially, the Indians migrated, either internally or externally. Many Indians left their farms which they occupied to move into towns in search of jobs.

Commodore Frank Bainimarama

Many Indians also migrated to Australia, New Zealand and India. A lot of businesses left behind were run down. Both sugar and the tourism industries were affected.

Finally migrations in Fiji occurred as a result of a military coup. These had resulted in bad opinion on Fiji as a western democracy. Fiji was criticized as racist country and inhuman to others who supposed to claim Fiji as home. It also brought about discontent among ordinary citizens. Fiji was eventually asked to withdraw from the common wealth of nations.

You may have come across some new words or phrases as you learn about coup in Fiji. These are:

Indigenous; The native people of an area.

Corruption: Wicked ways of doing things such as stealing and practice of wantok system in jobs.

Western democracy: A system of government introduced from Europe based on freedom and individual rights of people rather than state of control.

Commonwealth of Nations: It is an organization formed by member nations of those countries formerly colonized by Great Britain.

Summary

You have come to the end of this lesson. In this lesson you have learnt that:

- Fiji is an island nation in the Melanesian region.

- Fiji has two major races of people – the Indians and the Fijians.

- There have been three different military coups since 1987.

- The 1987 and the 2000 coups were relating to corruption and racial tensions.

- The 2006 coup was to try and stop corruption and to end all coups in Fiji.

- The coups let to movement of Indians to major town of Fiji and to overseas countries like Australia, New Zealand and India.

- These migrations have led to decline in businesses in the sugar and tourism industries.

NOW ANSWER PRACTICE EXERCISE 14 ON THE NEXT PAGE

Practice Exercise 14

Circle the correct alternative.

1.   Which European country colonized Fiji?

        A. United States of America   B. Germany

        C. Great Britain   D. France

2.   When was Fiji first colonized?

        A. 1970   B. 1643

        B. C. 1863   D. 1874

3.   What are the two largest islands of Fiji?

        A. Viti Levu and Vanua Levu   B. Kadavui and Tavenui

        C. Yasawa and Vatulele   D. Tonga and Samoa

4.   Why were Indians brought to Fiji:

        A. To hunt for whales which British people needed the most.

        B. To work on sugar plantations.

        C. To work as doctors and teachers as Fiji lacked these very much.

        D. To work for Europeans as slaves

5.   Identify main reason for the 1987 and 2000 coup as claimed by their leaders.

        A. The Indians were taking away native lands.

        B. Top jobs were given to Indians rather than the Fijians.

        C. The majority of seats were won by the Indians.

        D. Indians were more cleverer than the Fijians.

6.   Answer the following questions:

        (a) State the three different years the Fiji military coup occurred and their
            leaders.

        (i)

        (ii)

        (iii)

(b) Explain the reason for the 2006 coup.

_____

_____

(c) To which overseas countries did the Indians migrate to?

_____

_____

(d) As a result of the coup in Fiji, there have been different experiences. State
   five such experiences.

(i)_____

(ii)_____

(iii)_____

(iv)_____

(v)_____

(e) Why was Fiji told to withdraw from the Commonwealth?

_____

_____

(f) Fiji was criticized for its downfall of western democracy. Why?

_____

_____

NOW CHECK YOUR ANSWERS AT THE END OF THE TOPIC.

ANSWERS TO PRACTICE EXERCISE 11-14

Practice Exercise 11

1. Push factors

    i)   Natural disasters
    ii)   Wars
    ii)   Political persecution
    vi)   Over-population
    v)   Low wages
    iv)   Unemployment

2. Pull factors

    i)   better employment opportunities
    ii)   good educational systems
    iii)   better medical care
    iv)   social infrastructure
    v)   job opportunities

3. Voluntary Migration. This is because one does not have to be forced to go, he/she can choose to stay or go.

4. When a lot of migrants move from one country to another country, the recipient country's population will increase.

5. i) voluntary migration

    ii) forced migration

    ii) rural –urban migration

Practice Exercise 12

1. i) Africa

    ii) Ethiopia

2. i) In search of food
    ii) Climate was too cold or hot for them to live on

3. Climate difficulty like sea level rising

4. By the use of fossils, we are able to know of what type of movement that took place

Practice Exercise 13

1. Because their islands are either too small or very remote.

2. There are not many opportunities to gain cash income.
    Also, many migrate in search of better lifestyles and jobs.

3. Skilled and well-educated islanders leave while those who are unskilled or not well educated are left behind.

4   (a) Advantages of international migration
                (i)   Enjoying better lifestyle overseas
                (ii)   Better jobs, better education for children

         (b) Disadvantages of international migration
                (i)   Not enough skilled and educated people left behind to help
                           develop their island nation.
                (ii)   Some who migrate are faced with culture shock.

5.   Internal migration (rural to rural or urban drift).

6.   Poor people looking for jobs, business people, well educated people, students.

7.   (i)   Australia; 21,000
         (ii)   USA; 98,000
         (iii)   New Zealand: 86,000
         (iv)   Canada; 17,000

8.   Polynesian nations are small and remote and do not have opportunities for
         jobs and good living standard, whereas Papua New Guineans is big in terms
         of land and fairly well developed. Therefore has many job opportunities, many
         schools and universities and generally better standards of living.

Practice Exercise 14

1.   C   2.   D   3.   A   4.   B   5.   C

2.   (a)

       (i)   1987 – By Major General Sitiveni Rabuka

       (ii)   2000 – By George Speight

       (iii)   2006 – By Commodore Frank Bainimarama

       (b)   This was due to corruption led by the Prime Minister Qarase and his
              ministers since their appointment in 2001.

       (c)   Australia, New Zealand and India

       (d)   (i) Fighting and killing

                 (ii) Destruction of properties

                 (iii) Business ruined

                 (iv) Sugar and tourism industries affected

                 (v) Indians migrated to other countries in fear of their lives

       (e)   The commonwealth countries have democratic governments and do not
                allow for military coup.

       (f)   Because of the military take over which is against the democratic
                principles of individual rights and freedom.

TOPIC 4

The Pull of the City

In This Topic You Will Learn About:

- **Urbanisation and its Challenges**
- **Urbanisation in Papua New Guinea**

TOPIC 4:   INTRODUCTION

In this topic you will look at the pull of the city. The topic is made up of two lessons. They are;

Lesson 15 :   Urbanisation and its Challenges

Lesson 16:   Urbanisation in Papua New Guinea

At the end of this topic, you should be able to:

- define and explain demographic terms urbanisation and rural migration
- identify and discuss the causes and the effects of rural urban migration
- compare urbanisation in the developed and developing world
- outline advantages and problems of living in the city
- describe urbanisation in Papua New Guinea

We hope you will enjoy this topic.

Your teacher

Lesson 15:   **Urbanisation and Its Challenges**

Welcome to lesson 15. In the previous lesson you have learnt about migration in Fiji – a case study. In this lesson you will learn about urbanisation and its challenges.

 Your Aims:

- define urbanisation

- identify reasons for rural – urban migration

- explain how rural-urban migration leads to urbanisation

- discuss the effects of rural – urban migration

First of all let us look at the pull of the city.

The pull of the city usually refers to the attractions of towns and cities.

These attractions cause many people from rural areas or country side to move into urban areas.

So what are these attractions?

These are things like better health care, sports, education, entertainment, and food.
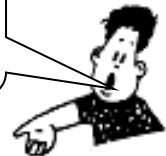
Sometimes we say it is the city life that attracts people from rural areas to migrate into urban areas. City life is said to be very exciting and interesting compared to rural life. Especially those in active age groups often want to experience and have the feel of this life, therefore they migrate into urban areas. The illustration below can help you to further understand city life

Life in the city

As more and more people migrate because of good city life, urban areas began to grow. This process of rapid urban growth is known as **urbanisation** and the loss of population from rural areas is known as **rural – depopulation**. To increase our knowledge on this migration we can learn from stories such as these ones below. These are the words of a migrant in Rio de Janeiro, one of the largest cities in Brazil. *'I was born in the sugar cane country, north east of Rio de Janeiro. I lost my job as thousands did when the land went over to raising cattle instead of growing crops.*
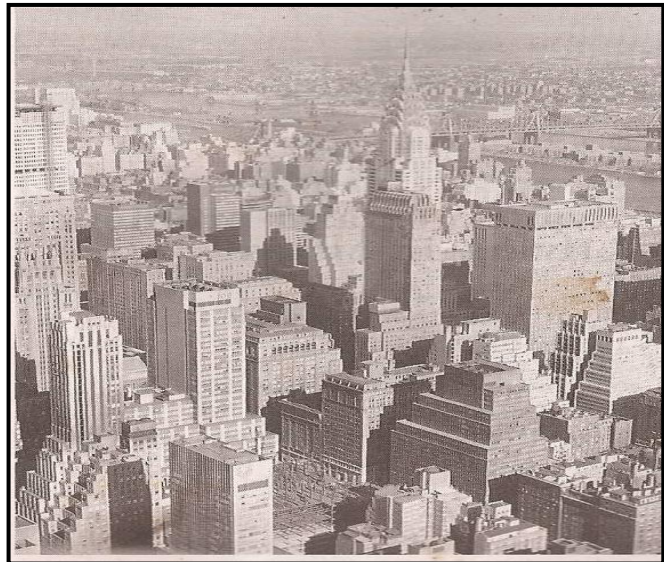
New York City, USA

My wife and I were living in a poor hut, and soon after that she died of typhoid from drinking polluted water. There was nothing else to do except migrate to the big city and hope that somewhere I could pick up work.

An old man in Manila, the capital city of Philippines also explains why he moved to the city. *'I am already old, with perhaps only a few more years to live. But I decided to gamble and leave my farm, to live in this stinking community. I did not do it for myself. I was happy in the village. But my children, what would they become? I was a farmer. I owned three hectares. My father was a tenant farmer, and I was lucky to have owned land, when he died without ever achieving that. But my children – I have six of them. If I die, how will they divide three hectares between them? So I decided to try my luck in Manila. Maybe, they can get at least an education, a job. Who knows?*

Now do activity below. Check your answers at the end of the summary.

Activity

1.   Complete the table below by stating two push and pull factors from each of the stories.

	Push Factors	**Pull factors**
Man from Rio de Janeiro	i)_____ ii) _____	i) _____ ii) _____
Man from Manila	i) _____ ii) _____	i) _____ ii) _____

2

i)   Which age group often leave the rural areas?

_____

ii)   Which people are left behind?

_____

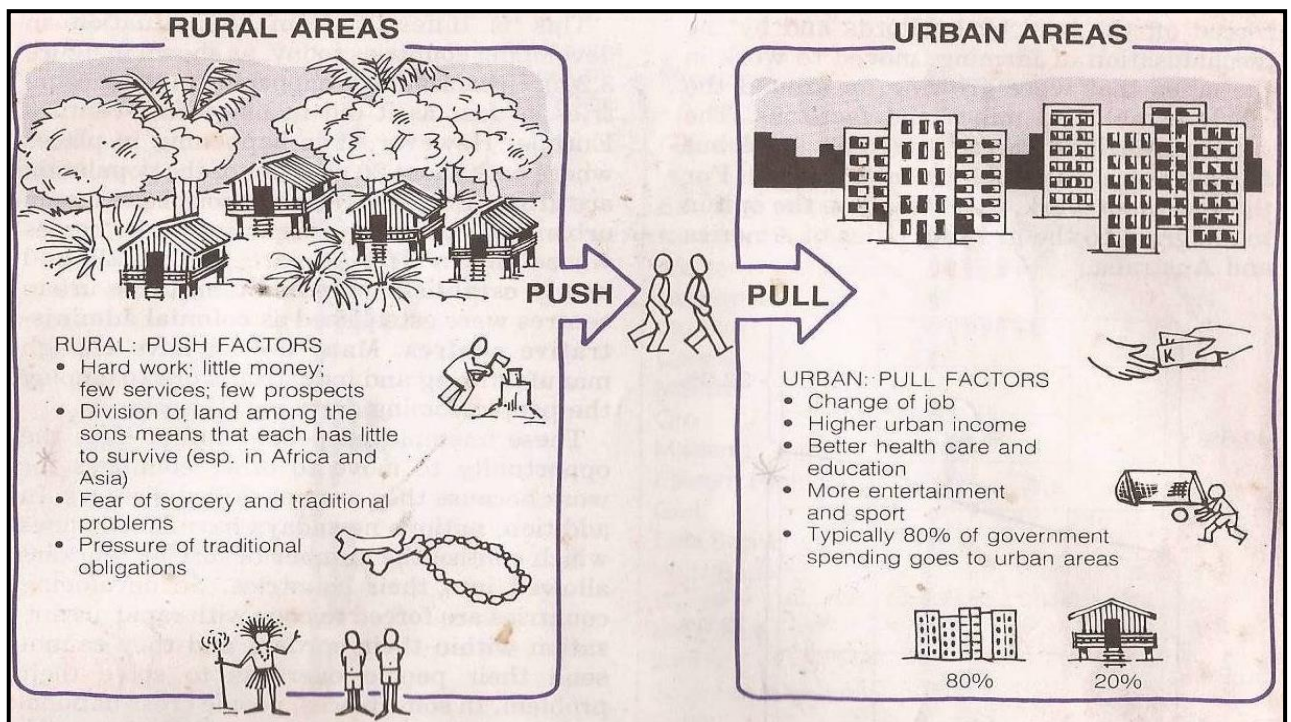iii)   Make a list of problems that rural areas suffer because of rural depopulation.

_____

_____

Rural – Urban Migration

The illustration below shows us reasons for rural – urban migration. People are either pushed or pulled.

In 1980, there were under two billion (2, 000 000 000) people living in the world's cities. It has been estimated that by the year 2000 there could be three billion. Of these, over two billion will be in cities of the developing world.

At the start of the 1980's, there were about 75, 000 people moving from rural areas each day to live in the already overcrowded cities of the developing world. For example, in 1980, people were arriving in Rio de Janeiro at the rate of 5000 a week. The pattern is the same throughout the developing world: Calcutta, Karachi, Beijing, Shanghai, Seoul, Cairo, Mexico city, Rio de Janeiro and many other cities will each have between 15 and 30 million people by the end of the century. It is impossible to provide the necessary **infrastructure of service** (such as water supply, roads,

sanitation) to keep pace with this rapid rural to urban migration. Solving the problems created by this rapid urbanisation is a major challenge for all countries today.

Urbanisation in Europe and America occurred in the 19th century (1800's). Towns and cities there developed around factories and mining areas. Therefore people moving to these areas easily found jobs. Whereas today in many developing countries, urbanisation is occurring in places which were established as colonial administrative centres. They were meant for colonial governments to run their affairs. Many people from the countryside moved into these areas whose urban services were still small and newly established. Most migrants do not have manufacturing and industrial work experience and therefore cannot find jobs. In order to cater for these large number of immigrants, the government spends more money on infrastructure development. Because much of the country's money is concentrated here, it leads to rapid urban growth. Today most of the fastest growing cities are found in developing countries.

The Effects of Rural-Urban Migration

Migrating into urban areas has both positive and negative effects. When so many strong young men and women leave the rural areas to move into towns, villages are left with young, old and weak who are not able to do much. Rural areas are left under developed. These people, who emigrate or leave for urban areas end up having experiences that are both good and bad,
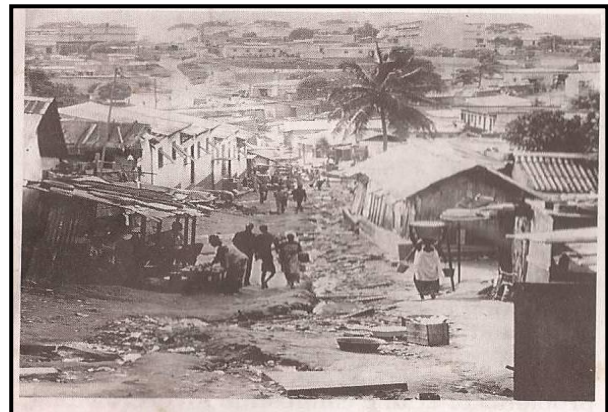
Ivory Coast of Africa

It is good because of much better and basic services and good things that makes life easier and enjoyed by people. It is bad on the other hand because most government spending is concentrated in here, prompting cities to grow at a faster rate than the rural areas.

As cities grow, there are also problems experienced by people, such as criminal activities, overcrowding, poverty, unemployment, traffic congestion and pollution.
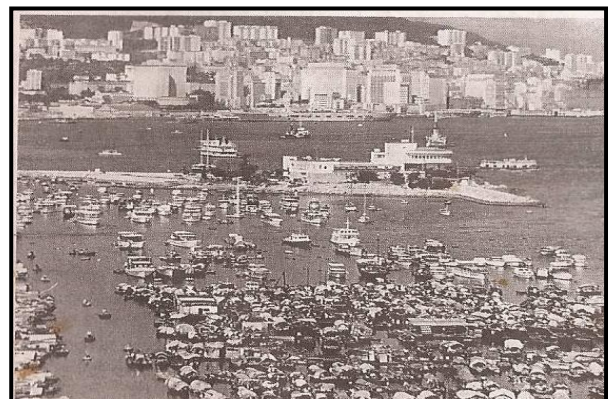
City of Hong Kong

Especially in the developing world, the cities develop into two distinct divisions, the formal and informal sectors. These are clear divisions because of inequality in wealth. The formal sector consists of good housing, sanitation, employment and infrastructure. The salary earned in formal sector jobs is much higher compared to the informal sector. On the other hand informal sector develops because people do not have formal jobs. Casual labourers and street vendors often seen in and around the city do not conform to formal rules. Earnings from sales and salaries are irregular .These leads to development of squatter settlements, shanty towns, and slums. Homes are built from scrap materials, sanitation is usually poor and living conditions

are unhygienic. In addition, they usually occupy land that does not belong to them. This is known as squatting.

Developing nations have these in common. Low income per capita, high growth rates, high illiteracy and less infrastructure development.

Summary

You have come to the end of this lesson. In this lesson you have learnt that:

- Urbanisation is the process of rapid urban growth.

- Rural-urban migration occurs when people are attracted into cities from the rural area.

- Urbanisation often leads to rural depopulation.

- Too many people are migrating into cities and it is impossible to provide necessary infrastructure.

- Most fastest growing cities are found in the developing world.

- Rural-urban migrations have both good and bad effects.

- Most developing cities have two distinct divisions - the formal and informal sectors.

- All cities have problems such as crime, unemployment, poverty, overcrowding, and pollution.

- Squatter settlements are common problems in many developing world countries.

Answers to the activity

	Push factor	Pull factors
Man from Rio de Janeiro	- lost job - poor hut - land shortage	- Find employment - Have better lifestyle
Man from Manila	- land shortage - poor education services	- Find job - Better schools for his children

2.   (i) Young and active age groups. Young adult and middle ages.

(ii) Old, weak and children

(iii) Less manpower to work, lack of development, poverty and hunger.

NOW ANSWER PRACTICE EXERCISE 15 ON THE NEXT PAGE.

Practice Exercise 15

1.   Define these terms.

   (i) Urbanisation

   _____

   _____

   (ii) Rural depopulation

   _____

   _____

   (iii) Infrastructure

   _____

   _____

   (iv) Squatter

   _____

   _____

   (v) Rural-urban drift

   _____

   _____

2.   State two rural push factors and two urban pull factors.

Rural push factors	Urban pull factors
(i) _____	(ii) _____
(ii) _____	(ii) _____

3.   Fill in the table on the next page by writing in the correct city, the country and the continent.

City	Country	Continent
(i) Calcutta	_____	Asia
(ii) _____	South Korea	_____
(iii) Mexico City	Mexico	_____

4.   Use the table below to answer the questions that follow.

The world's ten largest cities, 1950 and 2000. (Developing world cities shown in italics.)

	1950	2000
1	New York	*Mexico City*
2	London	*Sao Paulo*
3	Rhine/Ruhr	*Shanghai*
4	Tokyo	Tokyo
5	*Shanghai*	New York
6	Paris	*Beijing*
7	*Buenos Aires*	Rio de Janeiro
8	Chicago	*Bombay*
9	Moscow	*Calcutta*
10	*Calcutta*	*Jakarta*

(a)   In the year 1950, how many of the top ten cities were in the developing world?
        _____

(b)   In the year 2000, how many of the top ten cities were expected to be from the developing world?
        _____

(c)   Why do you think cities in the developing world are growing more quickly than cities of the developed world?
        _____

5.   Why are there two distinct divisions in most cities of developing countries?
        _____

6.   List at least five problems of urbanisation.

    (i) _____

(ii) _____

(iii) _____

(iv) _____

(v) _____

| NOW CHECK YOUR ANSWERS AT THE END OF TOPIC 4 |

Lesson 16: Urbanisation in Papua New Guinea

Welcome to Lesson 16. In this lesson you will look at Urbanisation in Papua New Guinea.

Your Aims:

- discus the rate of urbanisation in Papua New Guinea
- identify the causes of urbanisation of towns and cities in Papua New Guinea
- identify the problems that are associated with urbanisation in Papua New Guinea

When we look at cities and towns and see how they work and grow, we are studying **Urbanisation**. It is not very easy to say exactly what an urban area is and what is not and because of that, each country has its own definition of what an urban area or town is. In Papua New Guinea an urban area is officially defined as a settlement:

- that has at least 500 people living there (inhabitants)
- that has a population density of at least 195 people per square kilometres
- that has special functions, that is, many different types of work
- that depends on other areas to supply it food and other resources
- whose people in general do not earn their living as farmers

An **urban area** or **urban centre**, such as a town or city, is where a dense population lives. Towns and cities are defined in many different ways, usually by the total number of people, the number of people per square kilometre

So what is Urbanisation?

It is the movement of people from villages to towns

What is Urbanisation?

Urbanisation is the movement of people from rural areas to urban areas.

Why are Urban Centres Growing Quickly?

An **urban area** or **urban centre**, such as a town or city, is where a high population lives. Towns and cities are defined in many different ways, usually by the total number of people, the number of people per square kilometre

Like other developing nations, Papua New Guinea is experiencing the process of urbanisation. The majority of people (about 80 per cent) in this country however are still rural dwellers. That is, they are still very much traditional subsistence farmers who value and depend on their land and customs. However, the drift to the cities is already occurring at a very fast rate and urban areas are facing the problems associated with rapid population increase.

TOWNS OF PAPUA NEW GUINEA

Urbanisation in Papua New Guinea was encouraged before independence in 1975 as a source of economic growth. As a country develops from an agricultural to an industrial economy, large numbers of people living in rural areas move to towns and cities. This movement is called Urbanisation. Urbanisation is happening all over the world but there are great differences in the rate at which urbanisation is taking place around the world


The photographs above show some of the items sold in towns and cities to make money

In Papua New Guinea, most rural people have rights to land. They can use their land for subsistence or commercial farming to provide for their living. Unlike in other countries where much of the land is owned by the government and few rich individuals, Papua New Guineans are very fortunate to own land. However, this has not stopped people migrating from the rural areas into the urban areas. Sometimes people leave the rural areas because of push factors and pull factors.

Also because the National and Provincial Governments are located in towns and cities, many rural populations do not receive the services they provide. These include health, education, communication and transport services. Therefore, rural people migrate to towns and cities hoping to have access to these services

In general, it is both the "pull" and "push" factors combined with the lack of development in rural areas that contribute greatly to rural-urban migration in Papua New Guinea.
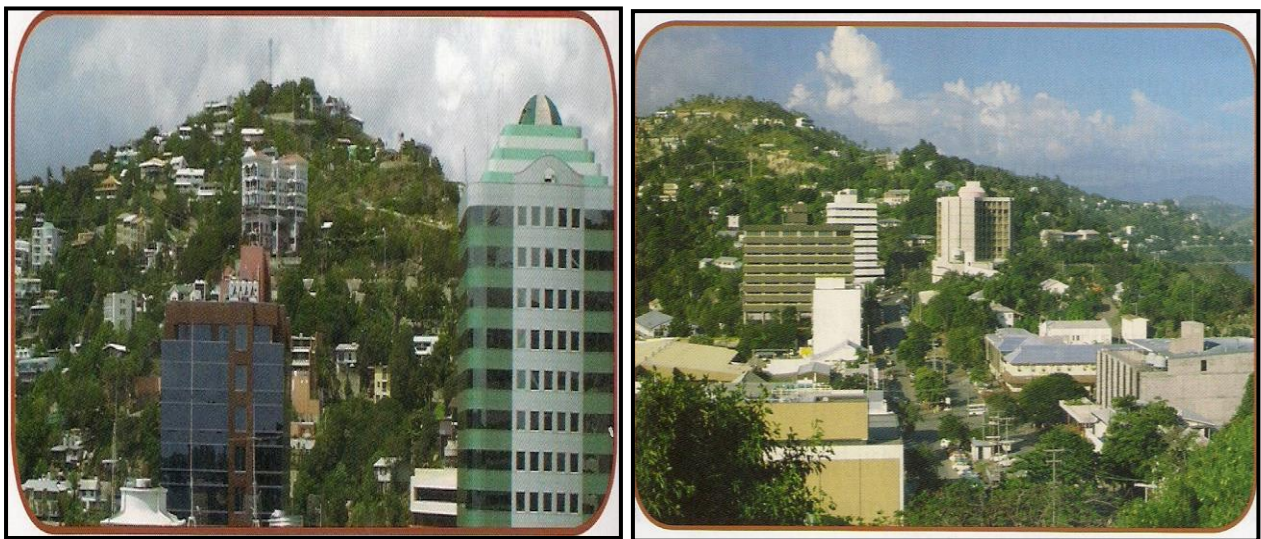
High rise buildings in down town Port Moresby

Why are towns and cities becoming urbanised?

Towns and cities are becoming urbanised because more and more people are leaving their villages and moving to towns and cities. As more people move into the towns and cities areas, they bring with them problems that urban authorities have to satisfy or meet. These would include building more houses, health centres, schools and increasing food production to cater for the increased population. All of these problems place a strain on the urban authorities' limited finances.

Another reason for the expansion of towns and cities is the large scale development of infrastructure by the government to attract more overseas business investments and tourists. This expansion also attracts people from the least developed rural areas.

Activity

1.   Identify two reasons why people are pulled to the cities?

       i._____

       ii. _____

2.   Explain why cities like Port Moresby are becoming urbanised at a faster rate?

       _____

Effects of Urbanisation on Rural Areas

Urbanisation eventually leads to a severe decline in the number of people living in the rural areas as more people tend to move to urban areas in search of employment and better services. This can lead to a negative population growth rates in the villages around Papua New Guinea. This means more people are migrating into towns and cities leaving only a minority in the rural areas.

Traditional ways of life and culture are being lost as more people move to live in urban areas. The traditional way of doing things have been replaced by modern, easier way of doing things as shown in the photographs below.

Villages in East Sepik Province using canoe to travel

Karkar Islanders using a modern vessel to travel to Madang

Problems of Urbanisation in Urban Areas

Overcrowding is an obvious effect of urbanisation in many developing countries. Overcrowding occurs when there are a lot of people in one particular area and as a result there is shortage of land to build proper houses. A third of all the city dwellers in Papua New Guinea live in squatter settlements because the cost of housing in towns and cities are very expensive for most people to afford. When people are not able to pay rentals for high cost houses, they build their own houses which would lack all essential services like water and electricity. With that comes poverty, which is often extreme around squatter settlement areas as most people who live in

settlements are not formally employed or they are very lowly paid. The environment is often unhygienic and poses a greater health risk amongst the people.
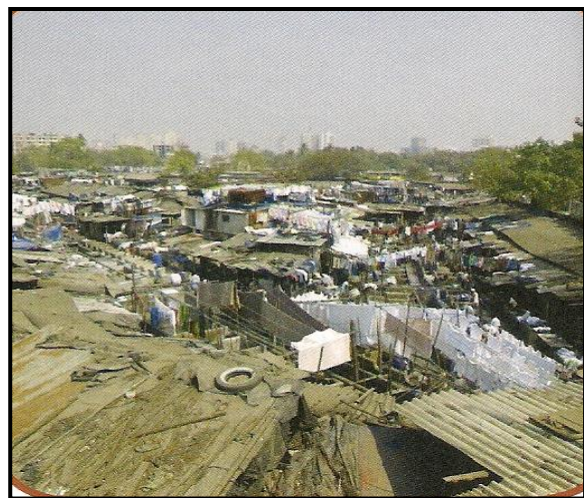
The high urban growth rate in developing countries has put a strain in services provided by the urban authorities. Services such as transportation, water supply, sewerage, waste disposal, electricity, health and education may not meet the demand by the urban population.

Increased unemployment becomes a problem when there are too many people and not enough jobs. As a result, some resort to criminal activities like stealing, break and enter to make quick money for their survival. The more unemployed people a country has, the more social problems that a country is likely to experience.

The photographs below show examples of rubbish at Ela beach in Port Moresby and Squatter settlements in Badili, Port Moresby.

Rubbish washed up at Ela Beach   Rubbish Dump at Badili

Summary

You have come to the end of this lesson. In this lesson you have learnt that:

- Urbanisation is the movement of people from the rural areas to urban centres. Migration can be permanent or can be semi-permanent

- Urban growth has started only recently in Papua New Guinea

- Like other countries, Papua New Guinea's towns are growing very fast.

- People in Papua New Guinea move to towns and cities because of pull factors.

- Problems like increase in unemployment, over crowdedness, criminal activities result from urbanisation.

ANSWERS TO ACTIVITY

Activity
1.   i).Towns have better school or big schools
      ii) Better employment opportunities

2.   Because it is the capital of Papua New Guinea and people assume that it has
      more job opportunities here than other areas.

        ┌───┐
        │   **NOW DO PRACTICE EXERCISE 16 ON THE NEXT PAGE.**   │
        └───┘

Practice Exercise 16

1.   Name 5 Provincial towns in Papua New Guinea.
   (i)
   _____
   (ii)
   _____
   (iii)
   _____
   (vi)
   _____
   (v)
   _____

2.   Name 3 cities in Papua New Guinea?

   (vi)   _____

   (vii)   _____

   (viii)   _____

3.   What would be one reason why more people move to towns?

   _____

4.   List 3 problems that people in towns face?

   (iv)   _____

   (v)   _____

   (vi)   _____

NOW CHECK YOUR ANSWERS AT THE END OF TOPIC1

ANSWERS TO PRACTICE EXERCISE 15 - 16

Practice Exercise 15

1.   Definition of terms

(i)   Urbanisation – The rapid growth of the urban areas.

(ii)   Rural depopulation – The loss of population in rural areas.

(iii)   Infrastructure – Basic services such as, water supply, buildings, roads and sanitation.

(iv)   Squatter – Someone who illegally settles on land that does not belong to them.

(v)   Rural –urban drift – Movement of people from rural areas to urban areas.

2.   Rural push factors

-   Hard work and little money
-   Division of land among the sons
-   Fear of sorcery
-   Pressures of traditional obligation.

Urban pull factors

-   Change of job
-   Higher urban income
-   Better health care
-   More entertainment.

3.   Filling in of table

City	Country	Continent
i) Calcutta	India	Asia
ii) Seoul	South Korea	Asia
iii) Mexico city	Mexico	North America

4.   (a) 3
        (b) 7
        (c) Due to mass migrations between rural and urban areas in many developing countries. Most government spending is on these towns and cities.

5.   Because of the inequality in wealth.

6.   (i) Unemployment
      (ii) Traffic congestion
      (vi) Divisions of cities into two – formal and informal
      (iii) Overcrowding
      (iv) Poverty

Practice Exercise 16

1.   i) Arawa   ii) Goroka   iii) Rabaul
      iii) Kimbe   iv) Kavieng   v) Wabag

2   i) Lae
      ii) Mount Hagen
      iii) Port Moresby

3.   Because of the pull factors.

4.   unemployment
      Over-crowdedness
      Social problem e.g. stealing

END OF UNIT 2

NOW TURN TO YOUR ASSIGNMENT BOOK AND COMPLETE ALL THE TOPIC TESTS. CHECK YOUR ANSWERS AGAIN AND WHEN YOU ARE SATISFIED, SEND YOUR ASSIGNMENT BOOK TO YOUR PROVINCIAL COORDINATOR FOR MARKING.

REFERENCE LIST

Population, Resources and Migration (1992), Department of Education Papua New Guinea, Jackaranda Press, Auckland, New Zealand

https://en.wikipedia.org/wiki/Line_chart

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http://travelingluck.com/Oceania/Papua+New+Guinea/Gulf/_2092686_Lakekamu+River.html

http://www.healthcarebusinesstech.com/the-10-deadliest-epidemics-in-history/

www.mayoclinic.org/diseases.../infectious-diseases/basics/.../con-20033534

http://nancysullivan.typepad.com/my_weblog/2013/week10/

FODE PROVINCIAL CENTRES CONTACTS

PC NO.	FODE PROVINCIAL CENTRE	ADDRESS	PHONE/FAX	CUG PHONES	CONTACT PERSON		CUG PHONE
1	DARU	P. O. Box 68, Daru	6459033	72228146	The Coordinator	Senior Clerk	72229047
2	KEREMA	P. O. Box 86, Kerema	6481303	72228124	The Coordinator	Senior Clerk	72229049
3	CENTRAL	C/- FODE HQ	3419228	72228110	The Coordinator	Senior Clerk	72229050
4	ALOTAU	P. O. Box 822, Alotau	6411343 / 6419195	72228130	The Coordinator	Senior Clerk	72229051
5	POPONDETTA	P. O. Box 71, Popondetta	6297160 / 6297678	72228138	The Coordinator	Senior Clerk	72229052
6	MENDI	P. O. Box 237, Mendi	5491264 / 72895095	72228142	The Coordinator	Senior Clerk	72229053
7	GOROKA	P. O. Box 990, Goroka	5322085 / 5322321	72228116	The Coordinator	Senior Clerk	72229054
8	KUNDIAWA	P. O. Box 95, Kundiawa	5351612	72228144	The Coordinator	Senior Clerk	72229056
9	MT HAGEN	P. O. Box 418, Mt. Hagen	5421194 / 5423332	72228148	The Coordinator	Senior Clerk	72229057
10	VANIMO	P. O. Box 38, Vanimo	4571175 / 4571438	72228140	The Coordinator	Senior Clerk	72229060
11	WEWAK	P. O. Box 583, Wewak	4562231/ 4561114	72228122	The Coordinator	Senior Clerk	72229062
12	MADANG	P. O. Box 2071, Madang	4222418	72228126	The Coordinator	Senior Clerk	72229063
13	LAE	P. O. Box 4969, Lae	4725508 / 4721162	72228132	The Coordinator	Senior Clerk	72229064
14	KIMBE	P. O. Box 328, Kimbe	9835110	72228150	The Coordinator	Senior Clerk	72229065
15	RABAUL	P. O. Box 83, Kokopo	9400314	72228118	The Coordinator	Senior Clerk	72229067
16	KAVIENG	P. O. Box 284, Kavieng	9842183	72228136	The Coordinator	Senior Clerk	72229069
17	BUKA	P. O. Box 154, Buka	9739838	72228108	The Coordinator	Senior Clerk	72229073
18	MANUS	P. O. Box 41, Lorengau	9709251	72228128	The Coordinator	Senior Clerk	72229080
19	NCD	C/- FODE HQ	3230299 Ext 26	72228134	The Coordinator	Senior Clerk	72229081
20	WABAG	P. O. Box 259, Wabag	5471114	72228120	The Coordinator	Senior Clerk	72229082
21	HELA	P. O. Box 63, Tari	73197115	72228141	The Coordinator	Senior Clerk	72229083
22	JIWAKA	c/- FODE Hagen		72228143	The Coordinator	Senior Clerk	72229085

SUBJECT AND GRADE TO STUDY

GRADE LEVELS	SUBJECTS/COURSES
Grades 7 and 8	1. English 2. Mathematics 3. Personal Development 4. Social Science 5. Science 6. Making a Living
Grades 9 and 10	1. English 2. Mathematics 3. Personal Development 4. Science 5. Social Science 6. Business Studies 7. Design and Technology- Computing
Grades 11 and 12	1. English – Applied English/Language& Literature 2. Mathematics - Mathematics A / Mathematics B 3. Science – Biology/Chemistry/Physics 4. Social Science – History/Geography/Economics 5. Personal Development 6. Business Studies 7. Information & Communication Technology

REMEMBER:

- For Grades 7 and 8, you are required to do all six (6) courses.
- For Grades 9 and 10, you must study English, Mathematics, Science, Personal Development, Social Science and Commerce. Design and Technology-Computing is optional.
- For Grades 11 and 12, you are required to complete seven (7) out of thirteen (13) courses to be certified.

GRADES 11 & 12 COURSE PROGRAMMES

No	Science	Humanities	Business
1	Applied English	Language & Literature	Language & Literature/Applied English
2	Mathematics A/B	Mathematics A/B	Mathematics A/B
3	Personal Development	Personal Development	Personal Development
4	Biology	Biology/Physics/Chemistry	Biology/Physics/Chemistry
5	Chemistry/ Physics	Geography	Economics/Geography/History
6	Geography/History/Economics	History / Economics	Business Studies
7	ICT	ICT	ICT

Notes: You must seek advice from your Provincial Coordinator regarding the recommended courses in each stream. Options should be discussed carefully before choosing the stream when enrolling into Grade 11. FODE will certify for the successful completion of seven subjects in Grade 12.

	CERTIFICATE IN MATRICULATION STUDIES	
No	**Compulsory Courses**	**Optional Courses**
1	English 1	**Science Stream:** Biology, Chemistry, Physics
2	English 2	**Social Science Stream:** Geography, Intro to Economics and Asia and the Modern World
3	Mathematics 1	
4	Mathematics 2	
5	History of Science & Technology	