ADULT EDUCATION

book 1

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NATIONAL TECHNICAL COMMISSION

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INTRODUCTION

This book is the first in a series of four books prepared by the National Technical Commission of the C.P.E for the programme of Adult Education. The series has been prepared with the objective of providing suitable and relevant material for upgrading the level of primary education of our sub-educated adults.

We have included three subjects in one book because this format is more economical and because it unites the three subjects which, in our opinion, form the essential pillars of knowledge for adults and workers in the New Grenada: English, Mathematics and Natural Science.

The English course emphasises the practise of reading as a means of independent study and a source of new knowledge. The Mathematics included here aims at providing the adult with a sound knowledge of the basics of mathematical theory utilising elements of actual experience. The Natural Science course seeks to introduce a scientific understanding of Nature. The understanding and use of science by the working people is an indispensible tool in the construction of the new society.

As a pioneering work in the field of education (adult education in particular) in Grenada, this book will gain its real value only after criticism and feedback from those who use it. The National Technical Commission invites all who use it to contribute to its improvement by providing us with such criticisms, feedback and suggestions.

NATIONAL TECHNICAL COMMISSION
Centre For Popular Education

English Language

UNIT 1

TOOLS

Man uses many different objects to help him do different things. Tools are the simple machines which he uses to make his work easier.

The crowbar, the trowel, the cutlass, the fork, the cocoa knife and the wheelbarrow are tools. We use these tools in our work on the land and in building.

Tools help to make work easier. With them man is able to increase his strength and ability to carry out tasks. The complicated machines of today have been the result of a long series of improvements to the simple machines of yesterday.

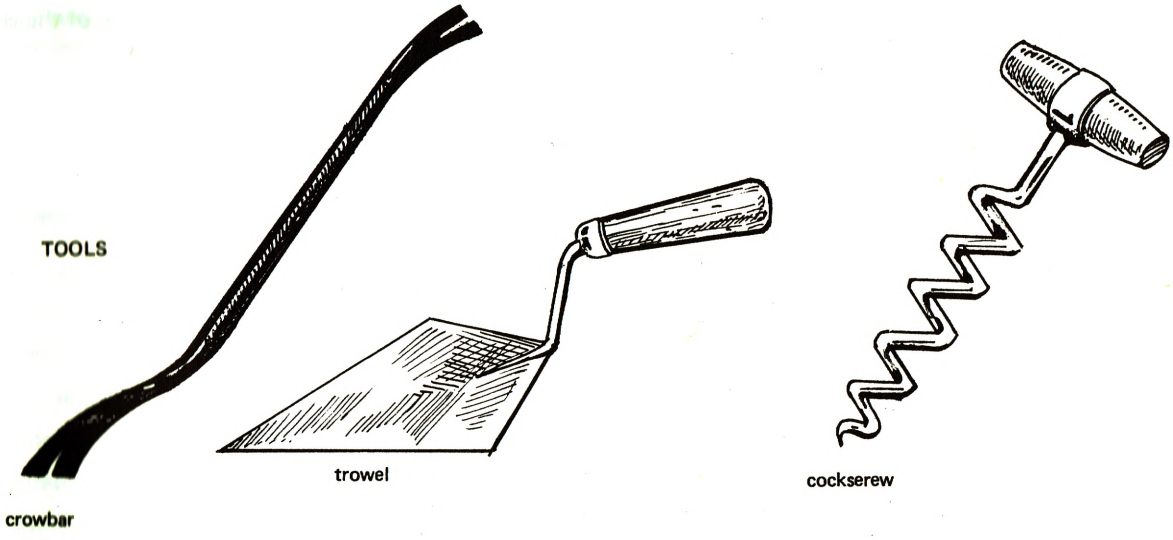
Many of the tools used by workers and some of the things used by housewives can be considered simple machines. Among these are cockscrews, sissors, ice picks, can and bottle openers.

As man makes more and more use of science, he develops better tools to do greater things.

Vocabulary

object:	thing
crowbar:	an iron bar used for opening crates
trowel:	a tool used by masons for plastering concrete
complicated:	difficult
cockscrew:	a tool used for removing cocks from bottles

TOOLS



Comprehension

What does man use to make his work easier?
Name some simple tools.
How did today's machines develop?
Name some tools which you use in your work.

GRAMMATICAL PRINCIPLES

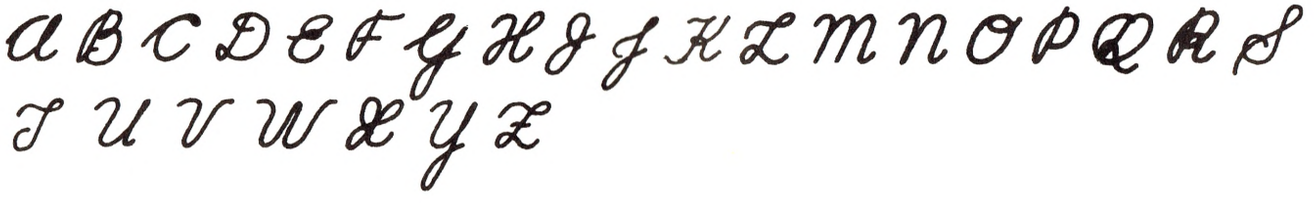
The alphabet: capital and small letters

You will notice from the reading passage that the first letter of every word that begins a sentence is bigger than the others.

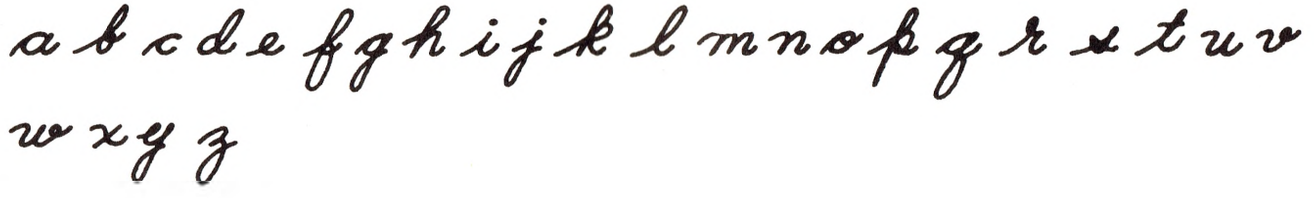
- The large letter that begins a string of words, or the name of somebody or somewhere is called a **capital letter.**
- The other small letters are called **common letters.**

There is a great difference between capital and common letters.

The alphabet in **capital letters**



The alphabet in **common letters**



The letters of the alphabet follow a pattern. **A** is the first letter of the alphabet. **B** comes after A, **C** comes after **B** and so on.

- This pattern is called **alphabetical order.**

Words are put in alphabetical order according to the first letter of the word.

For example:		
	axe	a____
	banana	b____
	cutlass	c____
	doctor	d____

Exercises

1. Copy the words of the vocabulary and their meanings.
2. Copy the alphabet in capital letters.
3. Copy the alphabet in common letters.

4. Fill in the blank spaces:

   The alphabet can be written in _____ or _____ letters.

5. Write three sentences about tools that you use at home or at work.

6. Copy the reading passage on "Tools".

7. Practise your handwriting with this sentence:

With tools man is able to increase his strength and ability to carry tasks.

8. Put these words in alphabetical order:

   axe, doctor, banana, fork, cutlass

   green, iron, hill, lend, kaiso, jelly

9. Learn the order of the alphabet by heart.

UNIT 2

MAKE A HOUSE A HOME

The home is the place where the family lives. It does not have to be big or filled with many things. It is enough to have seats and basic furniture.

Those who live in the house should take care of it and decorate it according to their taste. A house is more attractive if its walls and ceilings are clean and the furniture in order. A house in more comfortable if it is cleanly kept.

But this is not all. We should also make our homes pleasant places. Avoid shouting, bawling, disagreement and unnecessary commotion which are the enemies of human companionship.

Furthermore the home is a place where our children are taught by example because they imitate all that they see and hear. Therefore we are bound to set the best example of conduct and speech.

Let us make our homes examples of togetherness, cleanliness and respect.

Vocabulary

decorate:	fix it up
attractive:	beautiful
comfortable:	relaxing, enjoyable
commotion:	disturbances
companionship:	togetherness
imitate:	copy, follow the example
conduct:	behaviour

Comprehension

Does a home need many things to make it comfortable?

How should we keep our houses?

What are the enemies of human companionship?

Why should we set the correct example for our children?

Group discussion

Make a house a home.

What are the difficulties that parents face in making a house a home?

Why is example so important in our homes and lives?

How can we help each other in our community to build better homes?

GRAMMATICAL PRINCIPLES

Vowels and consonants

There are 26 letters in the alphabet. Among these letters, 5 of them are **vowels.**

- The vowels are: A, E, I, O, U.
- The rest of the letters of the alphabet are **consonants.**

Consonants and **vowels** together form **syllables.** Syllables form words: mi-nis-ter, minister, min is a syllable. The three syllables min, i, ster together form the word minister.

Exercises

1. Write down the alphabet.
2. Pick out all the consonants.
3. Fill in the blanks:

   The vowels are _____ and ____.

   There are _____ letters in the alphabet.

   _____ are consonants.

   Consonants and vowels together form _____.

4. Write down the syllables that make up these words.

   Example: minister

   mi-nis-ter

revolt	carnival	animal
banana	coconut	basket ball

5. Fill in the blanks with the correct vowel.

   On Bl_ _dy Monday we rememb_r our her_ Rup_rt B_sh_p.

   Childr_n are the fl_wers of _ur R_v_luti_n.

   B_tter ed_cat_on is the p_opl_s r_ght.

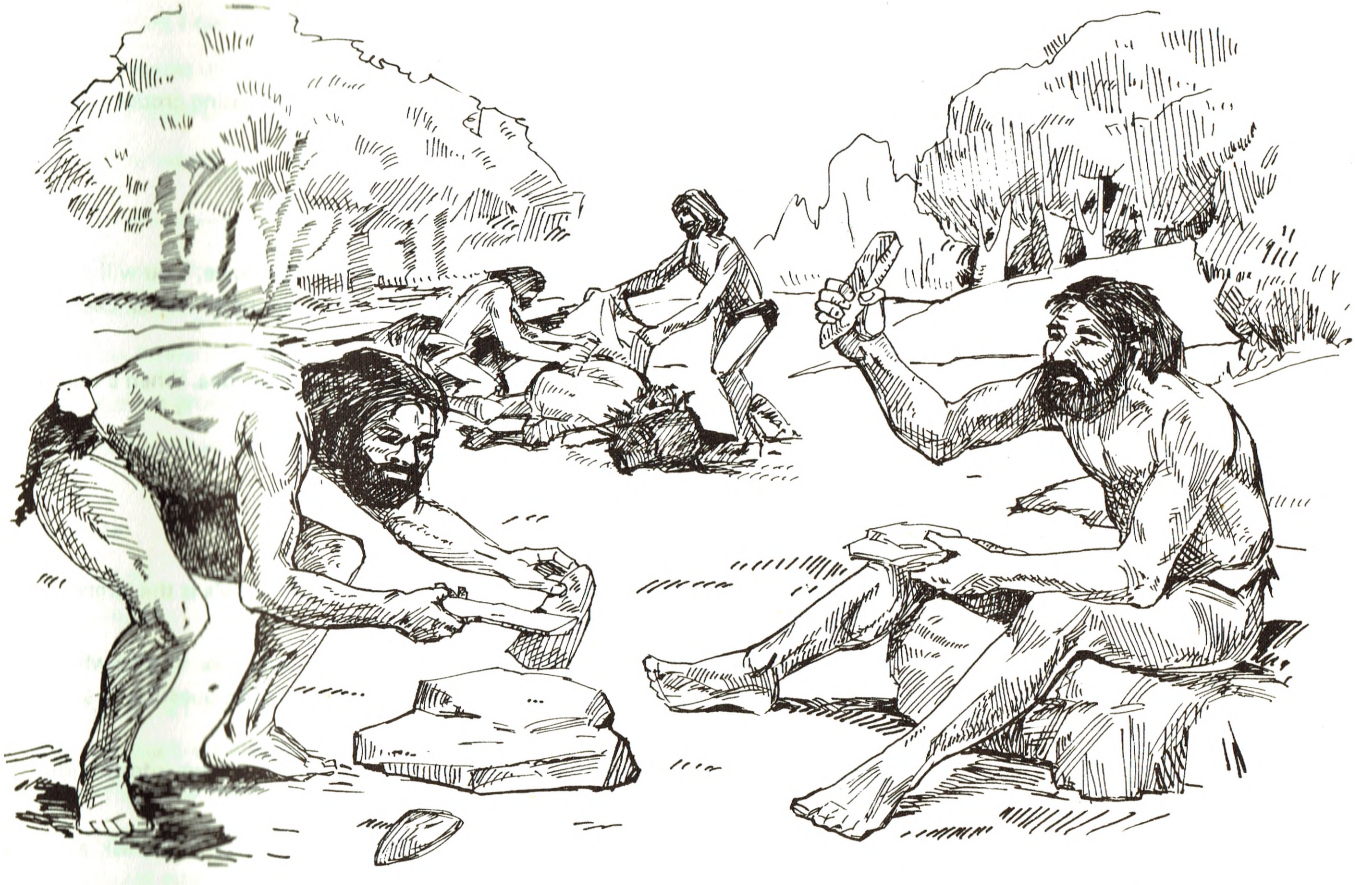
   Big dr_m is p_p_lar _n Carri_c_u.

6. Copy the reading passage MAKE A HOUSE A HOME.
7. Practise your handwriting with this sentence.

Our homes should be examples of togetherness, cleanliness and respect.

UNIT 3

PRIMITIVE MAN



Primitive man lived in a situation of total dependence on nature. He ate fruits, roots, fish and meat.

That forced him to live in groups. These groups improved the old ways of life in order to survive. Primitive man had to fight against nature to survive.

His first tools were sharp bits of stone, axes and spears. Much later, he invented knives and the bow and arrow. As his tools improved, he was able to improve the quality of his life.

Some of the tools which workers use today resemble those used by primitive man. For example, the axe. The study of how man and his way of life evolved is very interesting.

Vocabulary

primitive:	earliest
dependence:	reliance, unable to be on ones own
invented:	made for the first time
resemble:	look like
evolved:	developed in stages

Comprehension

What did primitive man eat?

What caused him to live in groups?

Name some of his earliest tools.

Name a tool that was used by primitive man that is still used today.

GRAMMATICAL PRINCIPLES

The sentence

When we speak we do not speak with isolated words. We speak using groups of words. We speak using groups of words related to each other.

For example:

The first tools were sharp bits of stone, axes and spears.

- This related group of words which we have just read is a **sentence.** You will notice that the reading passage "Primitive Man" is made up of groups of words. Each group of words has a complete idea. It is like a unit.
- **The sentence** is a group of words which expresses a complete idea. When a number of sentences come together they form a **paragraph.**

  1. St. Andrew's is the largest parish in Grenada.

  2. Which parish is the smallest?

  3. Open the door.

  The first sentence tells us something. It tells us that St. Andrew's is the largest parish in Grenada. This sentence makes a **statement.**

  The second sentence does not tell us anything. It asks a question. It asks which parish is the smallest parish. It is a **question.** The answer to this question is a statement.

  The third sentence does not give us information, nor does it ask for information. It orders someone to do something. It is a **command.**

- A sentence does one of three things. It can make a statement. Or it can ask a question. Or it gives a command.

  in the house

  by the road

  for his family

  These groups of words do not express complete ideas.

  In the house — Does not say what is in the house or what happened in the house. This group of words does not make complete sense.

- A group of words which does not make complete sense is called a **phrase.**

  For a phrase to make complete sense more words must be added to it which explains it.

in the house

The doctor was in the house.

by the road

The manicou was by the road.

for his family

Tha farmer plants food for his family.

Exercises

1. Which of these are sentences and which are phrases?

   I saw the film

   In the shop

   On the farm

   A hard working woman

   The fisherman works in the co-operative

   Yesterday

   This morning I ran to the beach

2. Make sentences with the phrases from the first exercise.
3. Complete these sentences:

   The farmer works _____.

   _____ hunted and fished.

   The men _____ the fishing nets from the sea.

   We must plant _____.

   To move forward we must _____.

   A phrase is a group of words which _____.

4. Write sentences using the following words:

   work

   Grenada

   Revolution

   Agriculture

5. Which of these sentences are statements, questions or commands.

   On January 21 we honour our fallen hero, Rupert Bishop.

   Was the block-o successful.

   Go to the show tomorrow.

   The people of El Salvador will win.

   Do you get equal pay for equal work.

   Make it a must and be there.

   Ann Marie is a teacher.

6. Write three commands, four statements and five questions.
7. Practise this sentence in your best handwriting.

Primitive man's first tools were sharp bits of stone, axes and spears.

INTER-ISLAND TRADE

Inter-Island Trade

Motor vessels like "Seafortress", "Success", "Faith H" and "Agatha K" leave Grenada every Tuesday for Trinidad to trade. They carry with them fruits such as sapodillas, sugar apples, mangoes and limes. They also trade with vegetables like plantain, banana, bluggo and avocado pears. Sometimes they bring spice to Trinidad.

The people who buy and sell those fruits and vegetables are called traffickers and they come from all parts of Grenada. They come from Paradise, Crochu, Mt. Rose, Maran and other villages.

The boats bring back sugar, flour, rice, garlic, onions, potatoes and other foodstuffs to Grenada. The boats usually return on Saturdays.

Inter-island trade is a common economic activity in the Caribbean.

Vocabulary

motor vessel:	ships
trade:	buying and selling
economic activity:	way of making a living

Comprehension

Name some of the ships which travel between Grenada and Trinidad.

What are some of the fruits and vegetables which they carry?

How are the people who buy and sell these goods called?

What parts of Grenada are they from?

Group discussion

Inter-island trade

Discuss inter-island trade between Grenada, Carriacou and Petit Martinique

Also the trade between Grenada and other Caribbean islands

GRAMMATICAL PRINCIPLES

Nouns

traffickers workers

Are words which name persons.

mango bluggo motor vessel

Are words which name things.

manicou goat

Are words which name animals.

- **Nouns** are words which name persons, animals or things. A noun is the name of anything.

Exercises

1. Grand Etang, Trinidad, Paradise, Maran.

   These words are _____ because they are the names of places.

2. sapodillas, lime, bottle, house, car

   These words are nouns because they are the names of _____.

3. Pick out the nouns from these sentences:

   It is important that men and women join the Militia.

   Gouyave, Maran and Woburn are fishing villages in Grenada.

   Tuesday is usually banana day.

   Brooms are made from bamboo and fibre.

4. Pick out the nouns from the reading passage on Inter-island Trade.

5. Put a noun in each of the following spaces:

   The _____ drove the _____ .

   Grenada, _____ and Petit _____ are one nation.

   Hurricanes, _____ and Belle Vue Rangers are football teams.

   Mighty, _____ is the greatest calypsonian in the world.

   Milk is good for _____ and _____ .

6. In each column write the names of five people, places, things and animals.

people	places	things	animals

7. Read the front page of the last issue of the *Free West Indian.* Pick out ten nouns from it.
8. Write sentences of your own using five of the nouns from the front page of the *Free West Indian.*

UNIT 5

AGRICULTURAL PRODUCTION

Our farmers and agricultural workers produce food crops which help to feed our people. They also produce other products like cocoa, nutmeg, bananas and spices which we sell to other countries.

Lots of potatoes, yams, tannias and bluggoes are sold on the local market. Tropical fruits like oranges, limes, mangoes, golden apples and others are produced. Some farmers grow vegetables like tomatoes, beans, carrots and cabbages for export to Trinidad.

Our farmers and agricultural workers play an important role in building our country. Agricultural production is the wealth of our country. Every year we spend about fifty-seven million dollars to buy food from other countries. Grenada's soil is rich enough for us to feed ourselves.

Idle hands on idle lands, forming and working in co-operatives, agro industries. These are the steps to greater agricultural production and more employment in our country.

Vocabulary

products:	goods
tropical fruits:	fruits which only grow in countries with warm climates
export:	sale of a product overseas
agro-industries:	production of canned and preserved food from local goods and fruits
employment:	jobs

Comprehension

What do our farmers and agricultural workers produce?

What is done with some of this produce?

How much money do we spend every year on food from overseas?

What are some of the steps to greater agricultural production?

Group discussion

Agricultural production

What are some of the main problems affecting agricultural production in your parish?

How can we help solve some of these?

What is the role of co-operatives in creating greater agricultural production?

Write the names of all the agricultural produce in this picture.

Market scene

GRAMMATICAL PRINCIPLES

Number of nouns

The farmer ate a mango.

The cat has ten kittens.

There are doctors in all of the hospitals.

The nouns farmer, cat, mango refer to only one person, one animal and one thing.

- When a word refers to only one person, animal or thing we say it is **singular** number.

The nouns doctors, kittens and hospitals refer to more than one person, more than one thing.

They refer to several persons, animals and things.

- When a word refers to several persons, animals or things, we say it is **plural** number.

The **number** tells us when we are speaking of one or more than one person, animal or thing.

The **singular** number refers to **only one** person, animal or thing.

The **plural** number refers to **more than one** person, animal or thing.

Singular	Plural
boy	boys
dog	dogs
farmer	farmers

Most of the nouns in English form the plural by adding **s** to the singular.

one farmer two farmers

Exercises

1. Give the plural of these nouns.

   farmer _____

   worker _____

   book _____

   boat _____

   pea _____

   vegetable _____

2. Make the nouns in these sentences plural.

   The engine stopped suddenly.

   The flower fell from the tree.

   The telephone rang quietly.

3. Give the singular for these plural nouns.

   bananas _____

   fruits _____

   spades _____

   soldiers _____

   cabbages _____

   carrots _____

   limes _____

4. Complete these sentences:

   _____ number is used for nouns that mean **only one.**

   _____ number is used for nouns that mean **more than one.**

   Most nouns become plural by adding _____ to the singular.

PART TWO

- Although most nouns become plural by adding **s,** there are some that form the plural differently.
- Nouns that end in a **hissing** sound form their plurals by adding **es.**

  one church - three churches

  one inch - three inches

  one box - three boxes

- Some nouns that end in **o** form their plurals by adding **es.**

  one potato - four potatoes

  one bluggo - four bluggoes

  one mosquito - four mosquitoes

- Nouns that end in **f** or **fe** form the plural by changing the **f** or **fe** to **ves.**

  leaf - five leaves

  thief - five thieves

wife - five wives

knife - five knives

- Some nouns that end in **y** form the plural by changing the **y** to **ies.**

baby - six babies

army - six armies

fly - six flies

- The plural of some nouns are the same or different from the singular. These have no rules:

Singular	Plural
sheep	sheep
man	men
woman	women
child	children
foot	feet
tooth	teeth
mouse	mice

Exercises

1. Give the plural of these words:

box	half	sheep
hero	leaf	woman
brush	loaf	foot
fox	donkey	fly
inch	day	banana

2. Complete the following sentences:

Nouns that end with a hissing sound form the plural by adding _____ .
For example church, _____ and _____ .

Nouns that end in **o** like _____ make the plural by adding _____ .

Nouns that end in **f** or **fe** form the plural by _____ _____ .

Nouns like _____ which end in **y** form the plural by changing the **y** into _____

3. Change these sentences from singular to plural:

For example:

The farmer cooked a bluggo. singular

The farmers cooked bluggoes. plural

The child ran out of the room.

The girl read the book on the shelf.

The man went to church in a car.

The woman worked in the field.

4. Give the singular of these nouns:

guns	stories	watches
roofs	wolves	spices
cloth	mice	radios

UNIT 6

MONDAY NOVEMBER 17, 1980

On Monday November 17, 1980 five people were murdered by counter-revolutionaries in St. Patrick's.

Four of the five patriots were killed in an attack on the car in which they were travelling in Plains. The names of those martyrs were Stephen Lalsee, Dennis and Donald Stanislaus and Andrew Courtney.

The fifth person who was brutally murdered that day was Evan Charles a member of the Pepple's Militia. He was killed in an attack on a house in Mt. Rose which was once the militia camp.

Acts of counter-revolution teach us in a painful way who the enemy is. Such brutal acts cannot intimidate us. They make us more determined. When a forceful and determined people cry, injustice trembles.

Vocabulary

counter-revolutionaries: people determined to turn back the revolution by any means.

patriots: people devoted to their country

martyrs: those who are killed for a noble cause

intimidate: frighten

Comprehension

When did the murder of the five patriots happen?

What were their names?

Where were they killed?

GRAMMATICAL PRINCIPLES

Proper and common nouns

The men were killed in Plains.

Farmer Brown sent mangoes and oranges to Barbados.

Andrew went to the rally in town in bus "Revo"

Notice that in these sentences Plains, Barbados, Revo, Brown, Andrew are the names of special people, places or things.

There are many farmers and people but Brown and Andrew are the names of **particular** people.

There are many different places but Plains and Barbados are the names of **particular** places.

There are many different buses but Revo is the name of a particular bus.

- Names of **particular** people, places or things are called **proper nouns.**

man, town, mango

These words refer to any of their kind. **Man** could mean anybody, it does not refer to any particular person.

Town does not refer to any special town. It refers to all towns in common.

Mango does not say what kind of mango. It refers to mangoes in common (it could mean lung mango or starch mango or any of the three hundred different kinds of mangoes that exist).

man, town, mango

are **common nouns** because they are the names given to all people or things or places of the same kind.

- **Proper nouns** begin with a capital letter because they are the names of particular things.

Days of the week and months of the year are names of particular days or months and begin with capital letters.

Monday	Wednesday
January	March

Remember: Sentences always begin with a capital letter.

Exercises

1. Read the passage "Monday November 17" carefully and write down all the proper and common nouns in it in two columns.

Proper nouns	Common nouns

2. Pick out the **proper nouns** from these sentences:

   Marva and Joseph are friends.

   Mount St. Catherine is the highest mountain in Grenada.

   Coast Guard and Union are villages in St. Marks.

3. Pick out the **common nouns** from these sentences:

   There are lots of lambie, lobster and turtle in Carriacou.

   The chicken eats rice.

   Boats bring tourists to Grenada.

4. Write down:

   — five **common nouns** that are the names of things around you now.

   — five **common nouns** for things that you use in your work.

   — five **common nouns** for things in your home.

5. Write down:

   — five **proper nouns** that are the names of people you know.

   — five **proper nouns** for places in Grenada.

   — five **proper nouns** for places in Carriacou.

6. Rewrite these sentences putting in capital letters for proper nouns where necessary:

   andrew lives in Crochu st. david's.

   we will fill grenada full with our song.

   the caribs jumped from leaper's hill in st. patricks.

   fedon's slogan was "liberty, equality or death".

   moko disease affects our bananas.

7. In your best handwriting copy the reading passage.

8. Write four sentences about your village. Pick out the proper and common nouns in your sentences.

UNIT 7

JULIEN FEDON

Julien Fedon is one of the outstanding freedom fighters in our history. He was a coloured planter who owned the Belvidere Estate in St. Johns and led a popular rebellion against the British almost gaining complete control of the island.

Fedon was of French origin and, like other French land owners in the island, did not enjoy the same rights as the English citizens. The French citizens suffered under British rule in Grenada.

On March 2, 1795 Fedon led a popular uprising of French citizens, free blacks and slaves against the British. Inspired by the ideals of the French Revolution, their flag of liberation carried the words "Liberty, Equality or Death."

Fedon's rebellion lasted from March 1795 to June 1796. During those sixteen months they gained control of all the parishes except St. Georges. He was eventually defeated by the British who were determined to regain control of the island.

Although Fedon was defeated, his spirit of resistance lived on and inspired other generations.

Vocabulary

popular: people's supported by the majority of the people

inspired: encouraged, influenced

ideals: aims, beliefs

Comprehension

Who was Julien Fedon?

In which parish is Belvidere Estate?

Who took part in Fedon's rebellion?

On what date did the rebellion begin?

What words were written on their flag?

How long did the rebellion last?

GRAMMATICAL PRINCIPLES

Gender of nouns

Read these sentences carefully:

The man drives the tractor.

The woman does carpentry.

The nouns **man** and **woman** show a difference in sex.

The noun **man** refers to the **male** sex. The noun **man** is **masculine gender.**

- Nouns which are names of males are said to be **masculine gender.**

For example: father, son, brother, Jones

All have **masculine gender.**

The noun **woman** refers to the **female** sex. The noun **woman** is **feminine gender.**

For example: girl, aunt, police-woman

All stand for females. All these nouns have feminine gender.

book, tree, town, hoe

All of these nouns are names of things but there are no male or female books. There are no male or female towns, or hoes.

Nouns that are names of things which are neither male nor female **neuter gender.**

- **Neuter gender** is neither male nor female. **Neuter gender** has no sex.

Some nouns can be both male and female.

servant, parent, crowd

A servant can be a male servant or a female servant.

A parent can be a male parent (father) or a female parent (mother)

- Nouns which can be both male and female are **common gender. Common gender** can be either masculine or feminine.

All nouns have **gender.** There are **four** genders:

1. **masculine gender** for males
2. **feminine gender** for females
3. **neuter gender** for what is neither male nor female
4. **common gender** for what refers to both male/female

Exercises

1. Group these words according to their gender.

coconut	hen	children	brother
ram	jack-donkey	book	policeman
wife	servant	citizen	woman
boar-pig	aunt	son	bull
girl	towel	planter	daughter

Masculine	Feminine	Neuter	Common

2. Rewrite these sentences changing the nouns from **masculine to feminine.**

The father and son came to the show.

The uncle and nephew are going to the field.

My brother met my uncle's son at the market.

The cock flew away.

3. Rewrite these sentences changing the nouns from **feminine to masculine.**

My mother was born in Belvidere.

Women are firm builders of the Revolution.

My aunt knows your wife.

4. Which of these nouns are **neuter** and which are **common?**

car	_____	pen	_____
book	_____	person	_____
doctor	_____	coconut	_____
revolutionary	_____	farmer	_____
rope	_____	house	_____

5. Complete the following sentences.

Land, table and airport are _____ gender because they _____.

Mothers, militia women and aunts are _____ gender because they are _____.

Nouns which are neither male nor female are _____ gender.

People, dentist and baby are _____ gender because these nouns refer to both males and females.

6. Give the masculine or feminine gender for these words.

For example: boy girl

policeman	_____	mother	_____
aunt	_____	man	_____
niece	_____	bull	_____
grand father	_____	wife	_____
Albert	_____	Eric	_____

7. Dictation of the first paragraph of the reading passage "Julien Fedon".

8. Practise this sentence in your best handwriting.

Fedon's flag of liberation carried the words, "Liberty, Equality or Death!"

9. Draw a design for Fedon's flag of liberation with the words "Liberty, Equality or Death" on it.

10. Design a flag for Free Grenada with the words "Forward Ever, Backward Never" on it.

WE MUST PLANT

We must plant,
mother,
we must plant;
among the stars
and on the seas;
on your bare feet
and by the road sides

in forbidden hopes
and on our open palms
everywhere. . .

Yes, mother,
we must plant,
We must plant

along the road of freedom
the new tree
of national independence.

Written by MARCELINO DOS SANTOS
a poet from Mozambique in Africa

Revision exercises

1. Write down the vowels in the alphabet.
2. Place the consonants in one column and the vowels in another.

Grenada	plant
egg	inter-island
knife	mountain
ochre	coffee

3. Write down five nouns from the poem.
4. Make sentences using these five nouns.
5. List the proper and common nouns in these sentences:

   Julien Fedon was a fighter for freedom and equality.

   Grenville has a fish plant.

   The largest lake in Grenada is the Grand Etang.

   Young men love to hunt manicou at nights.

6. Complete the sentence by joining the right phrases together:

A united people	better fishing methods.
Our fishermen can now learn	must be made to produce.
Every inch of land	can never be defeated.

7. Fill in the blanks with nouns of the opposite gender:

   I have a nephew and a _____ working on the airport site.

   My grandmother and _____ were married for fifty years.

   Both _____ and women do the fishing.

   The Revolution has room for man, _____ boy and _____ .

8. State whether true or false:

   A sentence must contain a verb.

   A paragraph is made up of a group of words.

   Allan, July and Success are proper nouns.

   A noun is the name of anything.

   A noun is plural when it refers to only one thing.

UNIT 9

COONYAR'S INVENTION

Norris Edwards, an agricultural worker known as "Coonyar" invented the beetle trap. Coonyar works on Marlmount Estate in St. Davids and was chosen "Worker of the Year 1980" for his outstanding invention.

His beetle trap catches cocoa beetles by a simple method. The trap is made of African broadfruit wood which sends out a gum that attracts the beetle. Cocoa beetle destroys the cocoa by boring into the cocoa tree. Coonyar invented the trap after observing the habits of the cocoa beetle

Prime Minister Bishop said that Coonyar "is an ordinary agricultural worker who has made an outstanding discovery". His discovery will save tax-payers tens of thousands of dollars in chemicals. The beetle trap will help increase cocoa production by getting rid of the pest.

Vocabulary

invention: discovery

beetle: insect with hard covering

boring: digging

observing: watching carefully

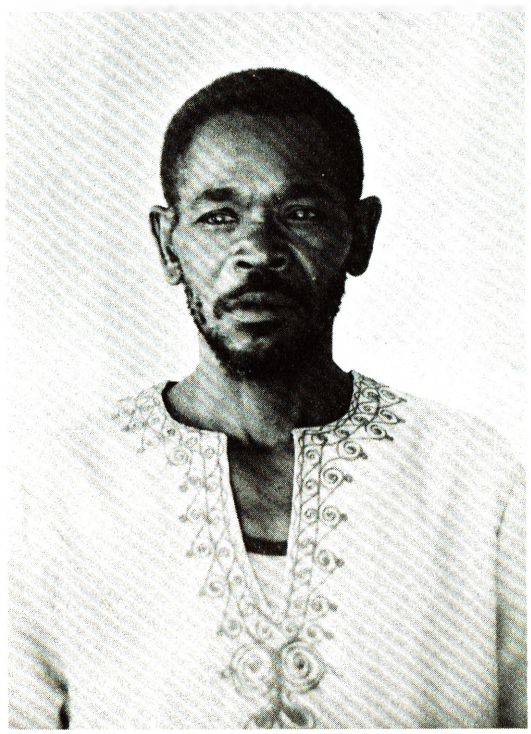
Comprehension

What is Coonyar's real name?

Where does he work?

What did Coonyar invent?

What is the value of Coonyar's invention?



Norris Edwards, *Coonyar.*

GRAMMATICAL PRINCIPLES

The verb

Coonyar invented the beetle trap.

What did Coonyar do?

He **invented** something.

The word **invented** is a verb.

Coonyar is a person.

Persons can invent, study, work.

- Words which say what people can do are **verbs.**

The fork **digs** the earth.

Words **express** ideas.

The rain **wets** the side walk.

- Words which say what things can do are **verbs.**

The beetle **destroys** the cocoa.

The donkey **carries** the baskets.

The fish **swims.**

- Words which say what animals do are **verbs.**

All of the words which say what a person, animal or thing can do is a **verb.** The verb is the most important word in a sentence.

Exercises

1. Complete the following sentences:

   The dog _____ at strangers.

   Rain _____ all day.

   Coonyar's invention _____ cocoa beetles.

   Grenada _____ nutmeg, cocoa and bananas.

   The P.R.A. and Militia _____ our country.

2. Which of these words are verbs:

catch	day	mountain
box	plant	fall
weeding	hill	sun
full	carry	dancing
earth	make	grow

3. Write sentences using the verb from the list above.
4. Read over the reading passage "Coonyar's invention" and write down the verbs in it.
5. Write ten sentences using verbs from the passage.
6. Replace the verbs with correct verbs.

   Peter grows the car.

   The dog cuts the man.

   Our people eat their community.

   We must jump what we grow and grow what we wash.

7. Make questions and give answers for the pictures below.

   Example: What is the woman doing?

   She is washing clothes.

8. Dictation of the first paragraph of the reading passage.

LANGUAGES

Not everyone speaks the same language. There are thousands of different languages spoken in different countries in the world. Although they are all different, they have one important thing in common: they represent ways of expressing thought and feeling.

The languages which are spoken by the largest numbers of people in the world are: Chinese, English, Russian, Spanish and French.

In our Caribbean we speak English, Spanish, French and Dutch. In some islands like St. Lucia and Dominica, English and Patois are spoken. Many years ago we used to speak patois in Grenada also.

The languages that we speak in the Caribbean are the result of our history. The Engl French, Spanish and the Dutch colonialists made us speak their languages but whatever language we speak, we are one people.

The more languages that we learn to speak, the better we can communicate with oth people and the more we can contribute to International understanding.

Vocabulary

patois: A language with a mixture of French and African.

colonialists: People from Europe who took over the Caribbean islands.

Comprehension

1. Name two languages that are spoken by the largest number of people?
2. What do all languages have in common?
3. In which islands are English and patois spoken?
4. What are the advantages of speaking more than one language?

GRAMMATICAL PRINCIPLES

The present tense

In our Caribbean we **speak** English, Spanish, French and Dutch.

Coonyar **works** on Marlmount estate.

The doctors **attend** to their patients.

The verbs **speak, works, attend** describe actions that are taking place right now.

These verbs are said to be in the **present tense.**

- The **tense** of a verb tells us **when** the action happened.

There are three main tenses:

past, present and **future**

The **past tense** tells us what has already happened.

The **present tense** tells us what is happening now.

The **future tense** tells us what will happen.

- The present tense does not tell us what happened yesterday or what will happen tomorrow. It tells us what is happening today.

Exercises

1. Pick out the verbs in the present tense.

   The Selmstrand travels to Carriacou.

   The woman sweeps the yard.

   Tourists visit Grenada everyday.

   Nutmegs grow in the mountains.

   Young and old join the Peoples Militia.

2. Fill in the blanks with verbs in the present tense:

   Militia men and women _____ to defend our country.

   He _____ his friend very often.

   We _____ gasoline and medicines from abroad.

   Grenada _____ nutmeg to Holland.

3. Complete the following sentences:

   The tense of a verb tells us _____ .

   The three main tenses in English are _____ , _____ and _____ tense.

   The past tense tells us _____ .

   The present tense tells us _____ .

   The _____ tense tells us what will happen.

4. Place these words in the box next to the tense which they represent.

today	yesterday	tomorrow

   past tense _____

   present tense _____

   future tense _____

5. Pick out the present tense verbs from this list:

speaks	sold	growing	leads
fought	invent	build	destroy
lives	ate	learn	save
travelling	fight	owned	wrote

6. Make sentences using the present tense verbs in the list above.

7. Write a paragraph of ten sentences on a topic of your choice.

8. Pick out the present tense verbs in your paragraph.

BOOKS AND EXPERIENCE

Our people have an old saying that "sense make before book". It is a very correct proverb because it is from the experience of man that books are written. Books are the written record of the experience of man.

By reading books we come to know what people of different countries and ages have thought and experienced. If we read carefully and understand what we read then we develop our knowledge. By reading and studying we accumulate the sense of different races and ages and can use this knowledge to help us create a better life.

Reading exposes us to great ideas and great ideas are powerful tools in developing greater understanding. Reading and study are permanent habits of a conscious people.

Vocabulary

proverb: saying

record: memory

accumulate: store up, pull together

permanent: fixed

conscious: aware

Comprehension

What is one of the old sayings of our people?

What do we call such sayings?

What are books?

How can we increase our knowledge?

Why are reading and study permanent habits of conscious people?

Exercises

1. Find five words in the passage which begin with vowels.
2. Write sentences using these words.
3. Complete these proverbs:

   A stitch in time _____

   Look before you _____
4. Fill in the missing letters in these sentences:

   R--ding e- p-s-s us to gr--t id-a-.

   Books a-e the w-itt--r-c-rds of the e-pe--en-e of m-n.
5. Insert the correct verb:

   _____

   catch, exposes, reads, helps

   _____

   Reading _____ us to gain new knowledge.

   Reading _____ us to great ideas.

   The fishermen _____ fish.

He _____ a book.

The worker _____ the newspaper.

6. Copy in your best handwriting:

By reading books we come to know what people of different countries and ages have thought and experienced.

GRAMMATICAL PRINCIPLES

Using **is** and **are**

The tree is full of ripe fruit.

It is a hot day.

He is a hard worker.

The donkey is a beast of burden.

All of these sentences speak of one person, animal or thing.

- We use **is** when we refer to one person, animal or thing.

  The trees are full of grapefruit.

  The men are hard workers.

  We are determined to build a new Grenada.

- We use **are** when we are speaking of more than one person, animal or thing.

The verb **to be**

I am	We are
You are	You are
He is	They are
She is	
It is	

Exercises

1. Fill in the blanks with the verb **is** or **are**:

The grapefruits _____ sour.

Guavas _____ good for making cheese, jelly and nectar.

It _____ a history book.

The class _____ over and we _____ going home.

NACDA _____ the National Co-operative Development Agency.

NCB _____ the bank of the people.

We _____ the children of Fedon, Marryshow and Butler.

2. Why do we use **are** in these sentences:

   Caribbean people are proud, freedom loving people.

   Black belly sheep are a stronger breed of sheep.

3. Correct these sentences:

   The hens is dead.

   You is a brave woman.

   We is on the bus.

   How is you?

   The men is always on the alert.

4. Why are the sentences above wrong?

5. Dictation of the passage "Books and Experience".

UNIT 12

IT IS COMING (poem)

It is coming

It is coming.
Do you hear the distant drumming?
It is coming.
What is coming?
Something radical and new,
Something glorious and true,
Something big with brotherhood.
It is coming.

Coming, coming
Not with make-believe and mumming.
It is coming.
Coming, coming
With the coming much shall go
Now so hard and mean and low.
Traffic in man's blood shall cease
In its clearer ways of peace.
Hence the coming.

This is an extract from a poem by T. A. MARRYSHOW written on July 30, 1920.

Vocabulary

radical:	original
make-believe:	pretence
mumming:	fooling, brandishing
traffic:	trade, business

Comprehension

What is the name of this poem?

Who wrote it and in what year?

What is coming?

When it comes what will it do?

Has it come?

Write, in a few sentences, all what you know about T. A. Marryshow.

Write a short paragraph on any one of these topics:

It has come.

Peace and brotherhood

An end to exploitation

GRAMMATICAL PRINCIPLES

The present continuous tense

The farmer **is planting** corn in his garden.

We **are learning** more about English.

The bananas **are growing.**

It **is coming.**

The words **is planting, are learning, is coming** tell us about an action that has started and is **still going on.**

- When **an action is still going on** it is **continuous.** Verbs that tell us when an action is continuing **are the present continuous tense.**

are growing **is coming**

There **are two parts** to the verb in the present continuous tense.

The **first part** is a form of the verb "to be": **am, is** or **are.**

The **second part** is a verb ending in **ing:** planting, washing.

To form the present continuous:

a) Verbs that end in **e**, drop the **e** and add **ing.**

write	writ**ing**
dance	danc**ing**

b) Some verbs **double** the last letter and add **ing.**

cut	cutting
hit	hitting

c) Verbs that end in **ie**: change the **ie** to **y** and add **ing.**

die	dying
tie	tying

Exercises

1. Fill in the blanks with the correct word:

teaching	washing	cutting
eating	barking	falling

The boy is _____ grass for his cow.

The hungry children are _____ their food.

He is _____ Sandra to drive.

Rain is _____ in Grand Etang.

The dog is _____ at the stranger.

2. Change these tense of the verbs in these sentences to the present continuous.

We build a new International Airport at Point Saline.

The coffee factory in Telescope produces local coffee.

I sail at Grand Anse.

We cut trees in Grand Etang for making timber.

You write neatly in your book.

LIAT flies to all the Caribbean Islands.

3. Change the tense of these verbs to the present continuous:

cut	roll	cry	shoot	live
swim	buy	fly	lie	stop
dance	drop	scratch	drive	move

4. Make sentences with six of these verbs using present continuous tense.

> The English that we speak has a different grammer to standard English. We use standard English so that we can be universally understood. Grenadian English is our natural form of expression.

The present continuous is expressed differently in Grenadian English.

We never use the verb **to be.**

Ah **going** to the rally - Grenadian English

I **am going** to the rally - Standard English

He **driving** the car.

He **is driving** the car.

Exercises

1. Change these sentences to standard English:

   You getting fat.

   St. Andrews producing local coffee now.

   Bertie joining the union.

   Marcia studying in Cuba.

   They building a new community centre in Birchgrove.

2. Write these sentences in Grenadian English (as you would say them):

   The man is cutting down the trees.

   I am writing a letter.

   He is working very hard.

   We are fighting up with our problems.

UNIT 13

HERE WE WERE BORN

Here we were born.

Our love is not shaken.
This is the land
where we were born.

Its sorrow
is our grief.

And today's bitter cloud
is a moment's pain
which the rain must dry.

This poem was written by MARCELINO DOS SANTOS, a poet from Mozambique. Mozambique is a revolutionary nation in Africa that has freed itself from Portuguese control.

Revision exercises

1. Fill in the blanks with suitable verbs:

   The birds _____ away.

   The Revolution _____ benefits to all.

   La Sargesse Farm _____ lettuce and vegetables for export.

   The size of Grenada _____ one hundred and thirty-six square miles.

   Most of our tourists _____ from Canada, West Germany and the U.S.

   The Ministry of Health _____ after the health services of our people.

2. Fill in the blanks with **am, is** or **are.**

   Cabbages _____ very expensive.

   I _____ going to help build Grenada.

   I _____ determined to study hard.

   Militia members _____ patriotic citizens.

   Coonyar _____ an inventor and a worker.

3. Complete the following sentences:

   Verbs are words which say _____.

   A _____ is the most important word in a sentence.

   The tense of a verb tells us _____.

   We use **is** when refering to _____.

   When we refer to more than one thing we use _____.

4. Pick out the verbs in the poem *Here We Were Born.*

5. Make sentences using these verbs.

CO-OPERATIVES

A co-operative is made up of a group of people who have common needs and aims and have decided to work together to improve their standard of living and the community in which they live.

Co-operatives differ according to the skills and the objectives of the people who form them. Fishermen can form a fishing co-operative. Tailors can form a co-operative. Handicraft people can form a co-operative. Any group of people with productive skills can form a co-operative.

When co-operatives are formed, the members of the co-operative — the workers— become the owners of the project. They agree on the amount they should work for, on how much will go to the further development of the co-operative and how much will be shared as profit among them.

The National Co-operative Development Agency (NACDA) is responsible for assisting groups who are interested in forming a co-operative. NACDA provides information, organizes workshops, runs training seminars and provides loans.

Vocabulary

differ: are different

objectives: aims, intentions

Comprehension

What are co-operatives?

Name two kinds of co-operatives.

For whom do members of a co-operative work?

What happens to the money made by the co-operative?

Which agency is responsible for helping co-operatives?

What kinds of help does it give?

GRAMMATICAL PRINCIPLES

The use of **have** and **has**

The cow **has** a calf.

Mary **has** some books.

The factory **has** many machines.

All of those sentences refer to one person, animal place or thing.

- The verb **has** is used when we are speaking about one person, animal or thing.

  We **have** a peoples government.

  Cocoa trees **have** short trunks.

  Pigs **have** plenty of fat.

- The verb **have** is used when we are speaking about more than one person, place, animal or thing.

  There are two exceptions to this rule:

  1. **have** is used with **I**.

  2. **have** is used with **you** whether you refers to one person or to several.

The verb **to have**

I have	We have
You have	You have
She has	They have
He has	
It has	

Exercises

1. Fill in the blanks with **has** or **have.**

   Where _____ you got the books?

   The house _____ two rooms.

   They _____ to learn more about soil formation.

   The Caribbean islands _____ a common history.

   Men and women _____ to work together to build a New Grenada.

2. Make five sentences using the verb **has.**
3. Make five sentences using the verb **have.**
4. Correct these sentences:

   They has to visit the dentist.

   It have a bad tyre.

   The sisters has to improve their skills.

   Bananas has to be sent to the boxing plant.

   He have to make fish pots today.

   You has the cold.

   Have the postman called?

   Has you got the hammer?

5. In your best handwriting, copy the reading passage.
6. Group discussion.

   What are the co-operatives in your area?

   What kinds of co-operatives could be started?

   What are some of the problems which would have to be faced?

   How can some of these be solved?

UNIT 15

POETRY

Poetry is a way of expressing ideas and feeling. It is a way of expression which helps us to see new relations between things.

The language of poetry is a rich language because it is full of feeling and fresh ideas.

Poetry is as old as language itself. From the time, man began to use language, he has always been trying to find new ways of expressing ideas and feeling. He wrote poems and songs about nature —its beauty and his struggle to control it. He wrote poems on suffering and exploitation and expressed his longing for freedom and brotherhood. He wrote about love, death and war.

Poetry tries to express our deepest thoughts and feelings in such a way that others experience them also.

Vocabulary

expression: saying things

relations: links, interconnections

exploitation: making unfair gains

Comprehension

What is poetry?

What does poetry help us to do?

Which is older, poetry or language?

Name some things that man wrote poems about.

Expression

Poetry is about man's deepest feelings and desires. Some of the most beautiful poems are written in the simplest language. They speak clearly and directly to us.

Freedom

There are words like freedom,
Sweet and wonderful to say,
On my heartstrings freedom sings
All day everyday.

There are words like liberty
That almost make me cry.
If you had known what I knew
You would know why.

Written by LANGSTON HUGHES, one of the early black American poets.

Write a few sentences explaining what you feel about this poem.

Write a poem on one of the topics below or on anything that moves you:

love hunger children Grenada

GRAMMATICAL PRINCIPLES

The use of **do** and **does**

Mother does the washing on Monday.

The poem does express the love for freedom.

- We use **does** when we speak of **one** person or thing.
- We use **do** when we speak of **more than one.**

For example: We do the lessons every night.
The shops do well at Christmas.

We always use **do** with **I** and with **you** (even when you refer to more than one person or thing).

The verb **to do**

I do	We do
You do	You do
He does	They do
She does	
It does	

Exercises

1. Correct these sentences:

   I does not know the situation.

   The children does not behave themselves.

   I hope you does well in your new work.

   We doesn't open on Sundays.

   I doesn't like the heavy rains.

2. Write **do** or **does** in the blanks:

   Jeffers and I _____ our tasks together.

   We _____ our best to keep our community clean.

   He _____ the most difficult jobs.

3. **Don't** and **doesn't** follow the same pattern as **do** and **does.**

   Fill in the blanks with **don't** or **doesn't**:

   Jean _____ like to stay up late.

   Grenada cannot move forward if we _____ increase production.

   _____ he want the money?

   We _____ want anybody to tell us how to run our country.

4. Write two sentences using each of these verbs:

   do, does, don't, doesn't.

5. Write out your favorite poem. If you dont't have one, copy "Freedom" by Langston Hughes.

CARIBS AND ARAWAKS

Long ago, the early inhabitants of Grenada were the Arawaks. They were a tribe of South American Indians who travelled up the islands in canoes. They fished, hunted and planted food crops. They were skillful craftsmen whose work survives with us today in c carvings and bits of pottery in the National Museum. The Arawaks loved to dance. They lived in houses made of sticks, palm branches and clay.

The Arawaks were driven out of the islands by the Caribs. The Caribs were a hunting and seafaring people. They were proud and brave. The Caribs fiercely resisted the colonization of Grenada by the English and French. For almost fifty years they fought these invaders until they were massacred by the French at Sauteurs and Cabesterre. Overcome by the French, they jumped to their deaths from Leapers Hill rather than surrender as slaves.

Like Fedon many years later, their motto was "Liberty or Death."

Vocabulary

craftsmen:	worker skilled in handicraft
pottery:	pots, dishes and jugs made of clay
seafaring:	sea going
colonization:	ownership
massacred:	mercilessly killed
motto:	slogan

Comprehension

Who were the early inhabitants of Grenada?

How did the Arawaks make a living?

Who came to Grenada after the Arawaks?

For how long did the Caribs resist the colonizers?

What is the similarity between the Caribs' and Fedon's struggle?

GRAMMATICAL PRINCIPLES

The past tense of verbs

Grenada **was** the first Caricom country to establish a Nutrition Council.

Black Baron **recorded** the album *African Blood.*

The airport workers **worked** hard to prepare the ground.

Was, recorded, worked tell us about things that have already happened. When a verb describes an action that has already happened it is in the **past tense.**

Exercises

1. Complete the following sentences with past tense verbs:

Rain _____ yesterday.

Dockworkers _____ the milk.

John _____ a letter.

We _____ the last fifteen lessons.

2. Write the past tense of these verbs:

is	work	kick
have	stand	drive
drink	receive	paint

3. Read the passage "Caribs and Arawaks" and pick out all the past tense verbs.
4. Write six sentences using past tense verbs from the passage.
5. Change the verbs in these sentences to the past tense:

   The trucks carry bananas to the docks.

   We walk to Freedom Hill in the march.

   The Comrade Prime Minister visits the agricultural workers.

   The lady grows carrots, lettuce and tomato.

6. Write a short paragraph on some incident that happened or something about the history of your village.

UNIT 17

THE COCOA DANCE

In the boucan yard, the ripe cocoa pods were broken open and the flat, broad beans spread out to dry in the sun. When the moisture evaporated from the thick, white paste which protected them in the pod, the beans were left enveloped by a thin grey film which had to be removed before they were bagged for shipment.

The dried beans were taken off the trays and spread over the wooden floor of the boucan in a broad carpet more than a foot deep. Then the youngest girl labourers washed their feet under the water pipe outside and waded into the beans. One of the older women took up a stick and started to beat time on an empty kerosine tin. The girls moved their feet to the rhythm of the drum and the cocoa dance began. As the insistent beat took hold, the women started to sing bawdy patois ballards about faithless men and other things which I was too young to understand. There was much laughter and teasing. The songs and indeed, the whole ritual of cocoa polishing had come down almost unchanged from the days of slavery.

This passage is taken from a book *Portrait of a Sea Urchin* written by a Grenadian MICHAEL HUMPHREY.

Vocabulary

boucan yard:	yard of the house where the cocoa is stored.
moisture:	water
evaporated:	dried
enveloped:	covered
film:	covering, wrapping
insistent:	regular
bawdy:	dirty

Comprehension

Where were the ripe cocoa pods opened?

What was done to the dried beans?

Explain this sentence:

"the youngest girl labourers washed their feet under the water pipe outside and **waded** into the beans"

Why did the older women beat the kerosene tin?

What is the name of the book from which this passage was taken?

Who wrote the book?

GRAMMATICAL PRINCIPLES

Forming the past tense

- To form the past tense of a verb we add **—ed** to the present tense:

present: The farmer **plants** his crops.

past: The farmer **planted** his crops.

John **cooks** all day.

John **cooked** all day.

- If the verb ends with **—e** we just add **—d.**

We **wipe** the floor.

We **wiped** the floor.

They **grade** the cocoa beans before shipping.

They **graded** the cocoa beans before shipping.

- For some verbs we double the last letter and add **ed:**

Maurice **hugs** Ortega.

Maurice **hugged** Ortega.

- Verbs which end with **y** form the past tense by changing the **y** to **i** and adding **ed:**

try tried

carry carried

Some verbs have different forms of the past tense:

Present	Past	Present	Past
buy	bought	creep	crept
bite	bit	come	came
fly	flew	do	did
wear	wore	hide	hid
draw	drew	break	broke
creep	crept	drink	drank
give	gave	take	took

Exercises

1. Give the past tense of these verbs:

learn	build	grade	wear
develop	fish	come	copy
fry	hug	pay	like
cut	copy	beg	save

2. Write sentences with eight of these verbs above in the past tense.
3. Pick out the verbs in the passage which are in the past tense.
4. Change these sentences to the past tense:

   Ann-Marie and Carol love to quarrel.

   We travel to Carriacou by boat.

   The mass organizations express the will of the people.

   We make soap from coconut.

   Imperialism tries to keep us down.

5. Copy the reading passage "The Cocoa Dance" in your best handwriting.
6. Write a short paragraph discribing a cultural activity in your village (something like the cocoa dance).
7. Choose a paragraph from a newspaper or magazine and pick out the past tense verbs.
8. Write six sentences using the verbs from the newspaper passage.
9. Do you know any songs of the cocoa dance? Write down the words and send them to the CPE National Office.

UNIT 18

THE EARTH AND ITS MOVEMENT

The shape of the Earth is like that of a football. It is round although it is slightly flat at its ends or **poles** and bulges at the middle or **equator.** The Earth is a sphere.

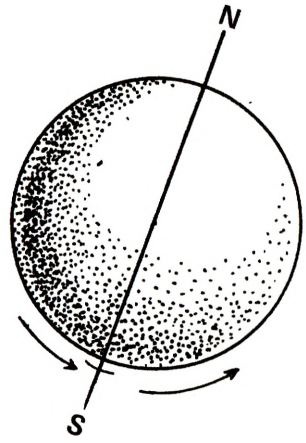
Like all the planets, it has two movements. The Earth has a **rotation** and **orbit.**

Rotation is the movement of the Earth turning around itself. This movement is like a top spinning around or a child turning itself around and around. To understand this, let us imagine that there is a line or **axis** from North to South. The Earth spins on this axis like a top. It spins from west to east. This movement causes day and night because, as the Earth spins, one side receives the light of the Sun while the other half remains in darkne

The time it takes the Earth to make one complete turn is divided into twenty-four hours. Every hour is divided into sixty minutes and every minute divided into sixty seconds.

The other movement of the Earth is its **orbit** or movement around the Sun. It takes 365 days, 5 hours, 48 minutes and 46 seconds to make one orbit. This period of time is called a **solar year.**

The Earth moves just like a top. It spins around itself (rotates) and as it spins, it moves around the Sun (orbits).



Vocabulary

sphere: a globe, a round solid shape like a ball bearing

equator: an imaginary line which divides the earth into halves: North and South

Comprehension

What is the shape of the Earth?

What are the movements of the Earth?

What causes day and night?

What is a solar year?

GRAMMATICAL PRINCIPLES

The adjective

There are **dry** coconuts on the tree.

The word **dry** tells us what kind of coconuts are on the tree.

Our leaders are **firm** revolutionaries.

The word **firm** tells us what kind of revolutionaries our leaders are.

Tatoo meat is **good** meat.

The word **good** tells us what kind of meat tatoo meat is.

The words **dry, firm** and **good** which tells us what kind of coconuts, leaders and tatoo we have, are called **adjectives.**

- Words that go with nouns that tell us something about the noun are called **adjectives.**

  Some adjectives tell us **what kind** something is:

  dry, firm, good, bad.

- These adjectives are **adjectives of quality.** They tell us what kind of something.

  Other adjectives tell us **how many.**

There are **ten** coconuts on the tree.

Mirabeau Farm has **many** nutmeg trees.

- The words **ten, many** are adjectives that tell us **how many.** They are adjectives of **quantity.**

Exercises

1. List the adjectives in these sentences:

   The big boat sailed on the calm seas.

   The farmer sold fresh ripe tomatoes and green bananas.

   Heavy wind blew down the strong trees.

   Let us move to greater production.

   Lovely, sunny Grenada attracts many tourists.

2. Fill the blanks:

   Big, clean, proud are words which tell us _____.

   They are adjectives of quality.

   Adjectives of quantity are words which tell us _____.

3. Find suitable adjectives for these nouns:

_____ sky	_____ night	_____ earth
_____ bird	_____ fish	_____ grapefruit
_____ cutlass	_____ shoes	_____ snake
_____ Grenada	_____ plaintain	_____ people

4. Write eight sentences using adjectives from those above.

5. Fill in the blank spaces with an adjective of **quality:**

   They are selling _____ mangoes.

   John is a _____ footballer.

   March and April are _____ months.

   Carriacou is a _____ island.

6. Fill in the spaces with adjectives of **quantity**

   They sold _____ bunches of bananas.

   A pound of sugar costs _____ cents.

   St. Andrews has _____ agricultural farms.

7. Write sentences using these adjectives:

patriotic	round	heavy	long
tall	great	clever	thick

8. Copy the first half of the reading passage in your best handwriting.

WHY DRINK WATER?

Why do we drink water?

You will say that we drink water because we are thirsty. But why are we thirsty?

We are continuously using up the water which our bodies contain and we always need to replace it to keep our bodies alive. If we drink a glass of ice cream it is immediately changed into droplets of water.

What happens to this liquid? It is used up by our body.

During the twenty-four hours of the day, the human body loses about twelve glasses of water. This is the quantity of water that we need to drink everyday to maintain a balance between what we eliminate and what we drink.

Thirst is a sign that our body needs water.

We do not only obtain water when we drink it as a liquid but also when we eat certain foods. Vegetables and meat contain much more water than solid substances.

It has been proved that someone could survive for as long as forty or fifty days without eating but we cannot live for more than fifteen days without drinking water.

This is so because about 70% of the weight of an adult's body is made up of water.

Vocabulary

Eliminate: to get rid of

Comprehension

Why do we need to drink water?

How much water should we drink everyday?

What is the sign that our body needs water?

In what ways do we provide water for our bodies?

Discussion

The importance of water in our lives.

Besides its importance to our bodies, in what other ways is water important in our lives?

Where do we get our water from?

Written exercise

Write down the names of any rivers in your parish.

GRAMMATICAL PRINCIPLES

The article

An adult drinks about twelve glasses of water every day.

A surgeon is **a** doctor who performs operations.

The "Alister" is **a** fishing boat belonging to our country.

The words **An, a** and **the** come before nouns. They are called **articles.**

an adult a doctor

- When the noun begins with a consonant we use the article **a.**
- When the noun begins with a vowel we use the article **an.**

The articles **an, a, the** refer to only one thing. They are singular.

- The articles are not used with plural nouns.

Example: **an** adult - singular **a** doctor - singular

adults - plural doctors - plural

Exercises

1. Underline the article in these sentences:

   The people of Grenada are united and free.

   The Earth is the same shape as an orange.

   An island is a piece of land surrounded by water.

   A book is an important and useful thing.

   An iguana is a kind of lizard.

2. Fill in the blanks with the correct article:

   Example: **a** man **an** adult

   _____ house

   _____ apple

   _____ car

   _____ tractor

   _____ ship

   _____ egg

   _____ ice-cream

   _____ farmer

3. Make these sentences plural:

   An iguana is a kind of lizard.

   There is a hill in Grenada.

   The farmer grows cocoa.

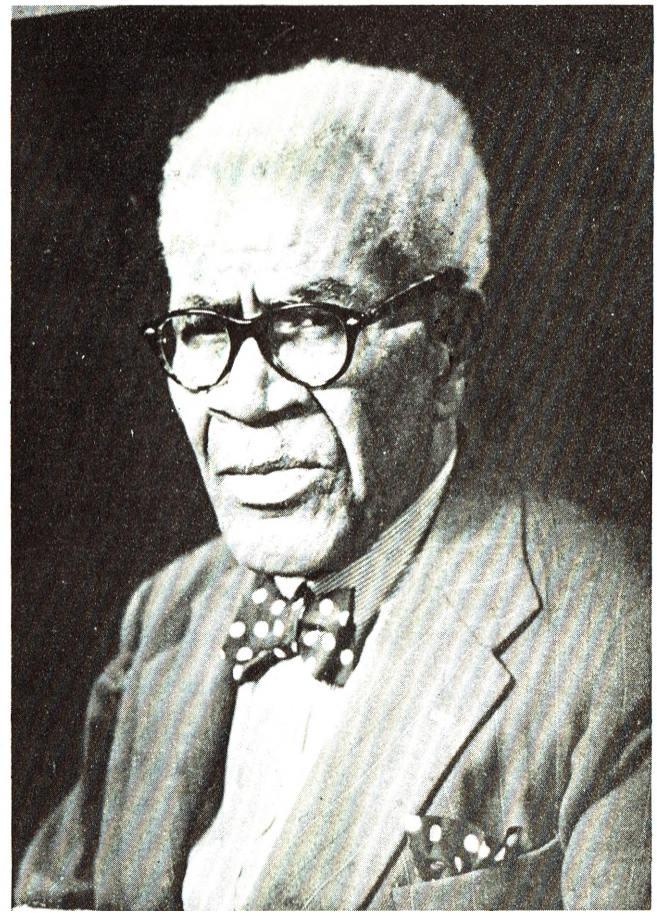
A patriot will die for a great cause.

The car drives through the Sendall Tunnel.

4. Write a short paragraph about **the importance of clean water in our lives.**
5. Read a paragraph of an article from *The Free West Indian* and note how often the article is used in a sentence.
6. Dictation of the first half of the reading passage "Why Drink Water"?
7. Write sentences using the words which were wrongly spelt in the dictation.

UNIT 20

THEOPHILUS ALBERT MARRYSHOW (1887-1958)



Theophilus Albert Marryshow

T. A. Marryshow as he was often called, was one of the greatest figures in our history. Marryshow was known as the *Prince of West Indian Journalist, the Father of West Indian Federation, Elder Statesman of the West Indies.* He was also an outstanding poet, speaker and singer.

Marryshow began work at sixteen years at the *Federalist and Grenada People* newspaper becoming sub-editor at the age of nineteen. In 1915 he started *The West Indian* and was the editor until 1924.

Marryshow was a determined fighter for a united Caribbean and for representative government. In 1917 he founded the Grenada Representative Government Association. As a result of the struggle by Marryshow and the Association, the Wood Commission recommended some measure of representative government for Grenada and the other English colonies.

For over thirty years T. A. Marryshow represented the people of St. Georges in the Grenada Legislative Council and for a life time he fought tirelessly for the cause of Caribbean unity. He died in 1958 but his work expresses the common destiny of Caribbean people.

Vocabulary

journalist: newsman

statesman: patriotic politician

federation: a union of islands (In 1958 the islands of the English-speaking Caribbean joined together in a Federation.)

sub-editor: assistant manager of newspaper

Comprehension

What was Marryshow known as?

Where did Marryshow work in his youth?

Which newspaper did he start?

What is this paper called today?

Which association did Marryshow begin in 1917?

What did it achieve?

Revision exercises

1. List five nouns from the reading passage and write sentences using them.
2. Choose five verbs from the passage and write sentences using them.
3. Fill in the blanks:

   A group of words that makes complete sense is called a _____ .

   A _____ is a group of words which do not express a complete idea.

   A noun is _____ .

   A verb is _____ .

   There are three genders, masculine _____ and _____

4. Place these nouns in two columns (singular and plural):

eggs	echo	oranges	echoes
sheep	newspaper	statesman	houses
donkey	speakers	fighters	beans
money	nutmeg	radios	chairs

5. Pair the words which sound alike:

right	hear	fill	see	blew	hair
blue	sea	taught	field	thought	write

Write sentences showing the difference between the words which sound alike.

For example: I told you that I was **right.**

He said that he would **write.**

6. Give the plural of these nouns:

donkey	ochre	book
child	lily	sheep
car	watch	box

7. Choose the correct noun for each sentence:

The (ship, ships) sails out to sea.

The (soldier, soldiers) march.

The (baby, babies) cries.

(Hiker, Hikers) climb the mountain.

The (men, man) are on the seashore.

The (woman, women) does farming also.

The (farmer, farmers) has a cutlass.

8. Match the phrases to make the correct sentence:

Marryshow began	the barlner of Liberty, Equality or Death.
Grenada produces	in the C.P.E. Adult Education class.
We are improving our education	will bring greater benefits for all.
Increased production	the struggle for Caribbean unity.
The population of Grenada	nutmegs, cocoa and bananas.
Fedon fought under	is one hundred and ten thousand people.

9. Some of these words are in alphabetical order. Some are not. Place all of them in alphabetical order:

at
boy
cat
date
boat
car
early
glad
cotton

10. The letters of these nouns are mixed up. Write out the correct nouns:

ermtho
apntsl
tefe
mgoan
uaryJna
odar

11. Make two words from each of these words:

Independence
forbidden

everywhere

roadside

READING 1

TAMAYO, FIRST CARIBBEAN SPACE MAN

Tamayo, first Caribbean Spaceman

A new period in the history of science began on April 12, 1961 when the Soviet Union sent the first man into space. Yuri Gagarin was that person. He took eighty-nine minutes to circle the Earth entirely.

Since that historic journey, the Soviet Union and the United States of America have made numerous advances in space travel. A high point was the landing of Neil Armstrong the first man on the Moon.

On September 18, 1980 an important step forward was taken by Caribbean people. Tamayo Mendez of Cuba became the first Caribbean man in space. Together with Yuri Romanenko, he circled the Earth in the Soyuz-38 and carried out various tests and exercises in space.

Tamayo's flight in space was part of the Inter-Cosmos programme. This is a program me of space travel and scientific research between the Soviet Union and other socialist countries. It gives other countries the opportunity to share the benefits of space research.

Tamayo was born in Guantanamo, Cuba in 1942. His family was extremely poor and Tamayo was forced to work even while at school and then after as an apprentice in a carpentry shop. After the Revolution he was able to continue his studies becoming an outstanding air force pilot.

Vocabulary

research: findings

journey: trip

numerous: many

apprentice: learner

opportunity: chance

Comprehension

What is the name of the passage?

When did the new period of science began?

Who was the first man to go in space?

What is the name of the first man who landed on the moon?

To which country did Gagarin belong?

To which country does Armstrong belong?

What was the purpose of the trip in space?

When did he travel in space?

Who is Tamayo?

What was the name of their space ship?

Supplementary Readings

READING 2

OUR FISHERMEN

Our fishermen.

Our fishermen go to sea to catch fish for our people. In Grenada, Carriacou and Petit Martinique many of our people make their living by the sea. It is one of our natural resources. There are many fishing communities along the coast of our country. Some of ou best fishing towns are Gouyave, Woburn, Grenville, Victoria, Sauteurs, Grand Mal, Soubise and Marquis.

The sea is as rich as the land. Our fishermen work to get food from the sea. They catch many different kinds of sea foods. Jacks, lobster, sea eggs, turtle, bonito, red fish, lambie Sea moss makes a very tasty and nutritious meal.

We can feed ourselves with the fish from the sea. To do this our fishermen must work closely together in order to upgrade their methods of catch. Fishing co-operatives will enable fishermen to make full use of limited resources and catch more fish. The Grenada Fisheries School set up by the P.R.G. with the help of Cuba is training our fishermen in modern techniques of deep sea fishing, catch storage and preservation. The fishing fleet is already beginning to catch hundreds of pounds of fish, some of which is processed by the fish plant.

The organization of a strong fishing industry is an important part of the struggle to feed ourselves.

Vocabulary

resources: stocks

nutritious: of great health value

processed: treated

Comprehension

Name some fishing villages in Grenada.

What are some of the sea foods that our fishermen get from the sea?

How can our fishermen improve their catch?

What has the P.R.G. done to organize our fishing industry?

READING 3

THE UNIVERSE

Long ago people used to think that the Earth and the stars which could be seen on a clear night were the only things that existed in space. They also believed that these stars never moved, that they remained in a fixed position. With the invention of the **telescope** it was discovered that there were millions of unknown stars.

Today we know that the majority of these which we can see are much bigger than than the Earth but because they are so far away, they appear small.

Space and all the stars and **planets** in it form what is called the **Universe.** Stars are grouped together in groups known as Galaxies.

The Sun, the Earth, the Moon, and other bodies which travel around the Sun form the Solar System. Our Solar System is part of a galaxy also.

Vocabulary

existed: was there

majority: the greater number

telescope: instrument which make small things appear to be bigger

universe: all existing things

Comprehension

What did people long ago think existed in space?

Which invention enabled man to understand the universe better?

What is the universe.

What is the solar system.

READING 4

COME BROTHER (poem)

Come, brother, and tell me your life
Come show me the marks of revolt
Which the enemy left on your body.
Come, tell me all this, my brother.

And later I will forge simple words
which even the children can understand,
words which will enter every house
like the wind
and fall like red hot embers
on our people's souls.

In our land
Bullets are beginning to flower.

Written by JORGE REBELO, a revolutionary poet from Angola in Africa

Vocabulary

forge: to make, to carve

embers: sparks from a fire

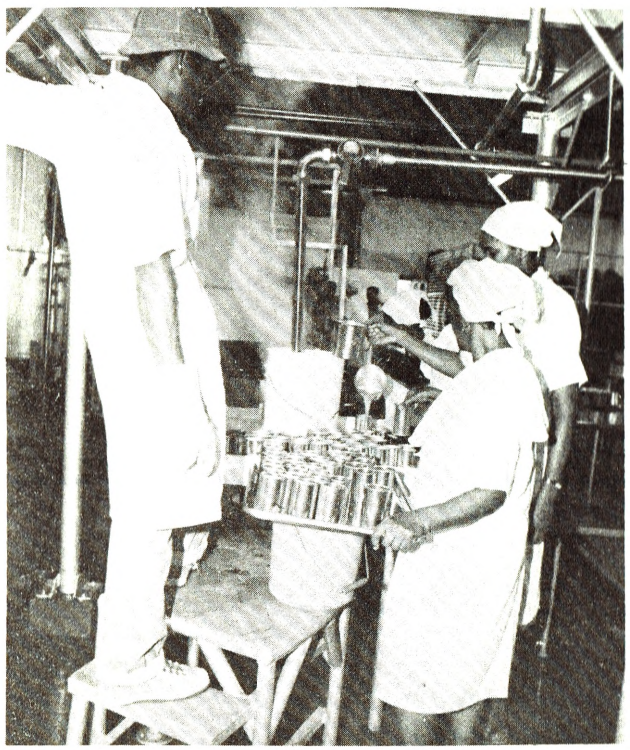
Comprehension

Explain the line: "Bullets are beginning to flower."

To what does "our land" refer?

READING 5

IMPROVING AGRICULTURE



Agro Industrial factory.

Our farmers will have to improve their agricultural skills if production has to be increased. They will have to begin to use scientific approaches when cultivating, harvesting and storing their crops. They will have new machinery on the farms, moving away from the cutlass, hoe, spade and fork; to mechanical mowers and ploughs.They will have to learn more about plant life in order to be aquainted with the different ways of handling different plants. For example the cultivation of bananas, cocoa, nutmeg and sugar cane is quite different from lettuce, carrots, cabbages and tomatoes. They will have to study the soil and weather conditions in order to make maximum use of them.

Two of our major problems are plant and animal parasites which harm and even destroy our crops. Our farmers will have to upgrade their knowledge in these areas so that we can eradicate these parasites.

Agriculture is one of the priorities of our country. Therefore farmers should arm themselves with the proper skills and knowledge to build agriculture. More production will mean better economic facilities for our farmers, more food for our citizens, and an improved economy.

Vocabulary

scientific: improved or newly discovered

maximum: full

harvesting: reaping

acquainted: familiar with

priorities: most important aim

arm: equip

Comprehension

What are two problems which affect agriculture?

Why should farmers improve their skills?

Why should farmers study the weather and the soil?

Name two parasites which destroy our crops.

Why should we build agriculture?

READING 6

THE CARDINAL POINTS

Whenever we find ourselves somewhere we need a point of reference to find our direction. Imagine that you find yourself somewhere that you have never been before. How do you find out what direction you need to travel in?

As a reference point there is something called the cardinal points. An instrument called the compass helps us to find the cardinal points.

The cardinal points are **North, South, East** and **West.**

The North is the cardinal point where we find the North pole. If we keep travelling towards the North, this direction leads us to the top of the Earth: the **North pole.**

The **South** is the opposite of the **North.** It leads to the **South Pole 118.**

The **East** is the direction from which the Sun **rises** every morning and the **West** is the direction in which the Sun **sets** every evening.

The cardinal points can be determined by three means: by the position of the North Pole, by the apparent movement of the Sun or by the compass.

The cardinal points or Diagram of compass

Vocabulary

refer:	check, look up
determined:	decided
apparent:	seeming
compass:	instrument used for showing directions

Comprehension

What do we call the points of reference needed to give us direction?

At which cardinal point does the Sun rise?

Where does the Sun set?

Give three ways of finding the cardinal points.

Exercises

Choose the correct word from those in the brackets.

Carriacou is (north west, north east) of Grenada.

Grenville is on the (west, east, north) of Grenada.

St. George's is on the (south west, north east) of Grenada.

Petite Martinique is to the (north west, north east) of Grenada.

READING 7

THE COCONUT PALM

The coconut palm is one of the most common trees in the Caribbean. It grows well near to the sea coast. It is believed that the Portugese brought the plants to the West Indies and then it spread throughout the islands by the nuts falling into the sea. These nuts **drifted** along with the tide to the coast of many of the islands.

Coconut plants vary in height from the very tall to the very short type.

The fruit of the coconut palm is very **valuable.** The most important part of the plant is the nut. The kernel is used in various ways. The kernel when dried is called copra. The oil from the copra is made into cooking-oil, shortening, margarine, soap, cosmetics and glycerine. The milk from the nuts is used when cooking. Candies, cakes, fudges are made from the flesh of the nuts. Animal feed and fertilizers are made from the kernel.

The outer shell of the coconut is used as firewood. The fibre from the outer shell makes good brooms, mattresses, rope and mats. The hard inner shell is used for making ornamental jewellery. Articles such as, etc., broaches, cups, chimneys for electric bulbs and and bracelets. The liquid inside the shell makes a refreshing drink. It is also used as plasma in times of emergency. The soft flesh of the young nuts, known as jelly is good to eat.

The tree itself is very useful. Furniture is sometimes made from the trunk of the trees. The logs could be used for making strong houses. Mats, bags and other articles are made from the leaves, while the spines when put together make good brooms. The **stalk** to which the coconuts are attached makes excellent brooms also.

Vocabulary

various: different

drifted: moved about by the current and wind

valuable: useful

ornamental: decorative

emergency: unexpected and dangerous situation requiring immediate action

stalk: part of the plant

vary: differ

articles: things, items

outer: outside

Comprehension

Where does the coconut palm grow best?

Who brought the plant to Grenada?

How tall are coconut palms?

What is made from the trunk of the tree?

In times of emergency: What is coconut water used for?

What is made from the leaves?

What use can be made of the stalk?

Name some plants that are attacked by insects?

Why should farmers study the soil and the weather?

How can farmers detect parasites in their fields?

What is copra?

READING 8

OUR FOREST

The forest is one of our natural resources and like all natural resources it needs to be conserved.

Forests are valuable in many ways. They are the main source of local timber.

They conserve the water supply in the soil and so help to keep the springs and rivers from drying up. On the hillside they form a protection to prevent landslides which are often caused by rain falling on the bare slopes.

Forests act as wind breaks to shelter our farms. They provide shelter for our wild animals. The climate of a place is affected by the density of trees and vegetation in it. They keep the atmosphere damp and cool. The high trees force the rain bearing clouds to rise. These clouds being heavy and saturated with moisture drop the moisture on the forrested area.

Grand Etang is the main source of our water supply and our timber industry. Recognising this, forest conservation methods are being applied in this area. This will enable us to have a better supply of water for human and factory use; and more timber for building.

Vocabulary

conserve:	preserve, protect
protection:	safeguard
saturated:	filled, unable to hold more
atmosphere:	air
prevent:	stop or save
density:	thickness
vegetation:	bush, plants

Comprehension

How does forest conserve water?

What is forest?

What often cause landslides?

How does forest prevent landslides?

How does forest shelter our farms?

What else does the forest protect?

READING 9

TOURISTS IN GRENADA

Tourists are people who visit our country. They come from islands as small as ours and other big countries. They come from islands that are very close to us and countries that are thousands of miles away from us. Despite where they come from, they are tourists.

Tourism is very important to Grenada. When tourists visit our country they spend money on souvenirs and other gifts which they bring back to their countries. They also spend money on hiring or renting vehicles that take them on sight-seeing tours. If they come to spend more than one, day the hotels earn some money. In this way our island receives much needed foreign exchange. Our island could still earn some more money if our hotels use local foods to feed the tourist. Money which is spent on imported foods can be used to purchase local food from our farmers and fishermen.

When tourists visit our country, they come to enjoy the bright sunshine, lovely beaches, our fresh fruits and to view the beautiful scenery. Most importantly they enjoy the hospitality of our people.

Service is the most important commodity we can offer the tourist. As patriotic Grenadians, we must do every thing in our power to help the tourists enjoy their stay. The taxi drivers must be courteous and patient. They should not overcharge the visitors. The vendours must show politeness when they offer their goods for sale.

All those things go a long way to make the tourists' stay enjoyable. They would certainly want to return to our country.

Vocabulary

tourists:	visitors
souvenirs:	gift bought in a country visited
purchase:	to buy
hospitality:	kindness
foreign exchange:	money from the other countries
imported:	bought from overseas
patriotic:	proud of ones country

Comprehension

Who are tourists?

List some people who benefit directly from the Tourist Industry.

Name some of things which attract tourist to our island?

How can the industry earn money?

What is the most important commodity we can offer the tourist?

List some local foods we can serve tourists.

How should we treat the tourist.

READING 10

WE ARE THIS COUNTRY

We're this country, and it would'nt be a thing without us, nothing at all. Who does the planting? Who does the watering? Who does the harvesting? Coffee, cotton, rice, sugar cane, cacao, corn, bananas, vegetables, and all the fruits, who's going to grow them if we don't? Yet with all that, we're poor, that's true. We're out of luck, that's true. We're miserable, that's true. But do you know why, brother? Because of our ignorance. We don't know yet what a force we are, what a single force— all the peasant, all the Negroes of plain and hill, all united. Some day, when we get wise to that, we'll rise up from one end of the country to the other. Then we'll call a General Assembly of the Masters of the Dew, a great big maroon of farmers, and a we'll clear out poverty and plan a new life.

We are this country.

Vocabulary

plain: flat land

maroon: meeting for community self help

Comprehension

Why would this country be nothing without us?

Who is **us?**

What can we do when we unite?

This extract is taken from a book MASTERS OF THE DEW by a Haitian revolutionary Jacques Roumain

UNIT 1

NATURAL NUMBERS

INTRODUCTION

Everyday in our lives we come across numbers, in production, in measurements, checking salaries, buying and selling, counting, in newspapers, etc.

We therefore need to know how to read and write these numbers correctly, and to use them to help us solve our problems.

Picture Discussion

Let us discuss the importance of the numbers in the picture.

ORDER OF NATURAL NUMBERS 0 - 9

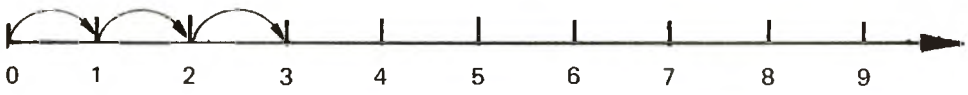
	Numerals	Words
	0	zero
	1	one
	2	two
	3	three
	4	four
	5	five
	6	six
	7	seven
	8	eight
	9	nine

- What do you notice about the way these numbers are built up?

You have just found out that the numbers follow this pattern:

$0 + 1 = 1$	$3 + 1 = 4$	$6 + 1 = 7$
$1 + 1 = 2$	$4 + 1 = 5$	$7 + 1 = 8$
$2 + 1 = 3$	$5 + 1 = 6$	$8 + 1 = 9$

Another way of showing this:



You can continue the steps.

These are called natural numbers.
As we see:

1 is obtained by adding 1 to 0 and we say that 1 comes after 0

In the same way:

2 is obtained by adding 1 to 1

1 comes before 2

Likewise:

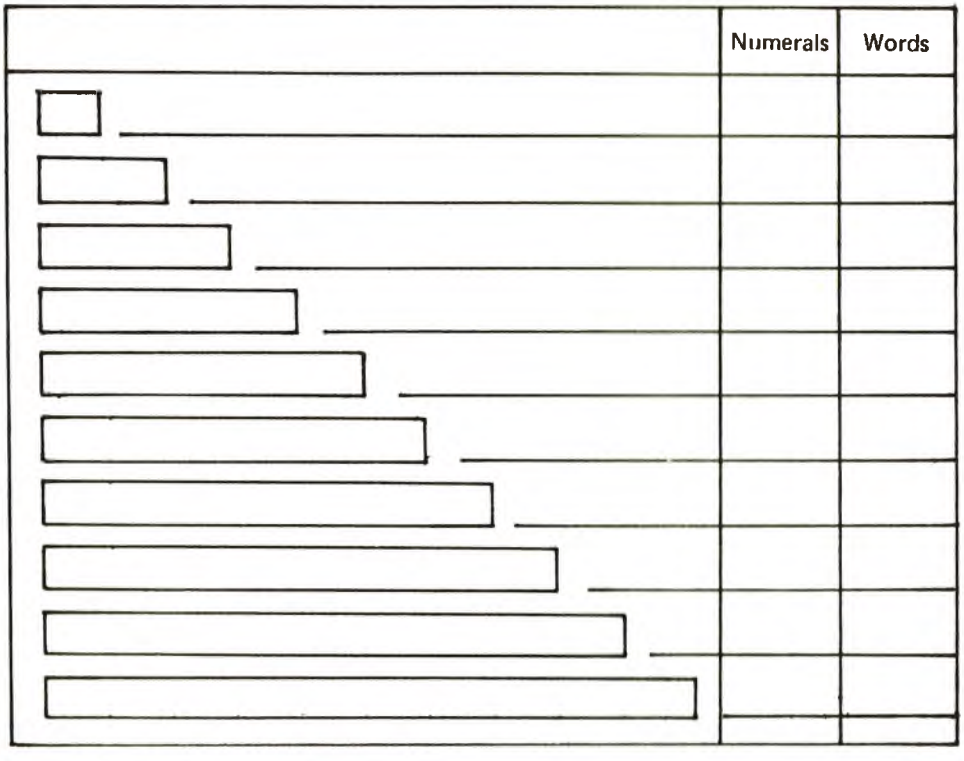
3 comes after 2 because $3 = 2 + 1$

2 comes before 3 and so on.

Look at the order of the numbers again:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9,

using this same order let us add seeds to these boxes one by one and count as we go on. Let us also write the words and numerals to show how many seeds are in each box.



- What numbers comes after 5?

  And what number comes before 5?

- What number comes after 0?

  The number after 0 is 1 because $0 + 1 = 1$

Important:

All numbers except zero have a number before them. The first natural number is zero, but there is no last natural number, because for all natural numbers, you can add one or more to obtain another natural number.

Exercise A

1. a) Which number comes just before 4?

   b) What number comes after 4?

   c) What are numbers between 7 and 9?

   d) What number comes before 7?

   e) Which number is less than 1?

   d) Which number comes between 2 and 4?

2. Let us put 2 coins in this bag:

Let us put one more.

a) How many do we have now?

b) What happened to the number?

c) What caused it to get bigger?

Let us keep on putting more coins and see what happens each time.

d) Write these starting with the smallest and moving up to the one of largest value.

7, 8, 9, 5, 4, 1, 3, 0, 2.

Observe the numbers that are shown on the number line. The number 8 is to the left of the number 9, 8 is less than 9 because $8 + 1 = 9$.

The number 7 is to the right of the number 6, 7 is greater than 6 because $6 + 1 = 7$.

What do you notice about a number that is situated to the right of another number?

6 is greater than 5 because $5 + 1 = 6$

3 is greater than 2 because $2 + 1 = 3$ etc.

What do you notice about a number that is situated to the left of another number?

0 is less than 1 because $0 + 1 = 1$

4 is less than 5 because $4 + 1 = 5$

8 is greater that 3 because $8 = 3 + 5$

8 is situated to the right of 3

4 is less than 6 because $6 = 4 + 2$

4 is situated to the left of 6.

In order to show that a number, is greater than, less than, or equal to another, these signs or symbols are used:

$>$ is greater than

$<$ is less than

$=$ is equal to

Example $8 < 9$ and $9 > 8$ which of the two numbers is greater?

By how much is it greater?

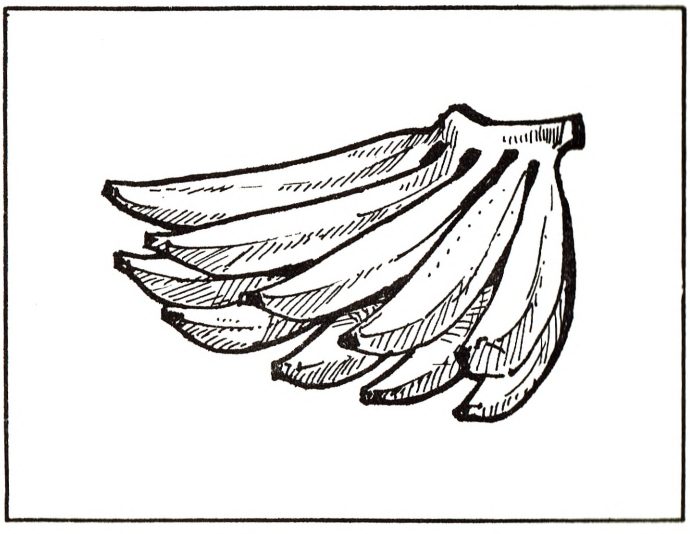
Which of the two numbers is lesser?

Exercise B

Compare the following numbers using the corresponding sign: $(< = >)$

1.....6	7.....9
8.....3	2.....1
5.....0	4.....2

NATURAL NUMBERS WITH DIGITS



Let us count the numbers of bananas on this hand.

There are ten bananas.

The number ten is expressed like this 10. Observe that two of the basic digits have been used. Which ones are they?

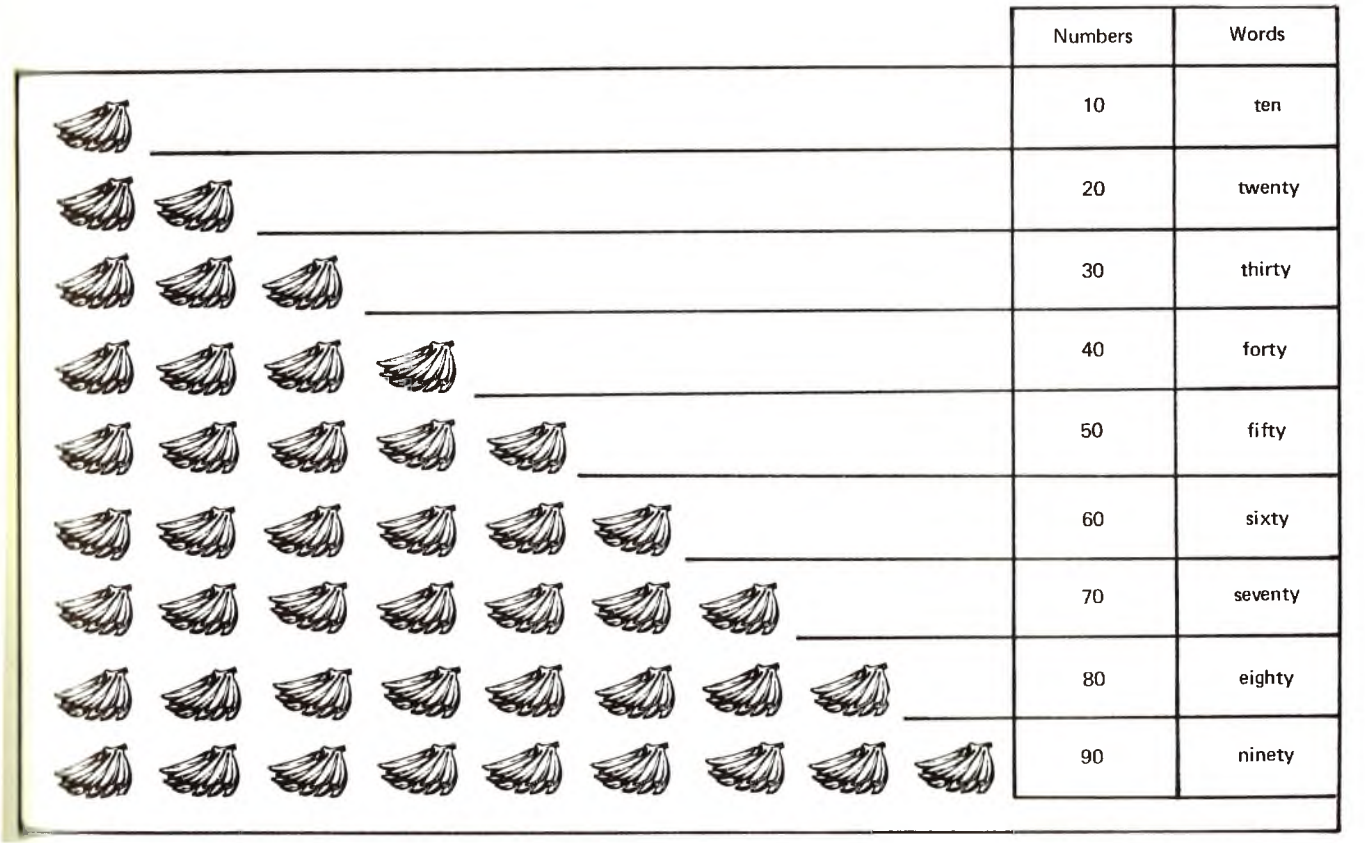
10 comes after 9 because $9 + 1 = 10$.

Let us show on the number-line.

0 1 2 3 4 5 6 7 8 9 10

The number 10 is greater than 9 by 1.

- Let us count the number of hands of bananas and observe carefully how the following numbers are built up.



Numbers	Words
10	ten
20	twenty
30	thirty
40	forty
50	fifty
60	sixty
70	seventy
80	eighty
90	ninety

What do you notice about how each number after 10 is formed?

What do you observe about the endings of each word?

Let us say and write each number carefully.

Let us fill in the missing numbers in the following squares.

	20		40		60		80		100

20	30		50	

10	20		

50		70		90

	30	40	

The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, are the denary numbers between 0 and 100.

How to read and write two digit numbers?

Observe the figure carefully and complete the table that follows:

	Numbers	Words		Tens	Units
	10	ten	10 = 10 + 0	1	0
	11	eleven	11 = 10 + 1	1	1
	12	twelve	12 = 10 + 2	1	2
	13	thirteen	13 = 10 + 3	1	3
	14	fourteen	14 = 10 + 4	1	4
	15	fifteen	15 =	1	5
	16	sixteen	16 =	1	6
	17	seventeen	17 =	1	7
	18	eighteen	18 =	1	8
	19	nineteen	19 =	1	9
	20	twenty	20 =	2	0

Let us read and write the numbers 10 to 20 again without the table.

The value of the basic digits by themselves is called their face value. But we must note that the value of these digits may change in different numbers. This is determined by the place of the digit in the numeral and is called its place value, for example, look at this carefully:

13 — the place value of the basic digit 3 in this number is 3 (which is equal to its face value).

But in 31 — the value of the basic digit 3 is 30

Here we see that the place value of the basic digit 3 has changed from 3 in 13 to 30 in 31.

11 = 10 + 1 (1 ten and 1 units)

What is the place value of the digit 1 on the right?

It has a place value of 1.

What is the place value of the digit 1 on the left?

It has a place value of 10.

What is the face value of 1 in both cases?

The face value of 1 is always.

Let us do these exercises:

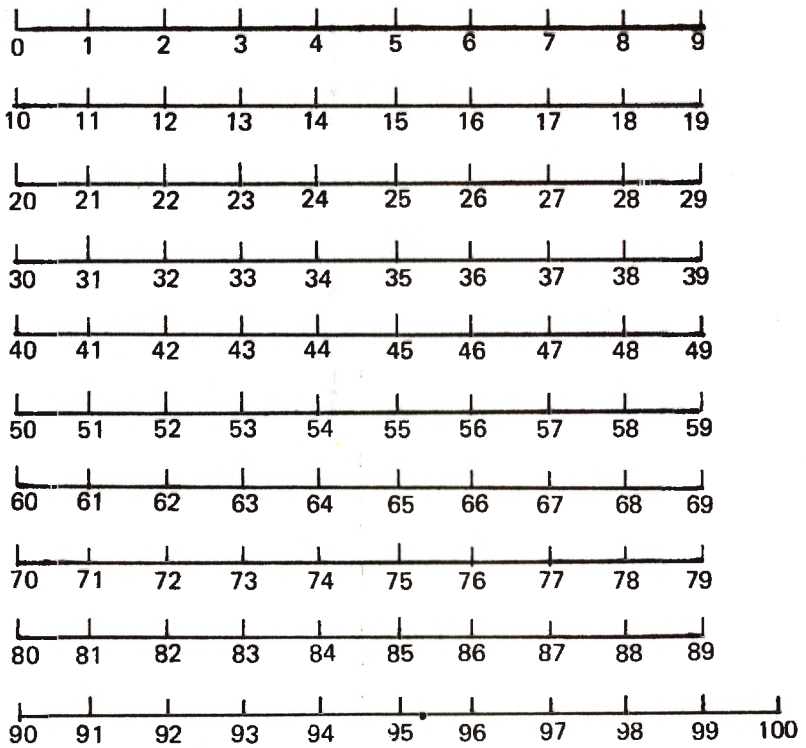
Exercise C

a) Say all the numbers from 50 to 70.

b) Say all the numbers in order descending from 40 to 20.

c) Say the denary numbers up to 90.

Look at this figure carefully and observe the order of the numbers from 1 to 100.



45 and 54 are written with the same basic digits 4 and 5, but nevertheless, they are different numbers.

68 and 86, 12 and 21, 62 and 26 are also different numbers.

In the number 45 the basic digit 5 represents a value of 5.

In the number 54 the basic digit 5 represents a value of 50.

Let us look at different examples in the table.

Tens	Units

65 — How is this read? Write words for this number
65 = 60 + 5

Tens	Units

94 — How is the read? Write words for this number.
94 = 90 + 4 Write the number into the table.

43 — Read and write this number, then write it into the table.

Tens	Units

Do this same exercise for the numbers 68, 96, 12, 21, 62 and 26, you'll have to draw the tables.

Observe these numbers:

11	12	13	14	15
eleven	twelve	thirteen	fourteen	fifteen
16	17	18	19	20
sixteen	seventeen	eighteen	nineteen	twenty

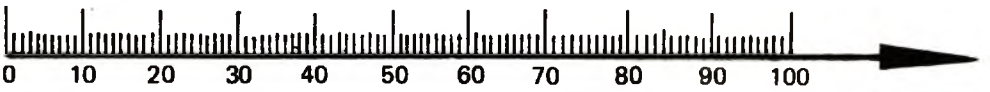
Note well that the numbers from 11 to 20 and all the denary numbers are written with one word.

How are the other 2 digit numbers from 21 onwards written?

Write the words for these numbers 46, 58, 93.

Important:

The natural numbers are written in order from smallest to lrgest in such a way that each number has one before and after it, except zero alone which only has one after it. These numbers can be represented on a number line thus:



Let us compare these: Can you put in the signs.

0.....10	10.....20	20.....30
30.....40	40.....50	50.....60
60.....70	70.....80	80.....90
90.....100		

Look again at the number line and compare 23 with 45. Compare the following numbers:

a) 39 and 45
b) 78 and 72
c) 27 and 11
d) 94 and 53
e) 10 and 14
f) 56 and 69

We can put the numbers in order from 0 to 100.

$0 < 1$	$10 < 11$	$20 < 21$	$30 < 31 \ldots 90 < 91$
$1 < 2$	$11 < 12$	$21 < 22$	.
$2 < 3$	$12 < 13$	.	.
$3 < 4$	.	.	.
.	.	.	
.	.		
.			
$9 < 10$	$19 < 20$	$29 < 30$	$39 < 40 \ldots 99 < 100$

Compare:
63 with 81
63 < 81
because
60 < 80

Compare:
75 with 51
75 > 51
because
70 > 50

Compare:
62 with 69
62 < 69
because
2 < 9

Compare:
77 with 72
77 > 72
because
7 > 2

What do you observe about making comparisons with numbers from the examples shown?

Exercise D

1. What number comes after: a) 5, 15, 25, 35, 95.
   b) 80, 70, 90, 92, 97.

2. What number comes before: a) 7, 17, 27, 37, 47.
   b) 43, 83, 74, 23, 13.

3. Show these numbers on a number line:
   a) 8, 12, 17, 25, 32, 45, 51.
   b) 63, 72, 74, 81, 86, 90, 92, 97.

4. Put these numbers in order according to their value; begin with the largest: 60, 51, 56, 52.

5. Put these numbers in order according to their value; begin with the smallest: 46, 55, 57, 48.

6. What numbers are found between:
   a) 19 and 25 c) 56 and 62
   b) 39 and 42 d) 78 and 82
   e) 22 and 29 f) 13 and 19.

7. Write all the two digit numbers and their numerals.

8. Write all the two digit numbers that can be written using 2 and 9
   a) How many can be formed?
   b) How is each one read?
   c) Which is the largest?

9. Using 3 and 8 a) How many two digit numbers can you write?
   b) How is each one read?
   c) Which is the least?

10. Using 4 only, how many numbers can be written?

11. How many two digit numbers begin with 8 only?

12. Fit the following numbers in the table, write words for them: 57, 8, 90, 39, 5 and 16.

Tens	Units	Words

13. Complete these according to the example given:

a) 96 = 90 + 6 d) 16 = _____

b) 82 = _____ e) 13 = _____

c) 23 = _____ f) 50 = _____

g) 49 = _____ h) 60 = _____

i) 34 = _____

14. Let us read and write numerals for:

a) Seventy-four b) Twenty-three

b) Eleven d) Ninety-eight

e) Forty f) Sixty-nine

15. If in the number 65, the place of each digit is changed write: How would you read the new number formed? Which is larger?

NATURAL NUMBERS FROM 100 TO 1 000

Look at figure 1.13, we have 10 heaps of 10 oranges. How many oranges are there in all? There are one hundred oranges in all.

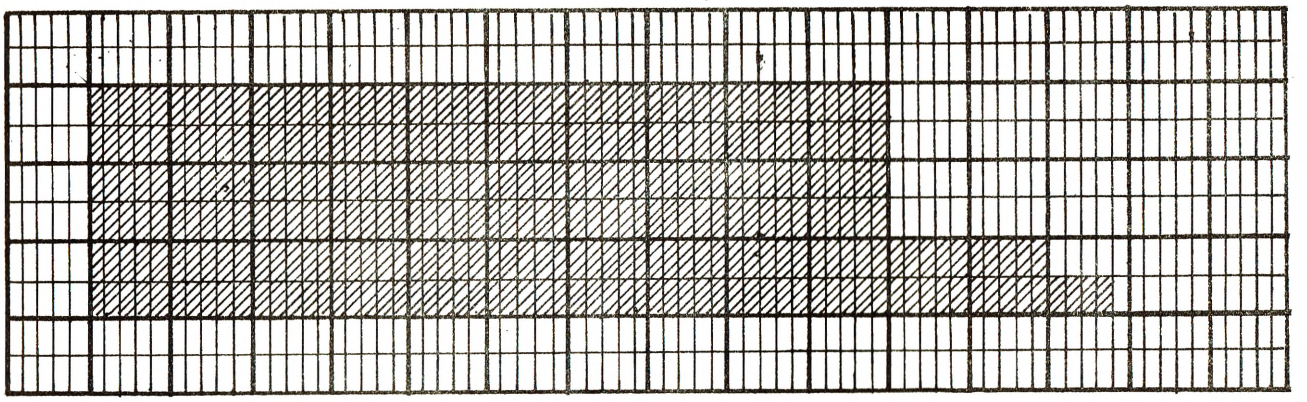
The number one hundred is expressed with the digits 100.

100 comes after 99 because 99 + 1 = 100

Numeral	Word	H	T	U
100	one hundred	1	0	0
200	two hundred	2	0	0
300	three hundred	3	0	0
400	four hundred	4	0	0
500	five hundred	5	0	0
600	six hundred	6	0	0
700	seven hundred	7	0	0
800	eight hundred	8	0	0
900	nine hundred	9	0	0

Observe carefully how the numbers are built up. What do you notice about how the words for the numbers are built up? Let us read and write the numerals and words for the numbers shown.

Let us observe the example of the figure carefully.



What number do you think is represented here?

a) $324 = 300 + 24$ b) $324 = 300 + 20 + 4$

Another way of representing this number is:

Hundreds	Tens	Units
100	10	1
3	2	4

three hundred and twenty-four.

What basic digits make up the numeral 324? 324 is a numeral with three digits or three places. It can be written as the sum of the following: $300 + 20 + 4$.

The numbers 112, 152, 585, and 340 can be written as the sum in the following way:

$112 = 100 + 10 + 2$ one hundred and twelve.

$152 = 100 + 50 + 2$ one hundred and fifty-two.

$585 = 500 + 80 + 5$ five hundred and eighty-five.

$340 = 300 + 40 + 0$ three hundred and forty.

Write these numbers in the following table:

All the numbers from 100 to 999 are three digit numbers.

We know that the natural numbers are placed from smallest to largest in such a way that each has one before and after it.

What number comes after each of the following:

a) 23, 73, 123, 473, and 973.

b) 50, 380, 549, 876, and 139.

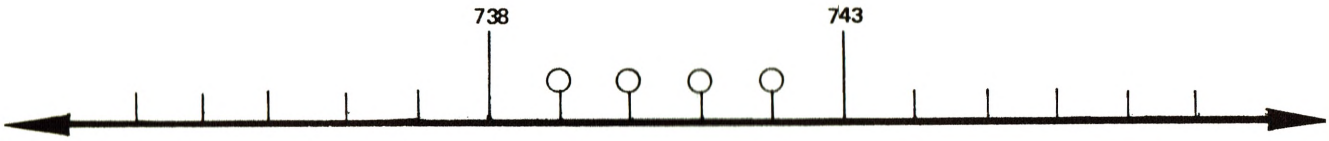
What number comes before each of the following:

a) 56, 526, 276, 776, 966.

b) 999, 845, 130, 654, 360.

H	T	U
100	10	1

Let us determine the numbers between 738 and 743.



They are 739, 740, 741 and 742.
Let us put these numbers in order according to their value from smallest to largest.

342, 876, 543, 73, 524.

Note well: First you should always compare the number of places, then the first place from the left, the second, third etc. in succession.
The first difference would show clearly which of the two numbers is smaller.

a) If put in order according to the number of places first: 73, 342, 876, 543, 524.

b) If put in order according to the first digit on the left: 342, 876, 542, 524.

c) If put in order according to the second digit on the left: 524, 543, 876.

Put these numbers in order according to their value from largest to smallest.

527, 843, 205, 97 and 847.

Exercise E

1. Write words for each of these numbers:

   309, 824, 571, 930, 706.

2. Compare the following using the signs (=)

   a) 73 with 345 d) 247 with 347 g) 876 with 879

   b) 735 with 438 e) 588 with 899 h) 701 with 901

   c) 642 with 673 f) 535 with 532 i) 89 with 899

3. Using the basic digits 9, 8 and 3, write all the numerals that can be formed. Which is the largest? Which is the smallest?

4. Say what is the value of the basic digit 3 in the following numbers: 139, 345, 823.

5. Write a number with three digits where each one doubles the one on its left.

6. Show how these numbers are made up and put them in the table, they write the words for each: 125, 246, 902.

7. Write numerals for:

   a) Five hundred and twelve.

   b) Four hundred and seven.

   c) Seven hundred and twenty-eight.

   d) One hundred and thirty-two.

   e) Eight hundred and ninety-six.

   f) Two hundred and nineteen.

H	T	U
100	10	1

8. Complete as shown in the example **a**. Then write the numbers in a table. Write their words:

   a) 789 = 700 + 80 + 9 d) 911 =

   b) 384 = e) 520 =

   c) 604 = f) 709 =

9. Put in order according to their value:
Start with the largest:

a) 435, 471, 753, 86, 529

b) 345, 347, 436, 675, 942

Start with the smallest:

a) 335, 762, 768, 794, 79

b) 846, 352, 127, 354, 873

NATURAL NUMBERS OF MORE THAN THREE DIGITS

Let us look at some information where numbers with more than three places were used. The population of Grenada is 110 000 while the population of St. Lucia is 120 000.

Let us show the number in the information using a table

Hundred of Thousand	Tens of Thousand	Thousand	Hundred	Tens	Units
100 000	10 000	1 000	100	10	1

What do you observe about the size of the table?

Note that we have extended the table towards the left.

Can you remember what was said earlier in the text about numbers that are situated to the left of other numbers?

Let us look at the new numbers added to the top of the table.

1 000 is read thousand

10 000 is read ten thousand

100 000 is read hundred thousand

Using the previous examples of oranges in heaps can we draw numbers of oranges to correspond with the above numerals?

Observe this figure well:

100 000 000	10 000 000	1 000 000	100 000	10 000	1 000	100	10	1

millions thousands

What number do you think is represented by the dark outline?

$2\,000 + 100 + 40 + 2 = 2\,142.$

Write the number in this table:

Thousand	Hundred	Tens	Units
1 000	100	10	1

Let us read the number.

Two thousand one hundred and forty-two.

What do you notice about how the number is made up?

What is the largest three –digit number?

999

1 000 is 1 more than 999 1 000 = 99 + 1.

Let us try to read these numbers:

3 792, 9 186, 4 002, 4 701, 6 800, 5 631.

First of all let us show their sums:

3 792 = 3 000 + 700 + 90 + 2 9 186 =

4 002 = 4 701 =

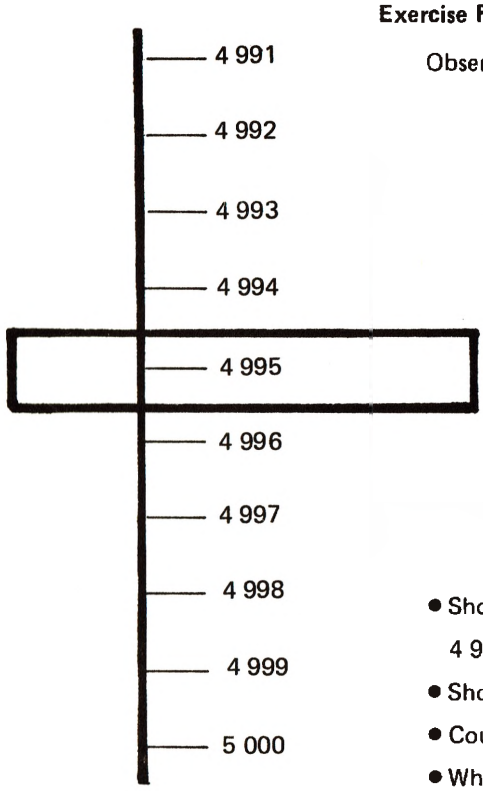
6 800 = 5 631 =

Then write the words for each.

Now read each numerals.

Exercise F

Observe this figure carefully:



- Show and name the number that comes after:
  4 995, 4 991, 4 998, 5 000, 4 996, 5 000, 4 992.
- Show and name the number that comes before each of these.
- Count from (a) 2 995 to 3 004 and (b) 8 995 to 9 004.
- What numbers come between 3 487 and 3 492.

● Complete the following table:

Numeral	Words
1 000	One thousand
2 000	
3 000	

Look at the number 10 000. Write words for and read the numeral.
Using the example 999 + 1 = 1 000, show the number that comes before 10 000.
How many digits are there in this number?
What do you think are (a) the smallest and (b) the largest five digit numbers.
Complete this list of numbers, using the example of the first three:

10 000 - ten thousand

20 000 - twenty thousand

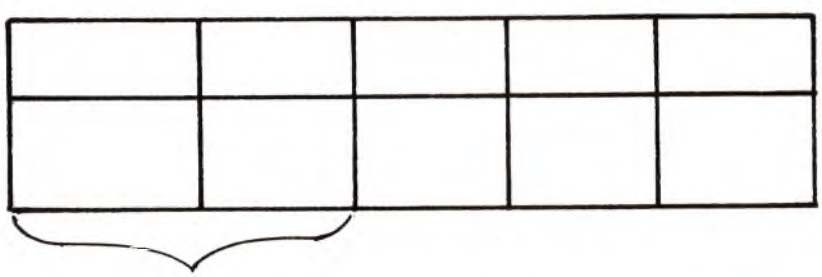
30 000 - thirty thousand

40 000 - etc.

Look at this number: 87 632

87 632 = 80 000 + 7 000 + 600 + 30 + 2

Put the number into this table, then read it.



The numbers from 10 000 to 99 999 are called five digit numbers.
Write the following numbers in a similar table and read them.

57 386, 63 080, 87 542, 48 006, 56 836, 59 387.

Determine the number that comes before and after 10 000, 79 000, 80 000, 90 001.

What number come between 67 035 and 67 037.

Observe the number 743 508 carefully. How many digits does it have?

743 508 = 700 000 + 43 000 + 500 + 8

This number is read: Seven hundred and forty-three thousand, five hundred and eight

10 000	1 000	100	10	1

thousands

Fill in the number in the table. Let us read and write it separately again.

What do you notice about how this number is made up.

Important:

The order of natural numbers is **infinite** that is there is no end, or last natural number. One can always form more natural numbers by adding 1 or more to whatever number he or she has, for example, look at this number:

879 671 + 1 = 879 531 and so on

Remember that in all cases the basic digits 0..... to...9 are used the form whatever number.

The following chart shows how the number system of natural numbers is made up:

100 000	10 000	1 000	100	10	1

Note well: this chart shows up the hundred millions to keep it simple but even larger numbers can be built up continuing this same system.

For example: Let us look at the numbers in the following chart.

100 000 000	10 000 000	1 000 000	100 000	10 000	1 000	100	10	1
		6	5	4	3	0	0	9
	2	7	4	0	5	8	4	0
1	5	3	8	0	0	5	0	3

millions thousands

Let us try to read the numbers shown in the table.

a) 6 543 009 reads

b) 27 405 840 reads

c) 153 800 503 reads

a) Six million five hundred and forty-three thousand and nine.

b) Twenty seven million four hundred and five thousand, eight hundred and forty.

c) One hundred and fifty-three million, eight hundred thousand, five hundred and three.

Write the sum of the following numbers and put them into a table; then read them.

52 345 007, 1 405 075, 800 595 643.

For each of these two numbers: a) 27 634 997 and b) 500 000 001, determine the five numbers that come immediately before and after it.

Important:

The numerals can be read much easier if written in blocks of three letters from right to left.

Odd and even numbers:

We should know for example, that if we want to share 20 pencils between 2 students, each one will receive an equal number of pencil.

Let us try this an see what happens. The same would happen if we share of 14 or 22 pencils. These numbers are 'even' numbers that is when shared in two, we can get 2 equal.

The numbers 0, 2, 4, 6 and 8 are even numbers, and all numbers that end with these basic digits are even numbers as well.

Let us give 6 examples of even numbers.

The numbers that come before and after these are called odd (or uneven) numbers which basic digits then, are the odd numbers:

1, 3, 5, 7 and 9.

These numbers and any number that ends with any one of these are odd numbers.

Exercise G

Say which of the following are odd and which are the even numbers:

4, 1, 6, 15, 28, 149, 2 756.

- Write all the odd numbers from 1 to 30.
- Write all the even numbers from 100 to 150.

ORDINAL NUMBERS

Sometimes we use expressions like these:

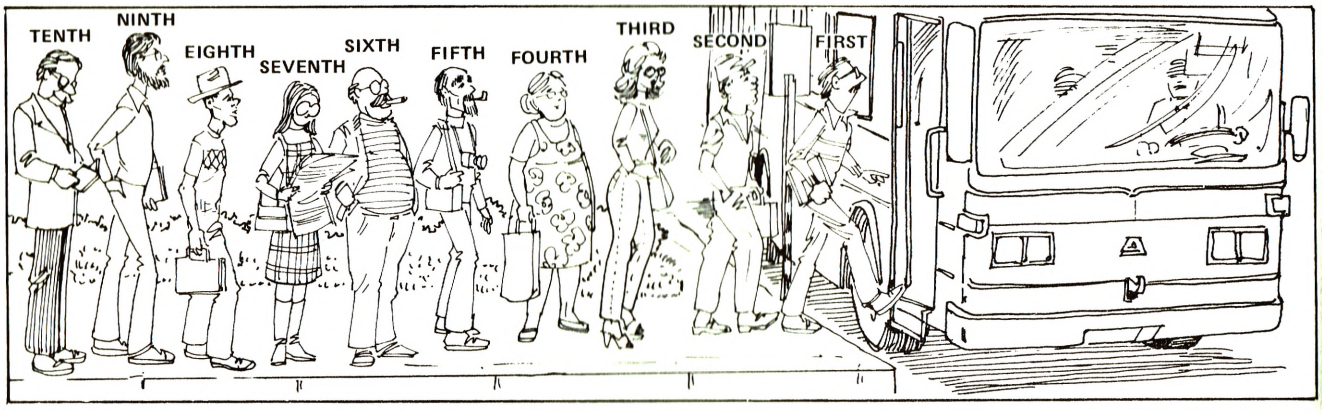
- Nigel is in **sixth** form.
- Today is the **first** of December.
- She is the **third** of her parents' five children.

We also read in the press, newspapers, books and other materials expressions like these:

- "The Revolution of March **13th** is the second in the Caribbean".
- "The **fourth** meeting of Caricom heads of government took place this week."

Have you noticed that the words sixth, first, third, second, and fourth show order. These are called **ordinal numbers.**

Look at the following picture which shows the first ten **ordinal numbers.**



Note these ordinal numbers:

first	sixth
second	seventh
third	eight
fourth	ninth
fifth	tenth

- What do you notice about the endings of most of the words?

  they end with **th**

  What are the endings of the first 3 words?

  st, nd, and **rd.**

  The ordinal numbers shown can be expressed in a Shorter way like this:

1st	6th
2nd	7th
3rd	8th
4th	9th
5th	10th

Exercise H

Write the words along with the corresponding form for each ordinal number, up to tenth.

For the remaining natural numbers after 10, ordinal numbers can be formed in the same way, that is by adding 'th' to the words and the numeral itself as shown above.

For example:

15	fifteenth	15th
27	twenty-seventh	27th
100	hundreth	100th
322	three hundred and twenty second	322nd

There are a few numbers that require small changes in their spelling in order to form the ordinal numbers.

For example all the denary numbers:

20	twentieth	20th
30	thirtieth	30th
40	fortieth	40th

Let us try to complete the other denary ordinals in the same way:

Exercise I

Write ordinal numbers for:

1. a) 4th, b) 7th, c) 19th, d) 23rd, e) 90th
2. Write these ordinal numbers in the shortened form:
   a) sixtieth, b) ninth, c) fourth, d) twelvth
3. Complete these sentences with the corresponding ordinal numbers:
   a) September is the _____ month of the year.
   b) The letter **R** is the _____ letter of the alphabet.
   c) January _____ is the anniversary of the death of our National Hero, Rupert Bishop.
   d) Labour day is celebrated on May _____.
   e) St. Andrews is the _____ largest parish in Grenada.

CONSOLIDATION EXERCISES 1

1. Write the following numbers in a number table, then read them:
   348, 1 300, 12 348, 59, 2 150 000, 425 009.
2. What number comes before and after each of the following:
   99, 57, 999, 4 300, 25 915, 3 843 507.
3. Say the numbers that are missing, then read all the numbers aloud.
   a) 475, 476, 477, 483
   b) 47 500, 47 501, 47 502, 47 509
   c) 356 876, 356 877, 356 881
   d) 1 845 998, 1 845 999, 1 846 003
4. Write numerals for these numbers:
   a) Twelve million seven thousand one hundred and ninety-two.
   b) Eight million nine hundred and three thousand and six.
   c) Six thousand and one.
   d) Seven million four thousand.
   e) One million thirty-four thousand and fourteen.
   f) Three hundred and fifty two thousand, four hundred and twenty six.
5. Compare these numbers using the appropiate signs:

200 302	.....	20 302
1 345	.....	1 425
28 345	.....	28 349
47 527	.....	47 627
291	.....	302
300 542 600	.....	500 542 600

6. Put these numbers in order according to their value; start with the smallest number:

   1 585, 1 432 643, 143 264, 563, 143 273, 1 593.

   g) Write these numbers that the teacher dictates:

   h) Write at the side of each number **E** if it is an even number and **O** if it an odd or uneven number:

28	343	252 530 .....
17	850	3 203 .....

   i) Write in the shortened form: ninth, sixth, seventeenth, thirtieth, eighty-fourth.

   j) Write these in ordinal numbers:

   1st, 16th, 40th, 27th, 123rd.

UNIT 2

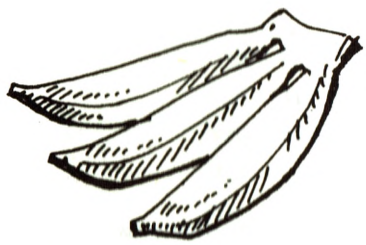
ADDITION

Picture discussion

INTRODUCTION

In unit 1 we learnt all the numbers from 0 - 100 000. We saw that some numbers, like 13 and 14, were formed by joining up two other numbers eg. 13 = 10 and 3,14 = 10 and 4. In this unit we are going to learn more about joining up groups or numbers.

4 bananas



3 bananas

If we put the two **hands** together, how many bananas would we have?

Let us put them together.

How many? _____

What did we do? What happened?

Let us read and write: 4 and 3 make 7

Let us use signs $4 + 3 = 7$

Let us use the number line to help us to understand what we did.

What should be the answer for $3 + 4$?

Let us put it in $3 + 4 =$ _____

What do you notice about the two answers?

What two numbers did we join in the first example?

What two numbers did we join in the second one?

Because of this what can we say?

Putting numbers together like this is the same thing as **adding** the numbers.

Let us read and write the word:

adding _____, _____

For us to put the numbers together we must **add** them.

Let us read and write the word.

add _____, _____,

When we put or join numbers together we do an **addition.**

Let us read and write the word.

addition _____, _____.

Let us read these words aloud.

add adding addition

What do you notice about the way the words are made up?

+	This sign is used to show that we are adding. It is the plus sign.
=	This sign is used to show that two or more quantities are equal. It is called the equal sign. For example: 7 = 7

Let us add these groups.

$5 + 3 =$ _____

We just did an addition.

What numbers did we add? _____.

These numbers are usually called **addends.**

Let us read and write the word

addends _____, _____,

What was the result? _____.

This is usually called the sum.

Let us read and write the word.

sum _____, _____,

A housewife had 4 pounds of heavy flour and 5 pounds of light flour. How much lour did she have in all?

Let us write down the addition statement.

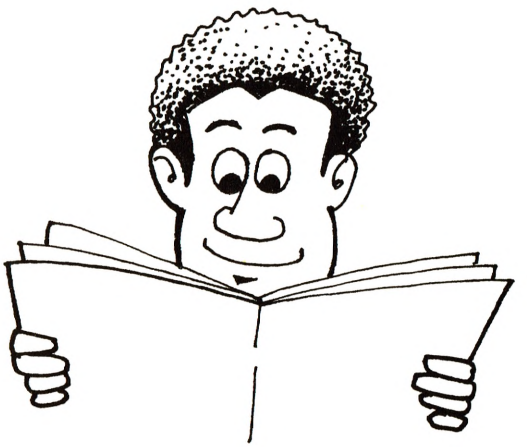
$3 + 6$ _____

To work it out we can set it down another way.

$$\begin{array}{r} 3 \\ +\,6 \\ \hline \\ \hline \end{array} \qquad \begin{array}{r} \\ + \\ \hline \\ \hline \end{array}$$

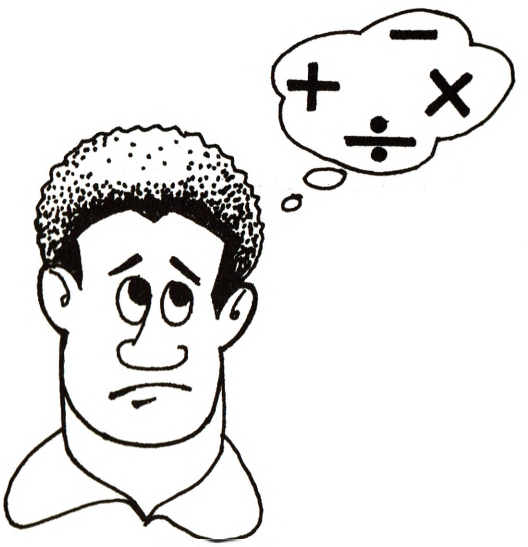
Let us put the answer in the box.

Here are some suggested steps for tackling these and other problems.



1. Read the problem very carefully!

2. Think about the facts given and examine the questions asked.



3. Determine what operation or operations to use.

4. Figure out what steps are going to use in working out the problem.

5. Work out the problem and write down the answer.

Let us try to do this one.

A housewife bought 5 pounds of jacks on Tuesday and 4 pounds on Thursday. How much jacks did she buy for the two days?

The addition statements:

Answer: _____

Exercise A

Find the sums of the following:

a) 6 + 2 c) 4 + 5

b) 3 + 5 d) 3 + 2

ADDING TWO DIGIT NUMBERS

Let us read the problem:

In one bag a hukster had 30 pears in another bag she had 20 pears. How many pears did she have altogether?

Steps

Addition statements:	Tens	Units
Let us first add units 0 + 0 = 0	3	0
Now let us add tens 2 tens + 3 tens = 5 tens	2	0

Answer: _____ pears.

On Monday a small poultry farmer collected 46 eggs from his hens. On Tuesday he collected 23 eggs. How many eggs did he collect for the two days?

Steps

Statements:	T	U
• Adding units first	4	6
• Adding tens	2	3

Answer: _____ eggs.

Let us practice these:

1. A fisherman caught 35 pounds of fish on Thursday, and 62 pounds on Friday. How many pounds of fish did he catch in all?
2. A carpenter earned 45 dollars from making a small chair and 24 dollars from a stool. How much money did he earn altogether?

ADDING THREE DIGIT NUMBERS

In one week a market vendor sold 124 pounds of potatoes. The next week sold 345 pounds. How many pounds were sold for the two weeks?

Steps

Statements:

- Adding units
- Adding tens
- Adding hundreds

H	T	U
1	2	4
3	4	5

Answer: _____ pounds of potatoes.

Here's another type:

A woman saved 134 dollars of her earnings at NCB in January. 123 dollars in February and 142 dollars in March. How much did she save for the three months together?

In this case we are joining 3 groups.

Statements: 134 + 123 + 142

We proceed before

H	T	U
1	3	4
1	2	3
1	4	2

Answer: _____ dollars.

We have just learnt to handle additions with up to 3 digit addends. Addends that have more than 3 digits are handled in the same way. That is, starting with units and going on to tens, hundreds and so on.

We are now going to learn to handle some more difficult additions.

REGROUPING ONES TO TENS

A man and his son decided to plant some cabbages. He planted 65 cabbages and his son planted 27. How many did they plant in all?

Remember: 65 = 60 + 5, and 27 = 20 + 7

Statements: 65 + 27

Now adding units 7 + 5 = 12

And adding tens 20 + 60 = 80

But 12 = 10 + 2

T	U
6	5
2	7

We have just got a new group of ten with 2 units extra,

Let us put the new group of ten with the 8 tens.

We get 80 + 10 = 90

The answer is then 90 + 2

Which is 92 cabbages

We can do this a shorter way.

65 + 27

	T	U
Adding units 7 + 5 = 12, let us put in the 2 units,	6	5
	2	7
Now we add all the tens 1 + 2 + 6 tens = 9 tens	9	2

Answer: 92 cabbages.

Let us try these:

Exercise B

a) 68 + 24 c) 27 + 17

b) 35 + 46 d) 36 + 19 + 17

REGROUPING TENS TO HUNDREDS

Let us find the sum of 447 and 271

Remember 447 = 400 + 40 + 7

and 271 = 200 + 70 + 1

As usual we begin by adding units.

Addition statement: 447 + 271

- Adding units 1 + 7 = 8
- Adding tens 70 + 40 = 110
- Adding hundreds 200 + 400 = 600

H	T	U
4	4	7
+2	7	1

But 110 = 100 + 10.

We have a new group of hundred with 10 extra.

Let us put this new hundred with the 600

600 + 100 = 700

Answer: 700 + 10 + 8 which is 718.

Again we can do this a shorter way.

447 + 271

- Adding units 1 + 7 = 8
- Adding tens 70 + 40 = 110, put in 1 ten and add 1 hundred to hundreds column
- Adding hundreds, 1 + 2 + 4 (hundreds) = 700

H	T	U
4	4	7
+2	7	1
7	1	8

Answer: 718

- Let us find the sum of 347 and 182.

REGROUPING ONES TO TENS AND TENS TO HUNDREDS AT THE SAME TIME

In this case we are going to get new groups of tens and also new groups of hundreds. Once we go step by step examples like these should be very easy to handle.

Let us find the sum of 186 and 278.

Remember $186 = 100 + 80 + 6$

and $278 = 200 + 70 + 8$

statement: $186 + 278$

H	T	U
1	8	6
+2	7	8

- Adding units, $8 + 6 = 14 = 10 + 4$

  put in the units, and add on the 1 ten to the tens column.
- Adding tens, $1 + 7 + 8$ tens $= 16$ tens or 160, which is $100 + 60$

  let us put in the tens and add on the 1 hundred to the hundreds column.
- We now add hundreds, $1 + 2 + 1$ (hundreds) $= 400$.

  Answer: $400 + 60 + 4$ or 464

LONG ADDITIONS

Sometimes we have a lot of groups to put together. We simply set down the statement and addition as usual, and go ahead adding as usual. However we have to think a little harder in working them out.

- Let us find the sum of these numbers, 134, 381, 412 and 322.
- The addition statement: $134 + 381 + 412 + 322$.
- Adding units, $2 + 2 = 4$, then this $4 + 1 = 5$, then $5 + 4 = 9$.

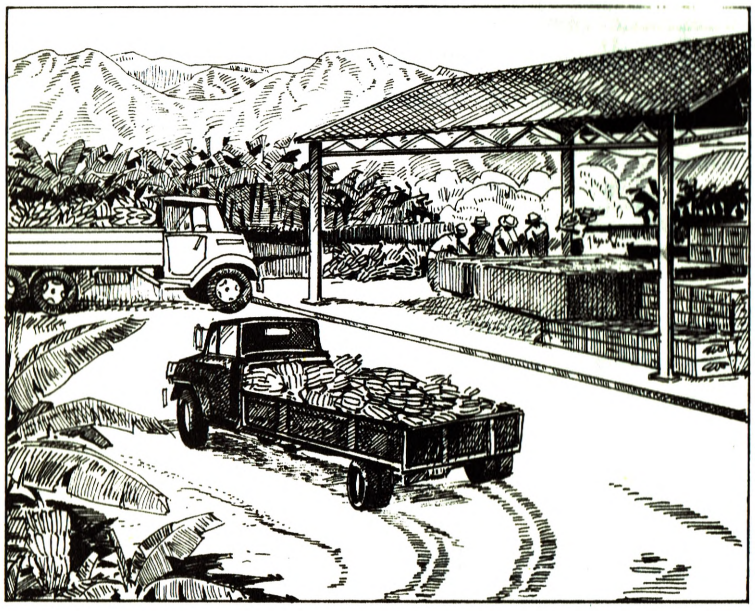
  Notice we have to add the sum from each pair to the new digit. You can jot down the sum of each step lightly alongside the columns to help you at first.

  Try to finish the addition by adding the tens and hundreds column.

H	T	U
1	3	4
3	8	1
4	1	2
+3	2	2
–	–	9

Answer: _____.

VARIABLES IN ADDITION



In the picture we see 2 trucks carrying bananas to the boxing plant. We do not know how many other trucks are around doing the same thing and so, we do not know the total number of trucks. For example if there are 3 other trucks then the total number would be: $2 + 3 = 5$, if there are 5 other trucks the total would be $2 + 5 = 7$. We only used 3 and 5 as guesses of the number of trucks that we cannnot see, because we are not certain.

Whenever we are not certain of numbers we can use letters in their places.

So we can write: $2 + a = b$ as the statement for the total number of trucks carrying bananas to that boxing plant. In this case **a** represents the number of other trucks, whatever number it might be, and **b** represents the **sum** resulting from the addition.

$$2 + a = b$$

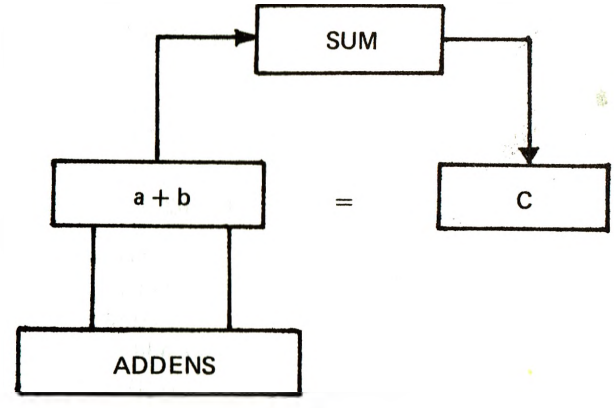
- What would be the value of **b** if **a** was 7?
- Find what **b** would be if **a** was 13.

SUMMARY OF ADDITION

In this unit we learnt to put groups together, to develop the operation of addition.

We also want to use this operation to solve problems. We continue practicing as the need arises in our everyday lives.

The following diagram will help us remember the important things about addition.



Also remember that:

- If $a + b = c$ then $b + a = c$
- $a + o = a$

Let us practice the examples below.

Remember to try to follow the suggested steps on page 80 for solving the problems. Also you may have your own ideas on how to tackle them.

CONSOLIDATION EXERCISE 2

Let us solve these problems:

1. In 1979, 42 students went to study in Cuba. In 1980, 45 students went. How many of our students are studying in Cuba?
2. A small farmer reaped 2 040 pounds of bananas in 1979 and 6 128 pounds in 1980. How many pounds did he reap in the two years together?
3. A community brigade needed 161 inverts for the first phase of a road project, 145 inverts for the second phase and 75 inverts for the third phase. How many inverts were needed for the whole project?
4. On a farming co-operative, the workers sold 213 dollars worth of tomatoes, 434 dollars worth of cabbages, 124 dollars worth of carrots and 74 dollars worth of egg plants in one week. How much money did they collect for that week from selling the vegetables?
5. Look at this statement: $14 + a = b$.

   a) If **a** was equal to 12, what would be the value of **b**?

   b) What values would **b** have if **a** was 13, 14 or 15?

6. A man works for 9 dollars a day if he worked from Monday to Saturday, how much money should he get?

TRANSITION

In problem number 6 the statement should have looked like this:

$$9 + 9 + 9 + 9 + 9 + 9.$$

- What do you notice about the addends?
- How many times does that number come up? why?

This is a special kind of addition and it can be worked out using another process. We are going to learn more about this in the next unit.

UNIT 3

MULTIPLICATION

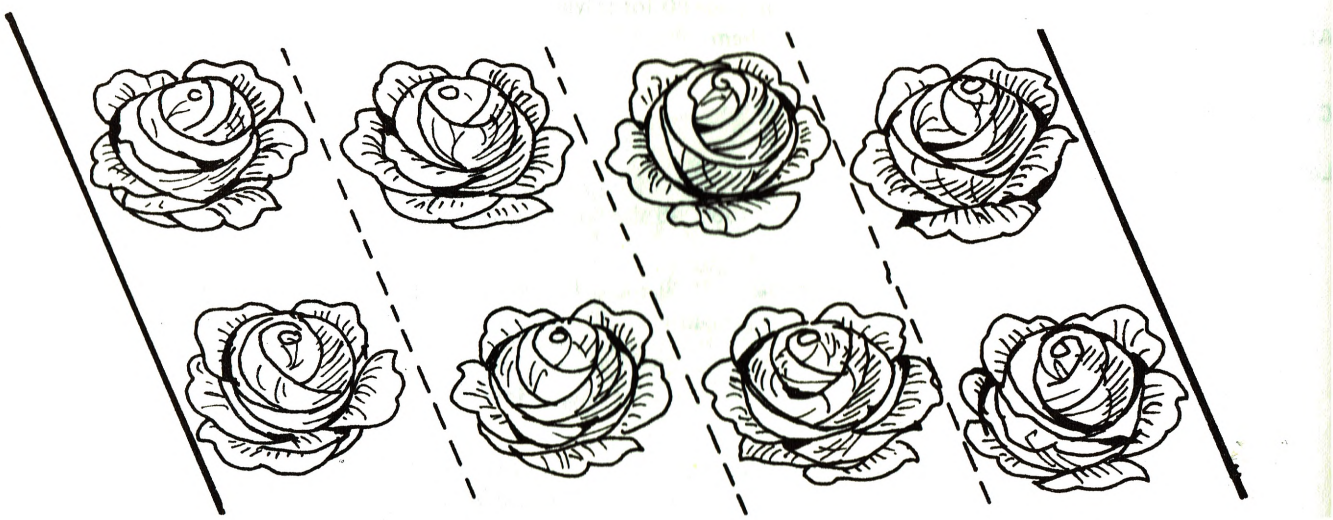
Picture discussion

INTRODUCTION

As we saw in the last problem, some additions have a series of addends, with each addend being the same number.

The sums of these can be found by using another process or operation apart from actual addition. Of course this new operation is going to be closely linked to addition.

Let us see how we can use this new operation.



- How many cabbages are in each group? _____.
- How many groups are there? _____.
- How many cabbages altogether?

We can add 2 + 2 + 2 + 2 + 2.

How many times does 2 come up?

What we really have then is 2 coming up 4 times.

Another way to say it is: 4 times 2 or 2 multiplied by 4.

Let us read and write:

2 multiplied by 4

_____ .

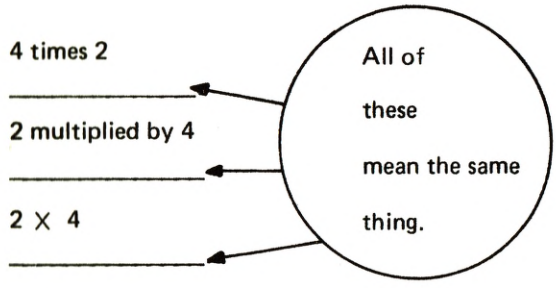
Let us use a sign for **multiplied by**: 2 X 4

Let us read and write it: _____ .

This sign (X) means **multiplied by.** It is the multiplication sign (X).

Let us practice to make it _____ .

Let us write these in the spaces



Fill in the answer:

2 X 4 = _____

How many nutmegs in each group? _____

How many groups? _____

How many in all? _____

Using addition 3 + 3 + 3 + 3 = 12

Using multiplication 4 times 3 gives 12

_____

3 multiplied by 4 gives 12

_____

Using signs 3 X 4 = 12

If we **multiply** 3 by 4 we get 12.

Let us read and write the word:

multiply _____, _____,

We **multiplied** 3 by 4 and got 12.

Let us read and write the word:

multiplied _____, _____,

We have done a **multiplication.**

Let us read and write the word:

multiplication _____, _____,

What do you notice about how the words are made up?

In this example, $3 \times 4 = 12$.

The number 3 is usually called the **multiplicand**

Let us read and write:

multiplicand _____, _____,

The number 4 is usually called the **multiplier**

Let us read and write:

multiplier _____, _____,

The result 12 is usually called **the product.**

Let us read and write:

product _____, _____,

Look at this carefully: $5 \times 4 = 20$

- Which number is the product? _____.
- Which is the multiplicand? _____.
- Which is the multiplier? _____.

A step further

Let us read this problem:

A farmer bought 3 sacks of salt manure. Each bag had 5 pounds. How many pounds of salt manure did he buy in all?

_____

Student's attempt

_____

How many times does 5 come up?

Let us write the statements.

3 times 5

_____

5 X 3

_____

We can use addition to get our answer.

$5 + 5 + 5 =$ _____

Let us put in the answer.

$5 \times 3 =$ _____

The farmer bought _____ pounds of salt manure.

USE OF MULTIPLICATION TABLES

Let us fill in the products for these: we may use addition to figure them out. We can then put in the answers in their right boxes in the chart below.

Exercise A

0 X 0 =	1 X 0 =	2 X 0 =	3 X 0 =	4 X 0 =	5 X 0 =
0 X 1 =	1 X 1 =	2 X 1 =	3 X 1 =	4 X 1 =	5 X 1 =
0 X 2 =	1 X 2 =	2 X 2 =	3 X 2 =	4 X 2 =	5 X 2 =
0 X 3 =	1 X 3 =	2 X 3 =	3 X 3 =	4 X 3 =	5 X 3 =
0 X 4 =	1 X 4 =	2 X 4 =	3 X 4 =	4 X 4 =	5 X 4 =
0 X 5 =	1 X 5 =	2 X 5 =	3 X 5 =	4 X 5 =	5 X 5 =

X	0	1	2	3	4	5
0	.	.	.	.	.	.
1	.	.	.	.	.	.
2	.	.	.	.	.	.
3	.	.	.	.	.	.
4	.	.	.	.	.	.
5	.	.	.	.	.	.

Some questions

1. What happens when we multiply any number by 0?
2. What happens when we multiply by 1?
3. a) Look at the endings of the products when we multiplied by 5.
   b) What do you notice?
4. a) Look at the product of 2 X 3, write it down. _____.
   b) Now the product of 3 X 2 _____.
   c) What do you notice?
   d) What numbers were multiplied in both cases?
5. Choose any other two numbers on the table and do the same thing.

   _____ X _____ = _____

   _____ X _____ = _____

   What do you notice?

What conclusion can you make then?

Look at this:

4 X 3 = 12

What should be the product of 3 X 4? _____.

Why do you think so?

Problem

A man gets 5 botles of milk each day from his goat. How many bottles should he collect in 4 days?

4 times 5 . . . 5 . . .

5 X 4. X 4 . . .

Let us write it down this way

Now let us look at the tables for our answer and fill it in.

THE FULL MULTIPLICATION TABLES

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

What do you notice about the products when the numbers are multiplied by 10?

Let us read these problems and solve them using the multiplication tables.

Exercise B

1. A community brigade decided to put money together to buy some refreshments for their work-day, so each person put 5 dollars. If there were 10 persons, how much money did they gather together?
2. A carpenter is able to build a small bench using 7 feet of board. How many feet would he need to build 6 such benches?

USING TWO DIGIT MULTIPLICANDS

To build a bookshelf a carpenter needs 14 feet of mahogany. How much mahogany would he need for 2 bookshelves of the same size?

A stage further

Let us find the product of 16 and 2.

Statements: 16 X 2

T	U
1	6
	X 2

Student's attempt

Steps

- 2 times 6 units = 12 units = 10 + 2... a new group of ten and 2 units extra.
- 2 times 1 ten = 2 tens or 20.

  Remember we had a new ten so let us add it to the 2 tens

  2 tens + 1 = 3 tens.

  The answer is 3 tens 2 units

  Which is 32

Student's attempt

Before we work this, let us write down 14 in parts, it comes up twice so we would write it twice.

1. ..... 14 = 10 + 4
2. ..... 14 = 10 + 4

putting together we get 20 + 8 = 28

What we actually did was to multiply units by 2 and then tens by 2.

Let us do the same thing here and use the tables to help us.

- 2 times 4 units = 8 units
- 2 times 1 ten = 2 tens

T	U
1	4
	X 2
2	8

Answer: 28

Let us practice these:

Exercise C

a) 34 X 2

b) 32 X 3

c) 13 X 2

d) 22 X 4

We can do this a shorter way:

- $6 \times 2 = 12$.. we write in the 12 on the side to remember. Then use the 2 units from it.
  Now 1 ten $\times$ 2 = 20. Adding on the other 10 from the 12
  We get 20 + 10 = 30 or 3 tens

T	U	
1	6	
	$\times$ 2	12
3	2	

Answer: 32

Another type

Let us find the product of 42 and 3.

Statements: 42×3

We proceed as before;

However in this case 4 tens $\times$ 3 = 12 tens or 120

Which is 100 + 20... a new group of 1 hundred.

Our answer is then 100 + 20 + 6

T	U
4	2
	$\times$ 3
1	2 6

Which is 126

Let us practice these:

a) 17×4 c) 26×2

b) 38×5 d) 33×4

Remember we must multiply before we add on the new groups.

THREE DIGIT MULTIPLICANDS

These are handled in very much the same way as those we did before.

- In a cartoon there are 144 tins of juice. How many tins should be in 2 such cartoons?

Student's attempt

The statement 144×2

Let us write down the number 144 in its parts.
It comes up twice so:

1. ..... 144 = 100 + 40 + 4
2. ..... 144 = 100 + 40 + 4

together we get 200 + 80 + 8

What we actually did was to multiply units by 2, then tens by 2, then lastly hundreds by 2, moving towards the left. If there were thousands, or ten thousands we would have gone on and multiplied them also by 2.

We can use a shorter way.

144×2

- 2 times 4 units = 8 units
- 2 times 4 tens = 8 tens = 80
- 2 times 1 hundred = 2 hundred = 200

H	T	U
1	4	4
		$\times$ 2
2	8	8

Answer:. 200 + 80 + 8
or 288

Let us practice these:

Exercise E

a) 243 X 2 c) 422 X 2

b) 210 X 4 d) 122 X 3

A stage further

Let us find the product of 153 and 3.

Statements: 153 X 3

As before... 3 times 3 units = 9 units

3 times 5 tens = 15 tens or 150 = 100 + 50

We use the 5 tens

3 times 1 hundred = 300 but we must add on the other new hundred so

300 + 100 = 400

Answer: 400 + 50 + 9 or 459

1 5 3	
X 3	150
4 5 9	

Let us practice with these:

Exercise F

1. A man works for 234 dollars a month. How much should he earn after 3 months?
2. A truck was able to carry 260 cartoons of milk. If the truck made 5 packed trips. How many cartoons would it have carried?

We have been multiplying using 2 and 3 digit multiplicands with a one digit multiplier. Examples with more than 3 digit multiplicands are handled in exactly the same way. We are now going to learn to handle examples with **2 digit multipliers.**

TWO DIGIT MULTIPLIERS

Let us find the product of 32 and 13

Statements: 32 X 13

How do you think we can do it?

Student's attempt

Let us write 13 in parts.

13 = 10 X 3

We should therefore multiply 32 by 3 and then by 10.

T	U
3	2
	X 3

So 32 X 3 = 96

And 32 X 10 = 320 (using tables for 10)

T	U
3	2
	X 10

Putting the two answers together then,

320 + 96 = 416

Answer: 416

	320
	+96

We can do a shorter way.

32 X 13

Steps

- **3 units times 2 units = 6 units**
- **3 units times 3 tens = 9 tens or 90**
- **1 ten times 2 units = 2 tens or 20**
- **1 ten times 3 tens = 3 hundreds or 300**

H	T	U
	3	2
	X1	3
	9	6
3	2	0
4	1	6

total (adding the two answers)

Answer: 416

Let us work out this example:

H	T	U
	2	2
	X1	4

- 4 times 2 units =
- 4 times 2 tens =
- 1 tens times 2 units =
- 1 tens times 2 tens =

Total: _____

Answer: _____

Let us practice these:

Exercise G

1. A tourist vendor used 14 yards of straw to make a bag. How much straw would she use to make 13 bags?
2. The weight of a cartoon of juice was 24 pounds. A van was carrying 25 cartoons What was the weight of its cargo?

THREE DIGIT MULTIPLIERS

In this section we are going to learn to use 3 digit multipliers. They are handled in the same way as those before.

Student's attempt

Statements: 112 X 123

Remember: 123 = 100 + 20 + 3

We therefore should multiply by 3, then by 2 tens (20), then by 100.

H	T	U
1	1	2
X1	2	3

Steps

- 112 X 3 = 336
- 112 X 2 tens = 2 240
- 112 X 1 hundred = 11 200

Total: _____

Answer: _____

Let us work out this example.

Find the product of 124 X 122

Statement: _____

H	T	U
–	–	–
X –	–	–

112 X 4 units =

112 X 2 tens =

112 X 1 hundred =

Total: _____

Answer: _____

Let us practice:

Exercise H

a) 223 X 342

b) 421 X 161

c) 366 X 212

MULTIPLICATION WITH ZERO AND NUMBERS ENDING WITH ZERO

In the last section we learnt to handle multipliers with 3 digits. Examples which have digits larger than those are dealt with following the same pattern. We are going to look at the interesting case of working with zero as and numbers which end with zero.

Let us find the products of these:

a) 5 X 0 =

b) 6 X 0 =

c) 1 X 0 =

d) 7 X 0 =

e) 0 X 7 =

- What do you notice about the answers?
- What do your notice about the numbers in each example?
- What conclusion can you make?

Now let us work these examples:

a) 14×20 b) 13×30

c) 16×10 d) 17×10

What do you notice about the last digit of the products and the multipliers?

What conclusion can you make?

Work out these two examples.

a) $13 \times 3 =$ b) $13 \times 30 =$

What is the difference between the products? Why did this happen?

Here is an interesting case:

$20 \times 10 =$

How many zeros are at the end of the product?

Why did this happen?

Lastly let us work these:

a) $114 \times 200 =$ b) $113 \times 300 =$

- What do you notice about the last two digits of the multipliers?
- What about the last two digist of the products?

What conclusion can you make?

We have just found out that usually when we multiply by zero regardless of what the other number is our product is always zero. Also we found that for multipliers which ends with zeros, the product usually has at least the same number of zeros at the end. How can these discoveries be helpful to us in working out multiplications quickly and correctly?

Just before we end off this unit, there is just one other interesting thing that we should look at.

First of all let us see how many addition statements we can write down get 8 as our answer.

For example: $4 + 4 = 8$, $2 + 6 = 8$, _____

_____

_____

Now work out this multiplication and fill in the product:

$8 \times 3 =$

Then instead of the number 8, let us use one of the addition statement, in the multiplication statement. We use brackets "( )" to show that $2 + 6$ are used instead of 8.

- $(2 + 6) \times 3$

Now let us multiply 2 by 3 ..... $2 \times 3 =$

Then let us multiply 6 by 3 ..... $6 \times 3 =$

Let us add the products ..... _____

_____

What do you notice about the result and the product in the multiplication statement?

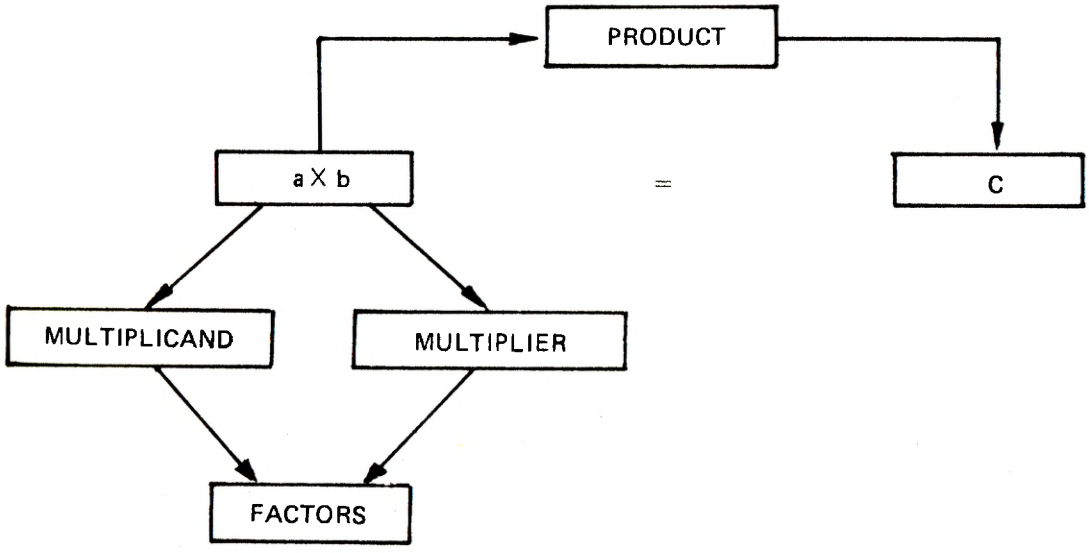
Now try the same thing using some of the other addition statements instead of 8.

What do you notice about all the answers?

What conclusion can you make about this?

SUMMARY OF MULTIPLICATION

In this unit we learnt about multiplication. We saw at first that this operation is very closely linked to the operation of addition. We saw that we can use multiplication whenever we have to put a series of equal amounts or numbers together. We learnt how the multiplication tables are built up and how they are used to make our work easier. It is a good idea to learn these tables by heart. The following diagram reminds us of the important things about multiplication.



It does not matter which factor comes first.

- If $a \times b = c$ then $b \times a = c$
  If $2 \times 4 = 8$ then $4 \times 2 = 8$

Any number multiplied by 1 gives a product which is equal to the first number.

- $a \times 1 = a$
  $6 \times 1 = 6$
- $(a + b) \times c = (a \times c) + (b \times c)$
  $2 + c \times 3 = (2 \times 3) + (6 \times 3)$

Any number multiplied by zero gives a product that is zero.

- $a \times 0 = 0$
  $4 \times 0 = 0$

CONSOLIDATING EXERCISE 3

Let us read these and give their products without writing:

a) 10×4 b) 12×10 c) 100×6 d) 23×100
e) 10×12 f) 6×200 g) 432×100 h) $53 \times 1\,000$

Look at this statement carefully:

$44 \times a = b$

What would be the value of **b** if a was equal to:

a) 12 b) 13 c) 21 d) 35

Let us find the following products:

a) $1\,438 \times 24$ b) $23\,431 \times 312$
b) $6\,891 \times 34$ d) $7\,315 \times 156$

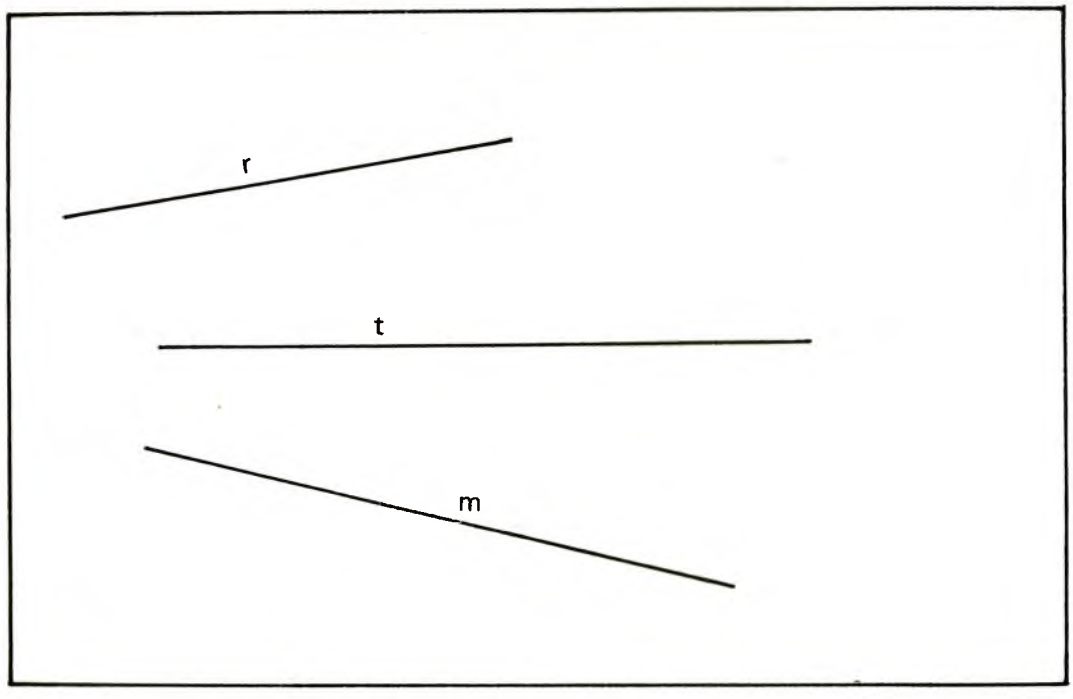
Let us read and solve these problems; remember the steps in problem solving. Also, use your own ideas.

1. A family pays about 46 dollars every month for electricity. How much money would have been paid by the family in 1 year (12 months)?
2. A small livestock co-operative sold 12 goats. If each one was sold at 124 dollars. How much money was collected for all the animals?
3. 25 youths came together to form a co-operative. As part of their investment each youth gave 150 dollars. How much money did they have in all to start?
4. The house rent to be paid by a family each month is 85 dollars. How much would the family pay in 1 year?

Solution of student's immediate problems based on this and previous topics

UNIT 4

BASIC SHAPES AND FORMS



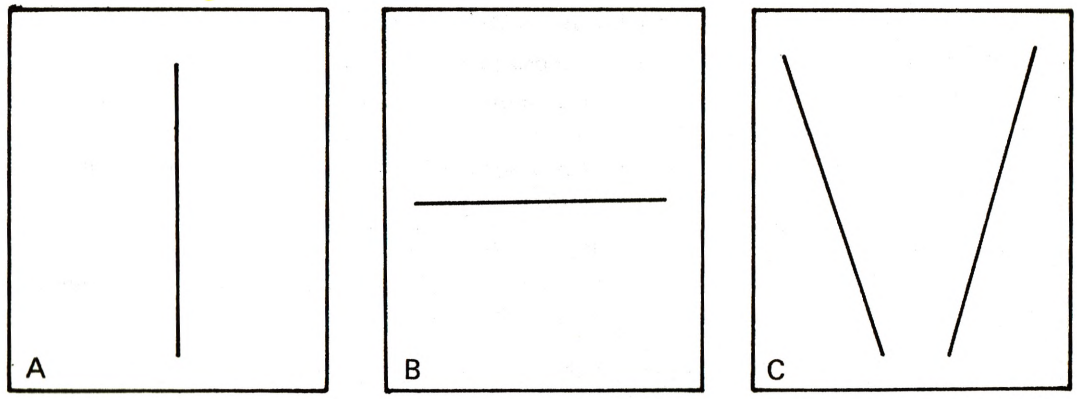
LINES

What do you observe in this figure?

r, t and **m** are lines, each running in a different direction. We can draw lines using a ruler.

Can you think of some examples of when and where lines are used?

Lines can be drawn in many different directions or planes. Let us look at just three such planes.



In figure **A** the line is upright or **vertical.** Look at the leg of a desk, is there any similiarity between the direction or plane of the leg and that of the line in **A.** If so what is it? What is this plane called?

Can you think of other examples of objects or parts of objects that are at a plane vertical to the ground?

In figure **B,** the line is **horizontal** to the ground.

Observe this plane carefully.

Gives examples of other things that are horizontal to the ground.

Look at the lines in figure **C.**

In what direction or plane do the lines run?

They are **slanting** or **sloping.**

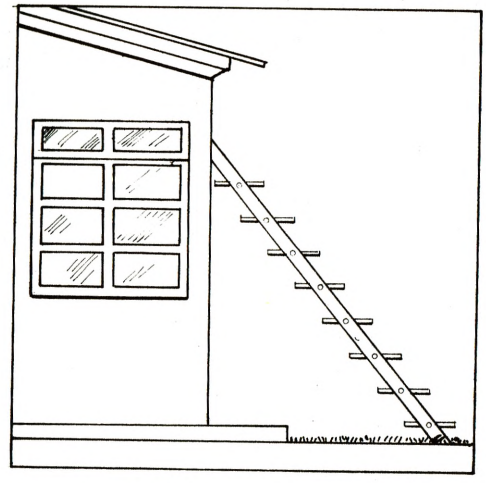
Let us try to describe this plane.

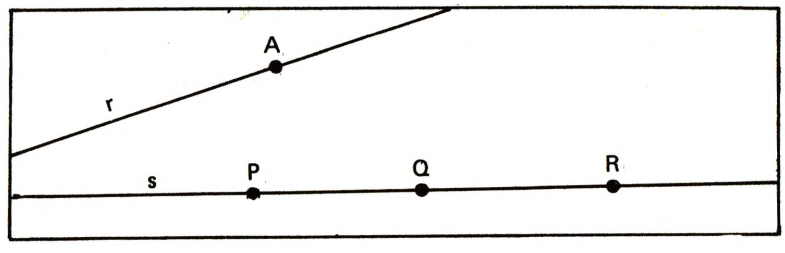
Along what plane or direction would you say each of the following runs from the ground:

a) a door post

b) the horizon

c) the ladder in this picture





Observe the figure carefully.

Can you describe A?

A is a **point** in the line **n.** P, Q, R, are points in the lines. The point A is situated in the line **n.**

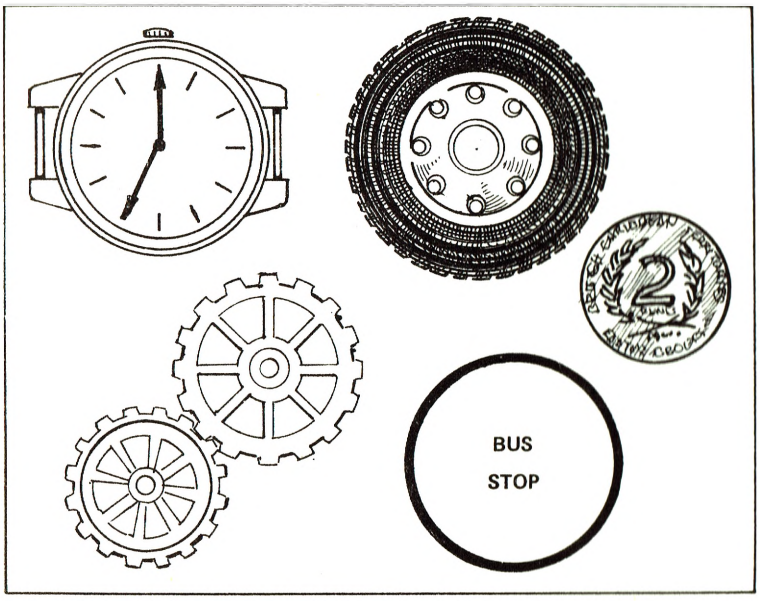
Another way is saying this is that the line **n** passes through the point A.

The point Q is between the points A and R.

Important:

Lines can be used to draw a wide variety of shapes and forms, some of which we are going to look at in this unit.

The circle _____



Picture discussion

—What do you notice about all the objects in this picture?

—Let us read and write the names of the shapes.

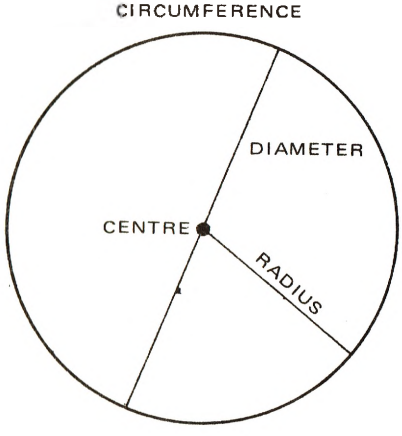
circle _____, _____

These objects are circular in shapes. Let us read and write the word circular.

circular _____, _____, _____

What other objects do you know have the same shape?

Let us learn the names of some parts of the circle.



_____ circumference

_____ centre

_____ radius

_____ diameter

circumference _____

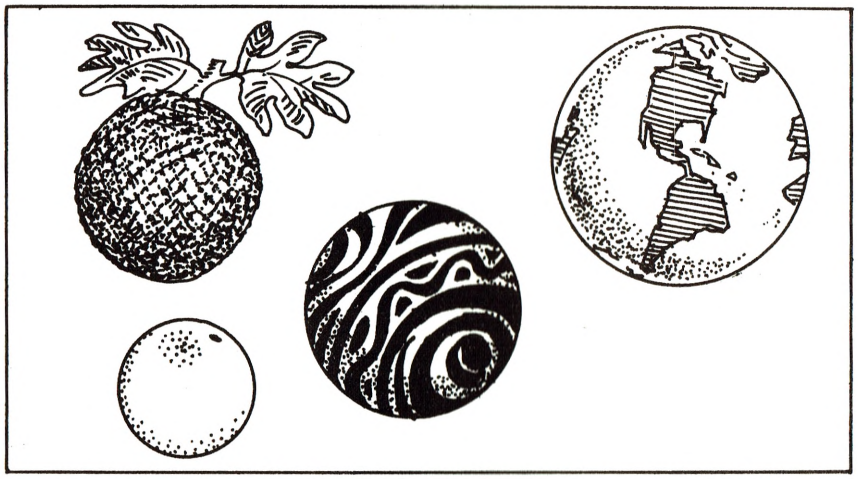
centre _____

diameter _____

radius _____

Let us draw a circle and name the parts.

Picture discussion



Let us read and write the name of this form:

Sphere _____, _____, _____

The objects are spherical in form.

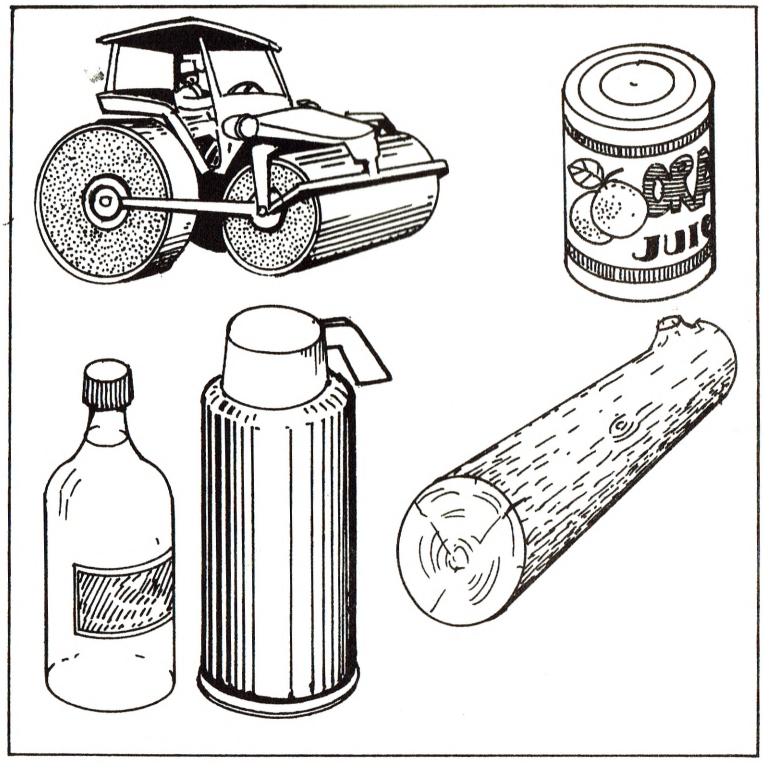
Read and write the word:

Spherical _____, _____, _____

What other objects do you know are spherical in form?

Let us try to draw some of these objects.

What differences are there between a circle and a sphere.



Picture discussion

What do you observe about the objects shown here?

Let us read and write the name for this form.

cylinder _____, _____

cylindrical _____, _____

What other objects do you know are cylindrical in form?

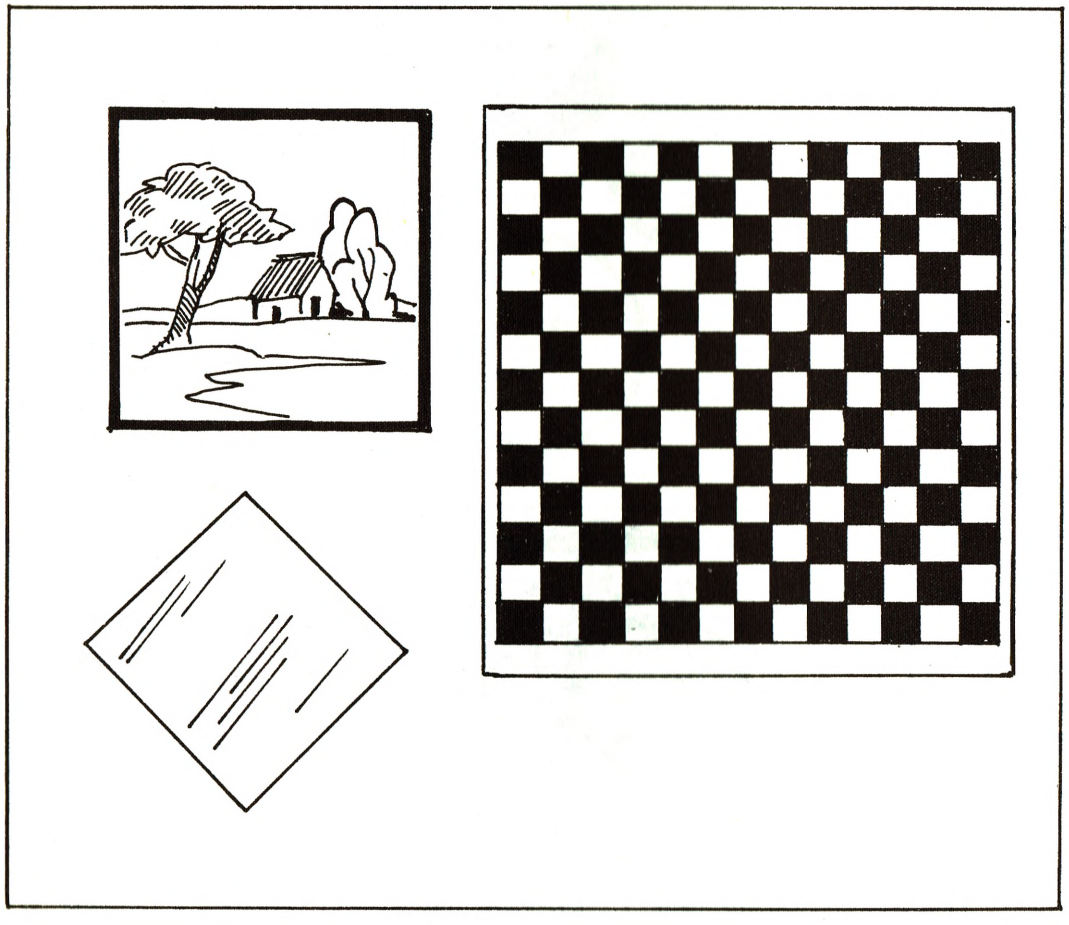
Let us draw a cylinder and some other cylindrical forms.

What differences are there between:

a) the sphere and the cylinder

b) the circle and cylinder

Can you describe, the main features of a **cylinder** that is what about a **cylinder** or **cylindrical** shape, makes it different from other shapes.



What do you notice about these objects?

The name of this shape is **square.** Read and write the word:

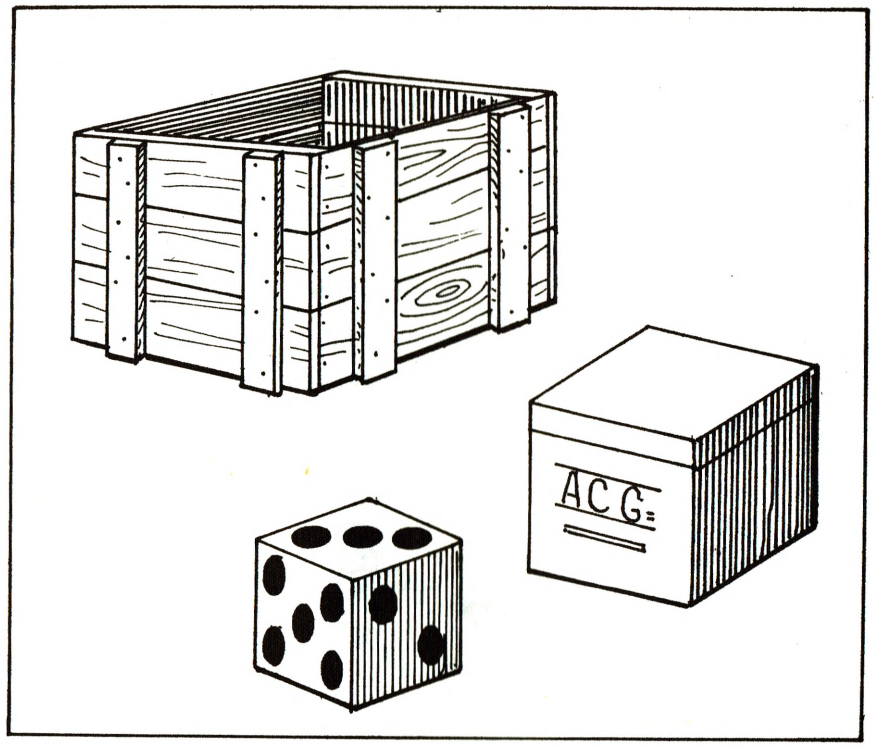
Square _____, _____

Can you give examples of other square objects?

What are the main features of a square?

Let us try to draw a squeare and a few square objects.

What differences are there between a circle and a square?



Here are some objects that we are familiar with.

What do you notice about the form of these objects?

Let us read and write the name for this form.

Cube _____, _____

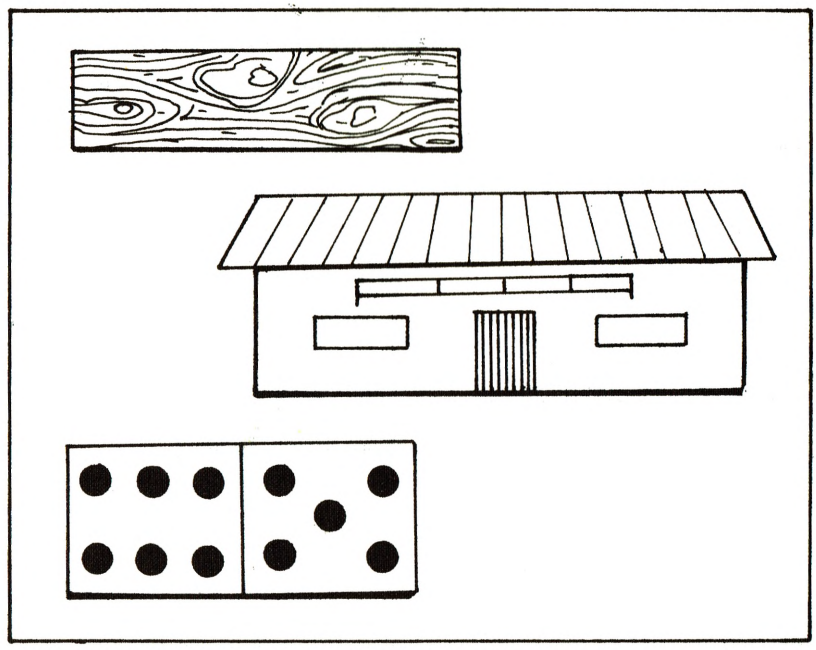
What other objects have this form?

There are all cubical in form.

Note the word cubical. Let us read and write it.

What differences are there between a square and a cube?

What are the main features of a cube?



Picture discussion

What do you notice about all these objects?

Do you know the word **rectangle**?

Let us read and write it.

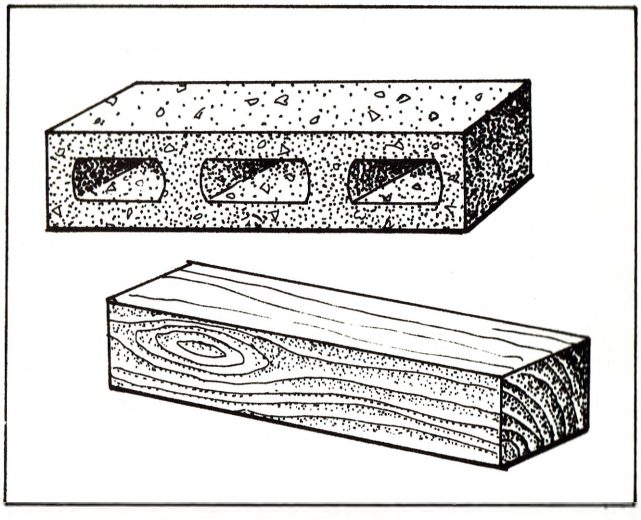
They all are rectangular in shape.

Let us read and write the word rectangular.

Rectangular _____, _____

Are there any differences between a square and rectangle? If so, what are they?

Name some other objects that are rectangular in shape.



Picture discussion

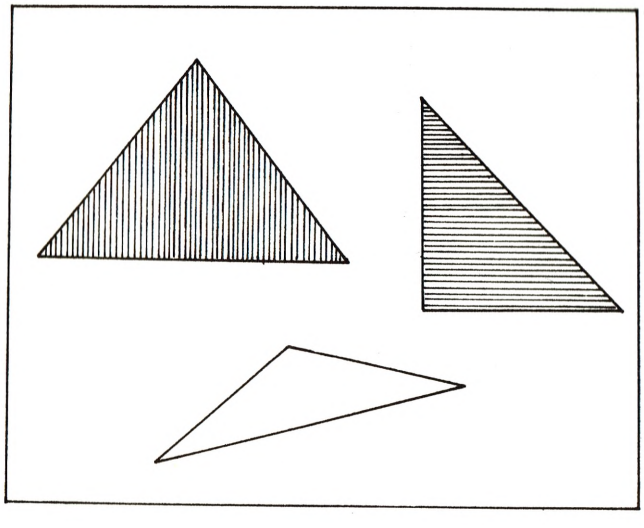
Let us read and write the words for the name of this form:

rectangular solids _____, _____

_____, _____

What other objects you know are rectangular blocks or solids?

What differences are there between this and the cube?



What is common about all these shapes?

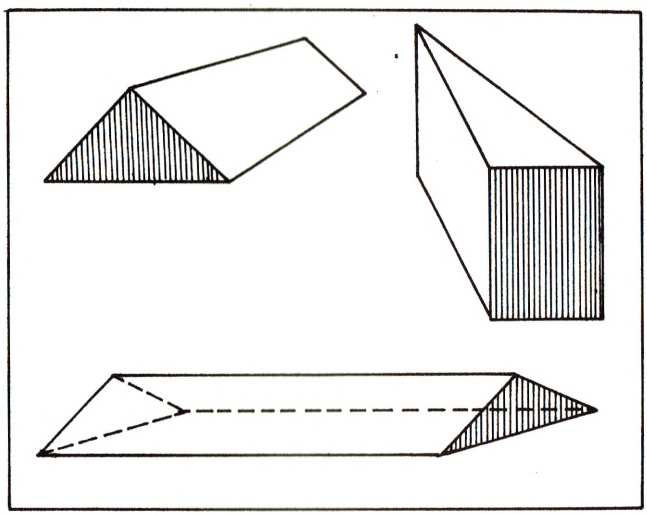
Let us read and write the words for these shapes.

triangle _____, _____

They are triangular in shape.

triangular _____, _____

What are the main features of a triangle?

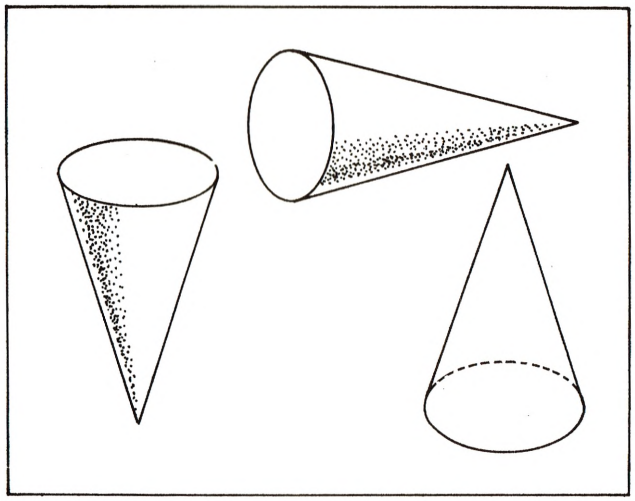


What do you notice about all these objects?

Let us read and write the name of this form:

triangular prism _____, _____

Can you name some other objects that have this form?

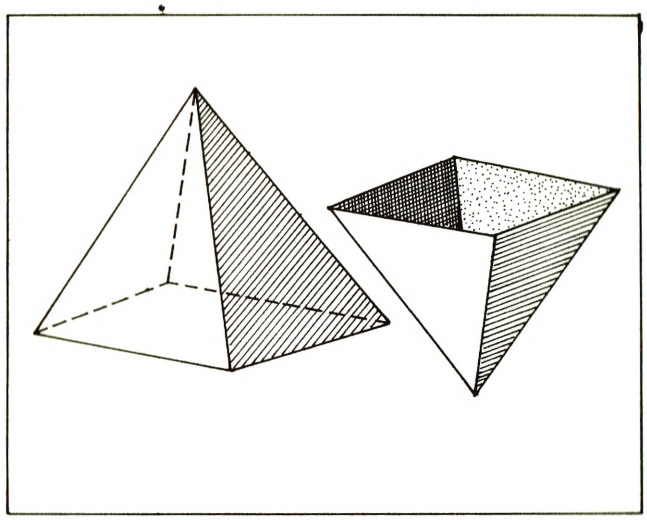


This is a form that we are quite familiar with. What do you notice about this form? They are conical in form.

conical _____, _____

Let us read and write this word. What other objects you know have this shape?

What are the main features of a cone?



Let us read and write the word for these forms:

pyramids _____, _____

What other objects have the form of pyramids?

What two shapes can you see in the pyramids?

What differences are there between a cone and a pyramid?

CONSOLIDATION EXERCISE 4

Let us pick out some shapes and forms around us and write statements for some of them.

For example:

The window pane is square in shape.

UNIT 5

SUBTRACTION

Picture discussion

INTRODUCTION

We have learnt to do addition and multiplications before. In this unit we are going to learn to do a new operation. We should continue practicing those we learnt before even though we are doing a new one.

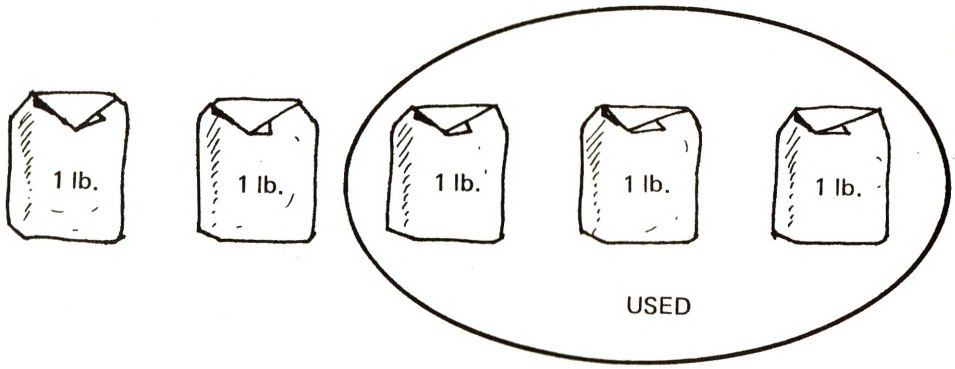
SUBTRACTION OF SINGLE DIGIT NUMBERS

Example 1

Out of 7 pounds of flour, a housewife used 3 pounds. How much flour was left?

Student's approach

Let us use drawings to help us:



How many pounds left?

Let us use words and numbers to show what happened.

3 taken from 7 leaves 4.

_____

3 subtracted from 7 leaves 4.

_____

7 minus 3 leaves 4.

_____

Now using signs: $7 - 3 = 4$

_____

The sign used for subtraction is made like this (—). It is called the minus sign.

We have just done a **subtraction.**

Let us read and write the word:

Subtraction _____, _____

We have **subtracted** 3 from 7.

Let us read and write:

Subtracted _____, _____

We used the **minus** sign to show that we are subtracting.

Let us read and write:

Minus _____, _____

_____, _____

Let us set down the subtraction, and put in the answer.

Units	
7	– – – – – –
–3	– – – – – –

Example 2

Let us read:

Out of 9 eggs the family used 4 for breakfast. How many eggs were left?

- Let us write the statements:

9 minus 4 leaves 5

9 – 4 = 5

Let us set down the subtraction:

9	– – – –
–4	– – – –

Answer: _____

Exercise A

Let us set these down and work them out:

a) 6 – 2 c) 7 – 5

b) 9 – 3 d) 8 – 4

DIFFERENCES

Example 1

On Monday a youth earned 8 dollars doing odd jobs. On Tuesday he earned 5 dollars. What is the difference between the amounts earned?

Monday

Tuesday

Student's approach

Let us write down the statements and work the subtraction:

The difference is _____.

How much more he earned on Monday? _____.

How much less did he earn on Tuesday? _____.

Example 2

A carpenter built 7 tables in one week and 4 the following week. What was the difference between the numbers of tables built?

Statements: 7 — 4

_ _ _ _ _
_ _ _ _ _
– _____
_____

The difference is _____ tables.

Let us practice:

Exercise B

Let us find the difference between these numbers.

a) 6 and 4 c) 9 and 3

b) 8 and 3 d) 8 and 5

Another type

Example 1

A small livestock farmer wants to increase his stock of sheep to 9. He already has 4 sheep. How many more does he need?

Student's approach

Statements: 9 — 4

_ _ _ _ _
_ _ _ _ _
_____
_____

He should buy _____ sheep.

Example 2

A man has to make 8 chains as a task. He has already made 3. How many more should he make?

_____ Student's suggested approach _____

..... _____ .....

_ _ _ _ _
_ _ _ _ _
_____
_____

He should make _____ more chairs.

Let us practice:

Exercise C

1. What number should be added to 5 to make 8?
2. Out of 7 dollars, 3 dollars were spent. How much money was left?
3. Over the Grand Etang the distance from St. George's to Grenville was 15 miles, a car doing the journey had just reached Beaulieu. If Bealieu is 3 miles from St. George's. How far does the car have to travel before reaching Grenville?

SUBTRACTION OF TWO DIGIT NUMBERS

A woman got about 44 pounds of tomatoes from her kitchen garden when she did not use fertilizer. Whenever she used fertilizer, she got about 68 pounds from the same plot. What is the difference in the quantity of tomatoes?

Subtraction statements ..... ——— .....

Student's approach

Let us write the numbers in parts:

		T	U
68 =	60 + 8	6	8
44 =	40 + 4	4	4

Steps

- Let us subtract units: 8 — 4 ..... = 4 2 4
- Let us subtract tens: 6 tens — 4 tens = 2 tens

Answer: 2 tens 4 units = 24

Another way

4 taken from 8 = 4

4 tens taken from 6 tens = 2 tens

T	U
6	8
—4	4
2	4

Answer: The difference is 24 pounds of tomatoes

Exercise D

Let us find the differences between these amounts:

1. 68 pounds and 54 pounds
2. 52 pounds and 21 pounds
3. 39 pounds and 24 pounds

BREAKING UP TENS TO ONES

Problem

In one week a woman got 24 dollars from selling wet cocoa. The following week she got 6 dollars. What is the difference between the amounts she got.

Student's approach

Statements: 24 — 6

Remember: 24 = 20 + 4 = 10 + 10 + 4

Let us use diagrams to help.

Answer: _____ dollars.

Notice we had to break up one of the tens. So now instead of 2 tens, we only have 1 ten left.

Let us set it down as a subtraction:

T	U
2,	,4
	6
1	8

We broke up one of the tens from 24.

We therefore now have 14 ones and 1 tens.

We can write in these as small numbers to help us.

We can now subtract:

6 from 14 = 8

0 tens from 1 tens = 1 ten

Answer: 18

The difference is _____ dollars.

Exercise E

Let us work these:

a) 26 — 8 b) 31 — 3

c) 56 — 7 d) 46 — 28

SUBTRACTION THREE DIGIT NUMBERS-BREAKING UP HUNDREDS TO TENS

Example 1

A trafficer' collected 324 oranges. She decided to keep 50 for herself and ship the rest. How many oranges did she ship?

Subtraction statements: 324 — 50 —

H	T	U	
3	2	4	..... 300 + 20 + 4
— 5	0		..... 50 + 0

Do we have to break up the tens section of 324? Why? Now look at the tens section. We have to take 5 tens from 2 tens.

How can we do it?

Student's approach

Remember: $324 = 100 + 100 + 100 + ,20 + 4$

$50 = \qquad\qquad 50 + 0$

- We have to break up the hundreds section and use 100 together with the 20, so under tens we now have 12 tens.

We can now subtract: ....

- 0 from 4 units = 4
- 5 tens from 12 tens = 7 tens
- 0 hundred from 2 hundred = 2 hundred

H	T	U
3_2	,2	4
	−5	0
2	7	4

Answer: 274

She shipped _____ oranges.

Example 2

Statements: 452 — 161

H	T	U
4_3	,5	2
1	6	1

- Do we have to break up the tens section? Why?
- Do we have to break up the hundreds section? Why?

We would then have 3 hundreds and 15 tens and are ready to subtract.

Answer: _____

Let us work these out:

a) 6 3 4
- 1 9 2
_____

b) 9 1 0
−7 2 0
_____

c) 3 0 2
−1 3 1
_____

BREAKING UP HUNDREDS AND TENS AT THE SAME TIME

A fisherman caught 505 pounds of fish for the week he sold 326 pounds to a hotel, and the rest he sold at the fish market. How much did he sell at the fish market?

Student's approach

Subtraction statements:

H	T	U
5	0	5
−3	2	6

Look at the digits carefully.

Do we need to break up the tens of 505?

Do we have tens to break up?

Where would we get it from?

We start by breaking up hundreds. We therefore now have 4 hundreds . . . and 10 tens.
But we need to break up one of the tens.
This gives 9 tens and 15 units. We can subtract now.

H	T	U
5_4	,0	,5
− 3	2	6

Answer: _____ pounds.

.et us do this one:

400 — 236

H	T	U
4	0	0
−2	3	6

First look at the digits carefully to find which section should be broken up.

Answer: _____.

CHAIN SUBTRACTION

A man's poultry was struck by disease. On the first day 3 chickens died, on the second day 4 died and on the third day 6 died. If he had 48 chickens at first, how many were left?

Student's approach

Remember: 3 groups of chickens had died so far.

Let us write the statements.

48 — 3 — 4 — 6

Let us work it out:

- 48 — 3 = 45
- 45 — 4 = 41
- 41 — 6 = 35

48
−3
45
−4
41
−6
35

Answer: 35 chickens.

Can you think of any other way of working this out?

Hint: Use addition to find the sum of all the dead chickens.

This kind of subtraction is usually called chain subtraction. Can you suggest why?

Let us ptactice:

A woman had 247 dollars in the bank. She first withdraw 15 dollars, then the next day 25 dollars and on the third day 40 dollars. How much money did she have left?

SOME INTERESTING THINGS ABOUT SUBTRACTION

1. Let us work this out: $4 - 3 =$

   Now let us change around the numbers $3 - 4 =$

   $$\begin{array}{r} 4 \\ -3 \\ \hline \end{array}$$

   Could you find an answer?

   Try the same thing with this one: $7 - 2 =$

   Changing the numbers around: $2 - 7 =$

   What do you notice?

   We found that $4 - 3$ is not equal to $3 - 4$.

   We can use a sign of **not equal to**

   Let us use the sign: $4 - 3 \neq 3 - 4$

   The same thing is true for all the natural numbers so

   $a - b \neq b - a$

2. Let us work this out:

   $4 - 1 =$

   Now let us add back the answer to the smaller number, 1.

   $3 + 1 =$

   What do you notice?

   Let us try the same thing with these.

   a) $9 - 6 =$ c) $7 - 5 =$

   b) $14 - 8 =$ d) $10 - 3 =$

   What do you notice happening?

   We found that when we added the answers back to the smaller numbers, we got the larger numbers as the sums. This is an important discovery.

   How can we use this to help us to work out our subtraction correctly?

   if $a - b = c$ then $c + b = a$

3. Let us do this chain subtraction.

   $9 - 3 - 2 =$

   Now let us add $3 + 2$, then subtract the sum from 9 the statement should be.

   $9 - (3 + 2) =$

   We use brackets to show that we are going to add first.

   What do you notice about the two answers?

   Let us try the same thing here:

   $10 - 4 - 3 =$

   $10 - (4 + 3) =$

   What do you notice happening?

This happens for all numbers sq.

$a - b - c = a - (b + c)$

4. Let us subtract zero from any three numbers.

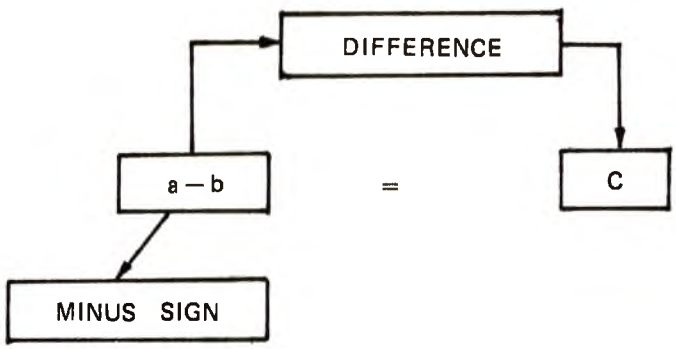
   What do you notice about the answers and the numbers you chose? This is true for all the natural numbers.

   So: $a - o = a$

SUMMARY OF SUBTRACTION

We have just learnt another important operation.

We found that this operation is used when we are taking out smaller groups from larger groups. It is also used to find the difference between the amounts in two group. In other words to compare groups. We learnt to handle subtractions of up to three digit numbers. Remember that larger numbers are handled following exactly the same pattern. We learnt to handle chain subtractions. We also found a way of checking our answers to see if they are correct by adding the difference to the smaller number.



- $a - b \neq b - a$
- If $a - b = c$ then $c + b = a$
- $a - b - c = a - (b + c)$
- $a - o = a$

CONSOLIDATION EXERCISE 5

1. Let us find the differences between these numbers:

   a) 1 408 and 1 301 c) 6 427 and 91

   b) 135 701 and 2 532 d) 70 000 and 40

2. Without writing let us read out the differences between these numbers:

   a) 300 and 100 c) 20 and 10

   b) 5 000 and 2 000 d) 1 000 and 100

   $11 - a = b$

3. Let us find the value of **b** when a is equal to:

   a) 5 b) 3 c) 7

   d) Let us prove our answers:

   - Let us solve these problems. Remember to follow the steps for problem solving and to use your own ideas.

4. On a small livestock farm there were 46 goats. 46 of them were sold. How many were left?
5. Out of 75 dollars a housewife spent 67 dollars for groceries. How much money was left?
6. A woman withdraw 240 dollars from her account at NCB. If she had 500 dollars at first. How much was her balance?
7. Theophillus Albert Marryshow died in the year 1958. How many years have passed since his death?
8. Fedon's rebellion took place in Grenada in March 1795.
   a) How many years ago was that?
   b) How many years had passed before the peoples revolution in March 1979?
9. A factory usually produces 5 000 tins of juice per day. Because of load electricity shortage due to load shedding; only 2 050 tins were produced. By how many tins did they fall short of their usual production?
10. As a task a community brigade decided to lay down 124 inverts. They had already laid down 57. How many more do they need to lay down in order to complete their task?
11. Solution of student's inmediate problems related to this and previous topics and operations

TRANSITION

In problem number 8, the subtraction statement should have looked like this:

$$25 - 5 - 5 - 5 - 5 - 5$$

What is special about this kind of subtraction? This kind of subtraction can be handled using a different operation. We are going to learn more about this new operation in the next unit.

UNIT 6

DIVISION

Picture discussion

INTRODUCTION

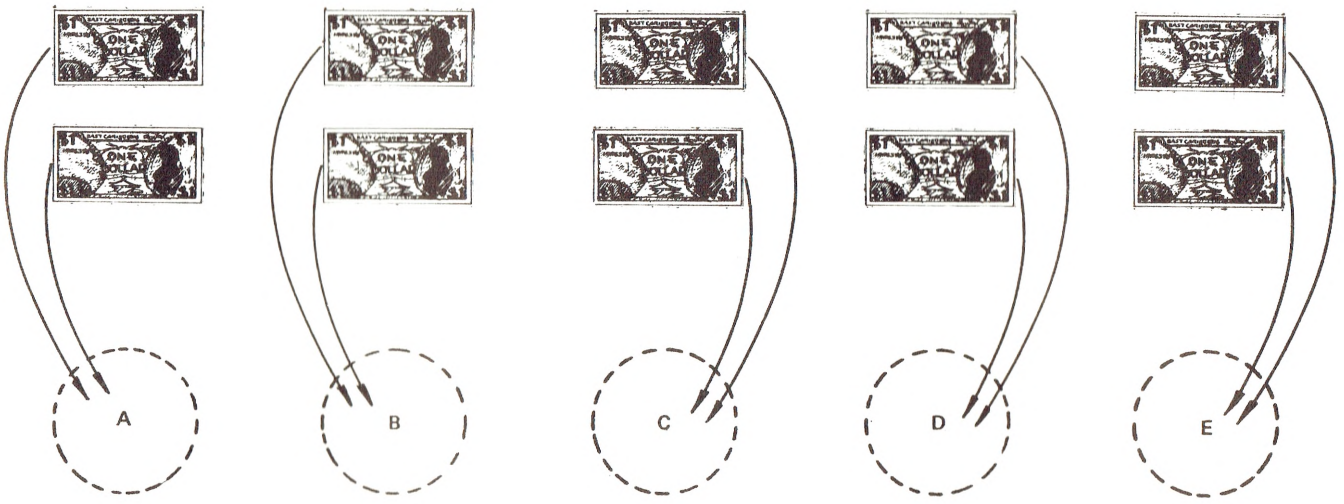
In the last problem of Unit 5 we found that some chain subtraction are done by subtracting the same number each time. Whenever we do this we are actually breaking up the large group into smaller groups. We can say that we are dividing the large group into smaller but equal groups. In this unit we are going to learn about this, using a new operation.

Example 1

A man decided to share 10 dollars equally among his children. If he gave 2 dollars to each child, how many children would get?

Student's approach

Let us use these drawings to help:



Answer _____ children.

Notice that we can do this using a chain subtraction in the statement: 10 - 2 - 2 - 2 - 2 - 2 taking out 2 dollars each time until all the money is finished. To find the number of children we simply count the number of times we were able to take off 2 dollars. Which in this case is 5.

We can use a new operation to get our answer. Let us read and write the statements for what we have done.

Using words and numbers:

10 divided by 2 gives 5

_____

_____

The word divide means to break up. When we say 10 divide by 2 we mean that 10 is to be broken into group of 2.

Using numbers and signs:

$10 \div 5 = 2$

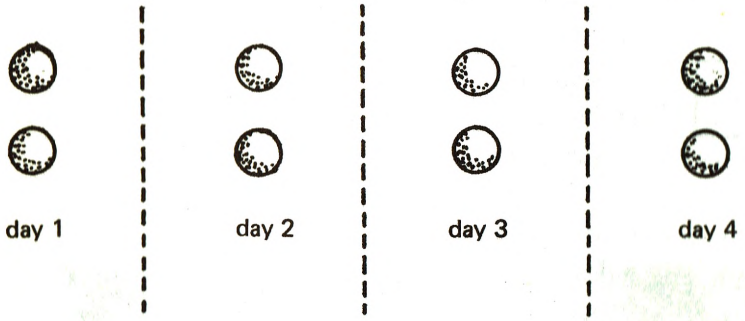
The sign ÷ means divided by. It is called the division sign, let us practice it . . . . . .

Example 2

Out of 8 balls of cocoa a housewife decided to use 2 each day. How many days would the stock last?

Student's approach

Let us use drawings to help.



Statements:

Using numbers and words _____

Using numbers and sign _____

Answer: _____ days.

We can do this as a subtraction by seeing how many times we can get groups of 2 from the number 8.

8		
−2	——— once	. . . . . day 1
6		
−2	——— twice	. . . . . day 2
4		
−2	——— three times	. . . . . day 3
2		
−2	——— four times	. . . . . day 4
0		

$8 \div 2 = 4$

Exercise A

Let us find the answers of these:

a) $4 \div 2$ c) $6 \div 2$ e) $8 \div 2$

b) $6 \div 3$ d) $8 \div 4$ f) $10 \div 5$

Let us learn some words about division:

$$6 \div 3 = 2$$

We have **divided** 6 by 3
let us read and write the word:

divided _____, _____,

We have done a **division**

Let us read and write.

division _____ , _____ ,

Dividing is breaking up a number into equal parts.

dividing _____ , _____ ,

The number 6 is usually called the **dividend.**

dividend _____ , _____ ,

3 is usually called the **divisor.**

divisor _____ , _____ ,

2 is usually called the **quotient.**

quotient _____ , _____ ,

USING MULTIPLICATION TABLES IN DIVISION

Let us look at these two statements:

$8 \div 4 = 2$
$2 \times 4 = 8$

What do you notice about the numbers used in both statements?

The dividend and the product both the same number **8.** Why do you think this is so?

Here are two more statements:

$6 \div 2 = \_\_$
$3 \times 2 = 6$

Let us put in the quotient in the box, by looking at the multiplication statement.

It is now easier for us to divide, because instead of doing a chain subtraction we can simply look at the multiplication tables to get the quotients.

Exercise B

Let us fill in the correct quotients by looking at the multiplication statements.

a) $12 \div 3 =$ $3 \times 4 = 12$

b) $16 \div 2 =$ $2 \times 8 = 16$

c) $14 \div 7 =$ $7 \times 2 = 14$

d) $24 \div 6 =$ $6 \times 4 = 24$

e) $64 \div 8 =$ $8 \times 8 = 64$

We can now turn to the multiplication tables and use them in the same way to get our quotients:

x	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Exercise C

Fill in the quotients $18 \div 6$.

6 multiplied by what number, gives 18?

Dividends of 3 digits - greater than 144 -

no regrouping, no decomposition

The agro industry unit has 633 cartoons of juice to distribute. There are 3 trucks to carry them. If each truck has to carry the same amount, how many cartoons should each take?

Student's approach

Let us write down the number in parts.

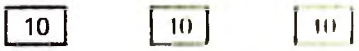
$633 =$ 600 + 30 + 3

$100 + 100 + 100 + 100 + 100 + 100$ | $10 + 10 + 10$ | $1 + 1 + 1$

We can share the hundreds first

each one gets *200*

Then sharing tens



each gets *10*

Then sharing units

each gets *1*

Each one gets 200 + 10 + 1 = 211

What we really did was to divide hundreds by 3, tens by 3, and lastly units by 3.
Let us set down the division and work it out.

Steps

- h h
- 6 — 3 = 2 we have shared up the hundreds
  so we take out the amount we shared
  =
  h h
  2 x 3 = 6 we take out 600. We are left
  with 33.
  t t
- 3 — 3 = 1 ..... we take off what we
  shared up t
  shared up = 1 x 3 = 30 we take off 30
  We are left with 3
- u u
- 3 — 3 = 1 x 3 = 3 we take off 3

  We are left with nothing

H	T	U
2	1	1
6	3	3
— 6	0	0
	3	3
	— 3	0
		3
		— 3
		0

600 + 30 + 3 = 211

Answer: 211 cartoons

Exercise D

Let us try these:

a) 842 — 2

b) 963 — 3

c) 448 — 4

Larger number can be handled in the same way

Try this one: 2 428 — 2

- We can do these a shorter way.

  642 — 2

Steps

h h
6 ÷ 2 = 3
t t
4 ÷ 2 = 2
u u
2 ÷ 2 = 1

	H	T	U
	3	2	1
2	6	4	2

Answer: 321

DIVISION WITH REMAINDERS

Let us divide 5 by 2:

Student's approach

How many remains that we could not divide?

That amount is called the remainder.

Let us read and write the word.

remainder _____, _____,

5 ÷ 2 = 2 with a remainder of 1.

Another way: 5 ÷ 2 = 2 r 1

Let us see what happens when we multiply the quotient by the divisor. 2 X 2 = 4

How would we get back the 5?

We can use this to prove our answers.

Exercise E

Let us work these examples and prove our answers:

a) 9 ÷ 2
b) 7 ÷ 3
c) 11 ÷ 5
d) 13 ÷ 6
e) 129 ÷ 4

DIVISION INVOLVING DECOMPOSITION OF THOUSANDS TO HUNDREDS

1 236 small boxes were to be packed in 3 large crates. How many boxes should be put in each crate?

Division statement: _____

Student's approach

In these cases where the first digit is smaller in face value than the division. We can group the thousand together with the hundreds.

Remember 1 thousand = 10 hundreds.

so together we have 1 200

Let us divide:

	H	T	U
	4	1	2
3		1 236	

Steps

- $1\,200 \div 3 = 400$
- $\overset{t}{3} \div 3 = \overset{t}{1}$
- $\overset{u}{6} \div 3 = \overset{u}{2}$

Answer: _____

Let us practice:

Exercise F

a) $1\,596 \div 3$ c) $1\,644 \div 4$

b) $2\,877 \div 7$ d) $2\,055 \div 5$

DIVISION INVOLVING INTERIOR DECOMPOSITION

2 618 bags of cement had to be divided equally between two trucks. How many bags should each truck get?

DIVISION INVOLVING DECOMPOSITION AND REGROUPING THROUGHOUT

Steps

- $1 \div 3 =$ at this stage not possible
- $1^h = 10^h$ and $10^h + 3^h = 13^h$
- $13^h \div 3 = 4^h$ R 1^h
- $1^h = 10^t$... so putting tens together, $10^t + 1^t = 11^t$
- $11^t \div 3 = 3^t$ R 2^t
- $2^t = 20^u$ so putting units together, $20 + 2 = 22^u$
- $22 \div 3 = 7^u$ R 1^u

$1\,312 \div 3$

	H	T	U	
	4	3	7	R 1
3		1 312		

Let us prove the answer:

437×3 _____ $+ 1 =$

INTERESTING CASES

1. Let us work out these: $6 \div 1 =$

$7 \div 1 =$

$2 \div 1 =$

$24 \div 1 =$

- What do you notice about the quotients and the dividend?
- What do you notice about the divisors?
- What conclusion can you make about dividing by 1?

Now let us look at these:

$$6 \div 0 =$$

$$7 \div 0 =$$

$$12 \div 0 =$$

These may seem odd, and you may think that the answers are still 6, 7, 12. This is not the case, because actually the answers are as follows:

$$6 \div 0 = 0$$

$$7 \div 0 = 0$$

$$12 \div 0 = 0$$

What can you say about dividing any number by zero?

2. Let us work these:

$$60 \div 10 =$$

$$50 \div 10 =$$

$$90 \div 10 =$$

$$80 \div 10 =$$

- What do you notice about the endings of the dividends?
- What do you notice about the divisors?
- What do you notice about the quotients and the dividends?
- What should the answers for these between?

$$100 \div 10 =$$

$$300 \div 10 =$$

$$800 \div 10 =$$

$$1\,000 \div 10 =$$

What conclusion can you make about dividing by 10?

- What do you think the answer to them would be like:

$$3\,000 \div 100 =$$

$$4\,000 \div 100 =$$

$$80\,000 \div 100 =$$

3. Let us fill in the answers for these:

a) $6 \div 1 =$ b) $60 \div 10 =$

c) $600 \div 100 =$ d) $6\,000 \div 1\,000 =$

4. a) $8 \div 1 =$ b) $80 \div 10 =$

c) $800 \div 100 =$ d) $8\,000 \div 1\,000 =$

- What do you notice about the quotients in No. 1?
- What do you notice about those in No. 2? Could you explain this?

5. Let us find the answers for these:

a) $99 \div 9 =$ c) $77 \div 7 =$

b) $88 \div 8 =$ d) $66 \div 6 =$

- What do you notice?
- Let us work these out:

  a) $2 \div 1 =$ b) $1 \div 2 =$

  Could you get a quotient for (b)?

  We can say then that the two quotients are not the same.

  $$2 \div 1 \neq 1 \div 2$$

  2 divided by 1 is not equal to 1 divided by 2.

In a later unit we are going to see how we can divide 1 by 2 and get a quotient. It's just the same thing as dividing 1 bread equally between 2 children.

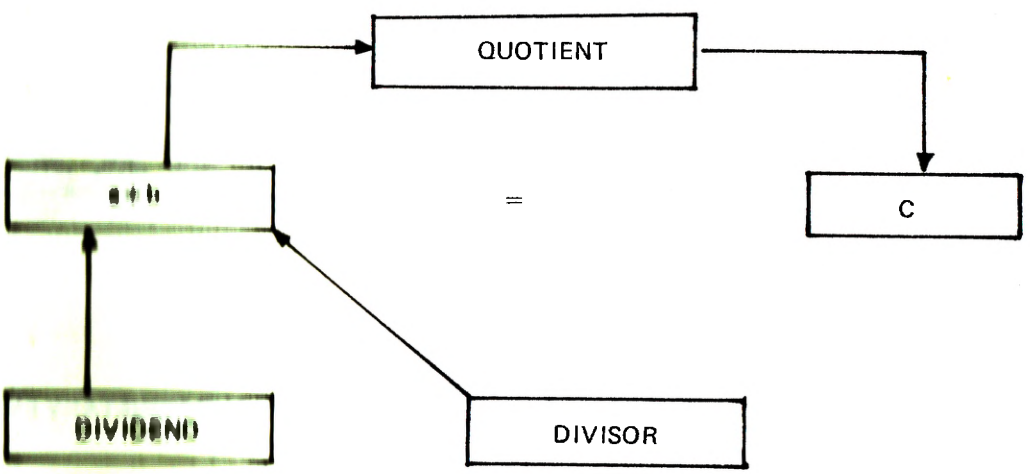
SUMMARY OF DIVISION

We have learnt to handle simple divisions, that is divisions with one digit divisors. At a later stage we are going to learn to deal with larger divisors. In the meantime you should continue to practice dividing whenever you have such problems to work out and also using some of the problems from the supplementary exercises at the back. Remember that dividing at this stage is actually the breaking up of a group or number into smaller, groups. We can safely use divisions in the following cases:

- When sharing equally,
- When trying to find out how many groups of a certain size we can get from a particular amount.

Remember that division is closely linked to subtraction and multiplication.

- The following diagram should help us to remember some of the important things about division.



Also remember:

- If $a \div b = c$, then $c \times b = a$

  $6 \div 2 = 3$ then $3 \times 2 = 6$
- $a \div 1 = a$

  $3 \div 1 = 3$
- $a \div 0 = 0$

  $6 \div 0 = 6$
- $a \div b \neq b \div a$

  $4 \div 2 \neq 2 \div 4$

Consolidation Exercise 6

1. Let us find the quotients of these:

   a) 3 963 ÷ 3 d) 98 125 ÷ 6

   b) 64 082 ÷ 2 e) 7 714 ÷ 7

   c) 13 090 ÷ 8 f) 35 ÷ 5

2. Let us find the values of C in the following statement, when a is equal to:

   a) 5 b) 6 c) 2 d) 10

$$30 \div a = c$$

Let us read and work out these problems.

3. A consignment of milk amounting to 99 bags were to be distributed equally among among the villages of St. Mark's, if there were 11 villages, how many bags should each village get?
4. A similar consignment of 150 bags were sent to Carriacou if there were 10 villages. How many bags should each village get?
5. A carpenter is cutting a 14 lengths of pitch pine. If he wants 7 equal lengths. What should be the length of each piece.
6. As part of a grant 468 bags of fertilizers are to be distributed among 4 farming co-operatives. How many bags should each co-operative receive?

Solution of student's immediate problems based on this and previous topics

UNIT 7

MONEY AND TRANSACTIONS

Picture discussion

INTRODUCTION. STRUCTURE OF OUR MONETARY SYSTEM

We all know about money, because we deal with money everyday in one way or another. In this unit we are going to learn to use symbols and calculations on paper, so that we would be better able to do our transactions, to buy and sell and to cater or budget our spending.

DECIMAL BASED DENOMINATIONS

COINS: 1¢ - 10¢

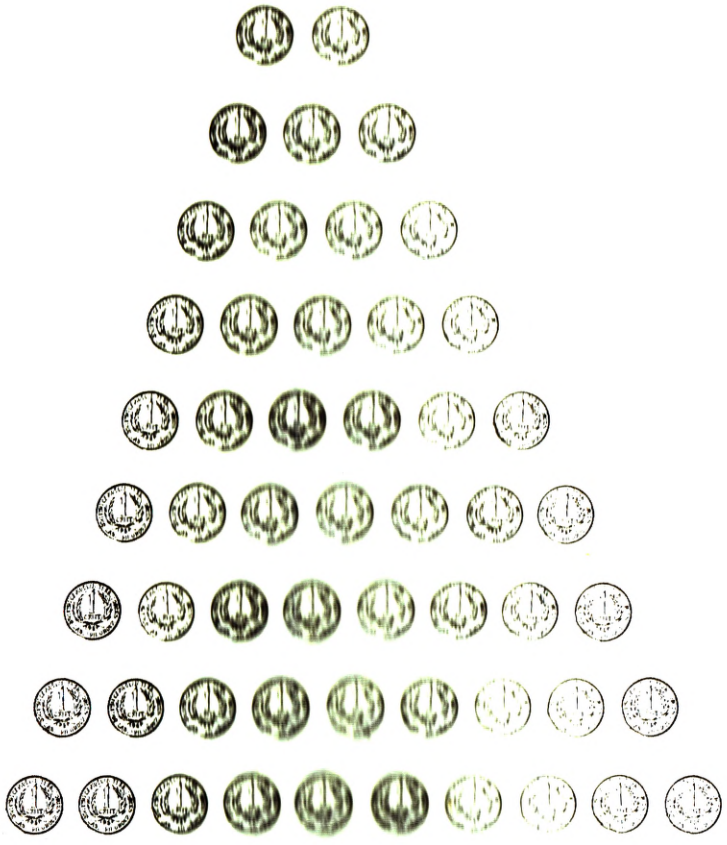
Let us read and write the words.

One cent _____ *hapenny* _____

Let us say and write the symbol 1¢ _____

Exercise A

Let us say the amount and write it using words and symbols.



WORDS	SYMBOLS
two cents	2¢

Let us read and write the words for the name of this coin.

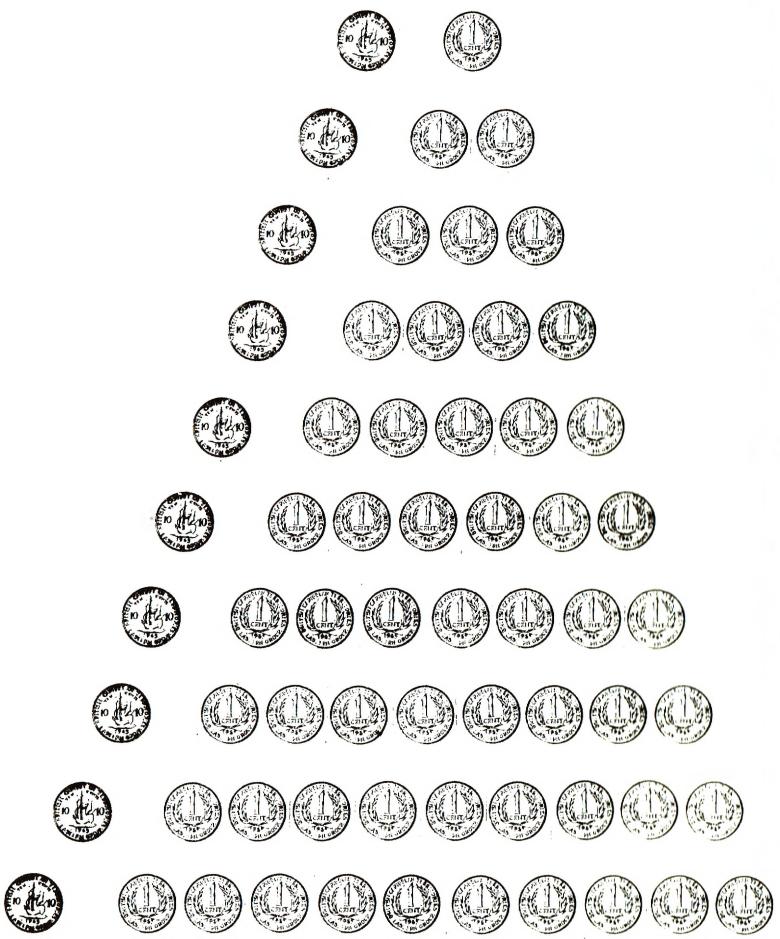
ten cents

Let us write the symbol, 10¢ .

How many 1¢ make up one 10¢?

Exercise B

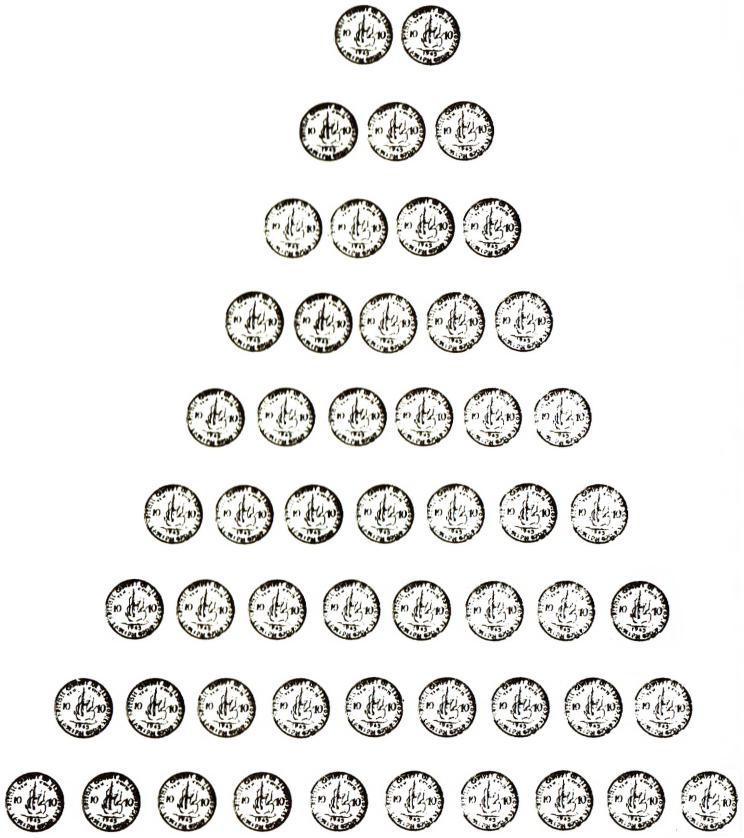
Let us say and write down the amounts, using words and symbols.



WORDS	SYMBOLS
eleven cents	

Exercise C

Now let us give the amounts, words and symbols for these.



WORDS	SYMBOLS
twenty cents	20¢

Let us practice:

Exercise D

Let us arrange the coins to show the following amounts and write down the words and symbols for the amounts.

	WORDS	SYMBOLS
6 ¢		
8 ¢		
10 ¢		
80 ¢		
100 ¢		
50 ¢		
25 ¢		

Some more coins:

Let us write the words:

penny ________, *two cents* ________.

________, *2¢* ________.

Let us write the symbols:

Let us write down the number of pennies that are equal to these amounts:

Let us write the word:

The symbol:

How many 1 ¢ pieces are equal to this 5 ¢ piece?

Make up 5 ¢ using pennies and halfpennies.

The words:

The symbols:

How many 5 ¢ pieces are equal to this 25 ¢ piece?

Exercise E

Let us make up 25 ¢ in as many ways as possible using the other coins, and write down the numbers of each coin that we use.. The first one is done as an example:

25 ¢ =	1 ¢	2 ¢	5 ¢	10 ¢
25 ¢ =	5	–	–	2
25 ¢ =				
25 ¢ =				
25 ¢ =				
25 ¢ =				
25 ¢ =				
25 ¢ =				

Let us fill in the spaces:

The word: – – – – – – – – – – –

The symbol: – – – – – – – – – – –

One 50 ¢ pieces = – – – – – – – – – – – 10 ¢ pieces.

" = – – – – – – – – – – – 5 ¢ pieces

" = – – – – – – – – – – – pennies

" = – – – – – – – – – – – halfpennies

Exercise F

Let us make up 50 ¢ in as many ways as possible using the other coins, and fill in the numbers of each coin that we used. The first one is an example:

	1 ¢	2 ¢	5 ¢	10 ¢	25 ¢
50 ¢ =	–	–	5	2	–
50 ¢ =					
50 ¢ =					
50 ¢ =					
50 ¢ =					
50 ¢ =					

We are now going to learn some bills or bank notes. If we have large amounts of money to carry around, and all we have are coins, it can become very clumsy. We therefore have bank notes or bills to use instead of large quantities of coins.

Give the name of this note.
Let us read and write the words. *one dollar*
let us use the symbols:
The symbol $1.00 ¢ were used earlier.
What do you notice about the two symbols?
The point (.) after the **1** is used here to separate the digits that are **cents.** In this case we have one dollar and no **cents.** However we must remember that the dollar itself has a value of 100 ¢.

We can also say that the point here is used to separate the tens and units from the hundreds.

This point is called a decimal point. We would learn more about it at a later stage.

Exercise G

Let us make up $1,00 using coins in as many ways as possible.

	1 ¢	2 ¢	5 ¢	10 ¢	25 ¢	50 ¢
$1,00 =						
$1,00 =						
$1,00 =						

Let us write the words: *five dollars*
Let us use the symbol $5,00
How many $1,00 notes are equal to a $5,00 note?

Let us write the words: *twenty dollars*
Let us use the symbol: $20,00
How many $5,00 notes are equal to a $20,00 note?

Let us write the words: *one hundred dollars*
Let us use the symbol; $100,00
How many $20,00 are equal to a $100,00 note?

xercise H

1. Let us make up the following amounts using $5,00 and $1,00 notes and put in the number of each note we used.

	$5,00 notes	$1,00 notes
$ 6,00 →		
$ 7,00 →		
$ 8,00 →		
$10,00 →		
$20,00 →		

2. Let us make up $100,00 using $20,00, $5,00 and $1,00 notes.

	$20,00	$5,00 notes	$1,00 notes
$100,00 →			
$100,00 →			
$100,00 →			
$100,00 →			

3. Let us write down the words and symbols for these amounts and use bills and coins to make them up

a) $12,30 g) $122,32

b) $22,55 h) $428,79

c) $26,75 i) $500,50

SIMPLE CALCULATIONS INVOLVING MONEY THE BASIC OPERATIONS

In tackling these problems and in working with money we can handle the numbers in the same that we handled the problems we met before, just remembering that in our answers we must put in the decimal point to separate the tens from hundreds.

1. *Addition*

- Let us read these problems and together work them out. A mother gives her daughter $1,20, and has also $1,00 for every day for school. How much money does she give them each day?

[Student's approach]

Statement:

Answer:

- Travelling from Grenville to Grand Anse a man pays $4,00 from Grenville to St. George's, then $0,80 from St. George's to Grand Anse. How much did he pay for transportation?

[Student's approach]

Statement:

Answer:

[Solution of student's immediate problems]

2. *Involving multiplication*

- What amount should be paid for 4 pounds of fish if one pound cost $2,50?

[Student's approach]

Statement: – – – – – – – – – – – – – – –

Answer: _____

- A man worked for $20,00 per day. How much should he be paid for working a six (6) days'week?

Student's approach

Statement: – – – – – – – – – – – – – – –

Answer: _____

Solution of students immediate problems

3. *Involving subtraction*

- A man bought a pound of jacks for $2,50. He paid the fishmonger with a $5,00 bill. How much change should he get in return?

Student's approach

Statement: – – – – – – – – – – – – – – –

Answer: _____

- A housewife bought some goods in a shop which costed $4,33. She paid with a $5,00 bill. How much change should she get back?

Student's approach

Statement: – – – – – – – – – – – – – – – –

Answer: _____

Solution of student's immediate problems

4. *Involving division-sharing*

- The profits earned by a small vegetable farming co-operative was $550,00. This had to be distributed equally among the members. How much should each member get?

Student's approach

Statement: – – – – – – – – – – – – – – – – –

Answer: _____

- A woman received $20,00 from a friend overseas, to share equally for her 4 children. How much should each child get?

Student's approach

Statement: -

Answer: _____

Solution of student's immediate problems

5. *Shopping bills*

Short discussion

A housewife prepared this list to buy a few food items:

4 pounds *(lbs.)* of flour at 68¢ per pound *(lb.)*

2 pounds *(lbs.)* of sugar at 69¢ per pound *(lb.)*

3 pounds *(lbs.)* of rice at 71¢ per pound *(lb.)*

How much money does she need to pay for all the items?

Student's approach

Steps

- How much was paid for flour? . . . . . 68¢ x 4 =
- How much was paid for sugar? . . . . . 69¢ x 2 =
- How much was paid for rice? . . . . . 71¢ x 3 =

How much altogether? _____

_____

a)
	¢
	68
	x4
	____

b)
	¢
	69
	x2
	____

c)
	¢
	71
	x3
	____

We can set out the bill like this: $ ¢

4 pounds of flour at 68¢ per pound =

2 pounds of sugar at 69¢ per pound =

3 pounds of rice at 71¢ per pound =

Total amount: _____

_____

Let us work out the cost of this shopping list together.

4 pounds of flour at 68¢ per pound

1 pound of salt at 34¢ per pound

2 tins of lard at $3,34¢ per pound

We can follow the same steps as before

Calculation of bills and lists of student's immediate concern

Bills and change

Sometimes after finding the total cost of the items, we want to know how much change we would get from a certain amount of money. We are going to work a few examples like that:

These items were bought:

- 2 tins of coals at $3,00 per tin
- 2 boxes of matches at 15 ¢ per box
- 3 pounds of flour at 68¢ per pound
- 1 tin Glow Spread margarine at $1,87 per tin

How much would the items cost altogether?

How much change should the person get if he paid with a $20,00.

Student's approach

Steps

- To work out the total cost, follow the steps as before.
- To work out the change, subtract the cost from the $20,00.

Solution of cases from student's immediate concern

EVERYDAY BUSINESS. PROBLEMS AND SOLUTIONS

Simple profit and loss

- A furniture maker used $14,00 to buy materials to make a chair. He then sold the chair for $50,00. Did he gain or loose on the deal? How much?

Student's approach

How much did it cost him to make the chair?

Let us call this the cost price or c.p.

How much did he sell it for?

Let us call this the selling price or s.p.

Let us now find the difference.

How do you we know if he gained or lost?

c.p. — — — cost price
b.p. — — — buying price
s.p. — — — selling price

Let us try this example.

A man bought a piglet for $40,00. After rearing it for sometime he sold it for $400,00. How much profit did he make?

	$	¢
s.p.=	———	——
c.p.=	———	——
Profit =	———	——

Other types

A young man decided to cyltivate some cabbages. He spent about $10,00 on seeds and fertilizer. He got about 50 goods heads and sold them at $3,00 each. What was his profit?

Student's approach

Here we know the whole cost of growing the cabbages.

The cost price is therefore $10,00.

We do not know the exact amount he got from sales.

How do you think we could find it?

Statement: _____ _____

The selling price is therefore _____

Let us now find the profit:

Profit: _____

A man bought 5 kids at $40,00 each. After rearing them some time he sold each one at $100,00 each. How much profit did he make?

Student's approach

- In this case we need to work out the cost price.
- Then the total selling price.
- We can then find the profit.

Cases where the person looses

A market vendor bought a bag containing 100 oranges for $20,00. Because the oranges began to spoil she was forced to sell them at 15¢ each. Did she loose or gain? How much?

Student's approach

Cost price = _____

Selling price = _____ X _____ = _____

Difference: = _____

How do we know if she gained or lost?

Another example

Another vendor bought 100 pears for $25,00. She resold them at 40¢ each because they began to soften. Did she loose or gain? How much?

Student's approach

MONEY TRANSFERS

Sometimes we receive money from relatives in other countries. In most cases these countries use different money systems to the Eastern Caribbean Currency (E. C. dollars) that we use. In those other systems the denominations have different values and apperance from our own. That is why we must change or transfer the moneys that we get from abroad to our currency, before we can use it.

For example, one Trinidad and Tobago dollar ($1,00 T.T.) is worth ($1,12 E.C.) This means that for every T.T. dollar we have, we can get $1,12 of our money.

How much should we get for $5,00 T.T.?

This table shows what the money unit of some countries is worth in our currency.

Foreign currencies	E.C. currency
$1,00 Trinidad and Tobago (T.T.)	$1,12
$1,00 Barbados currency (B/dos)	$1,35
$1,00 United States of America (U.S.)	$2,71
$1,00 Canada	$2,31
£1 (one pound) Sterling	$6,58

Note that these values change slightly from day to day.

Exercise

Using the table let us solve these problems:

1. A woman received $5,00 T.T. from her friend in Trinidad. How much should she get when the money is changed to E.C.?
2. How much should you get for $10,00 Barbados currency?
3. A man got £ 6 (6 pounds). How much should he get for it at the bank?

Let us fill in the correct amounts in E.C. currency, that the following foreign represents:

Foreign currency	E.C. currency
$10,00 T.T.	- - - - - - - - - - -
$15,00 Barbados	- - - - - - - - - - -
$20,00 U.S.	- - - - - - - - - - -
$10,00 Canadian	- - - - - - - - - - -
£5	- - - - - - - - - - -

SUMMARY

In this unit we learnt how to use symbols and words to show the money that we handle everyday. We also learned to solve simple basic problems that arise from day to day as we go about our transactions. These problems of course used the same operations

that we dealt with in units 2 through 6. The shopping bills are very important we should use them any time we are about to do shopping and want to plan our spending. We learned how to work out profits or losses on simple transactions. We would learn a little more about this at a later stage. Lastly we dealt with different money values and learned to work out the worth of different amounts of foreign currency in our currency. We can use this whenever we need to work out the value of money we receive. Notice we did not deal with transfering our money into other currency. This involves in most cases a more difficult type of division is required we are going to deal with these in a next stage.

CONSOLIDATION EXERCISE 7

1. A man sold 43 *lbs.* (pounds) of nutmegs at 40¢ per *lb.* and 3 *lbs.* of mace at $1,60 per *lb.* How much money be should get?
2. A shopkeeper bought 3 dozen eggs (36 eggs) for $14,40 he used 6 for himself and sold the rest at 50¢ each. How much profit did he made?
3. How much should this shopping list cost?

   3 tins of milk at $1,25 per tin.

   3 *lbs.* of brown sugar at $0,68¢ per *lb.*

   2 *lbs.* flour at 68¢ per *lb.*

   1 bottle cooking oil at $1,50 per bottle.

   1 tin lard at $3,34 per tin.

   and 1 tin glow spread margarine at $1.87 per tin.

4. A woman joined a **soo-soo** in which there were 12 **hands.** She has to pay $10,00 each month. What should be the amount of her **hand?**
5. At the end of November 1980, a man's saving at NCB was $540,00. He then withdraw $300,00 for christmas spending. How much did he have left at the bank?
6. The same man shared $100,00 equally among his 4 children. How much should each child get?
7. A butcher bought a cow for $1 080,00. After selling the beef at the market he had made $3 000,00. What profit did he make?
8. A woman received $25,00 U.S. from her son in America. How much should she get for it after changing it to E.C. currency?

UNIT 8

LOOKING FORWARD

LOOKING FORWARD TO FRACTIONS

Picture discussion

If we were to share this loaf equally among 2 children, how much would each child get?
Let us read and write the word:

half _____

Here we have 1 loaf divided by 2.

$1 \div 2$

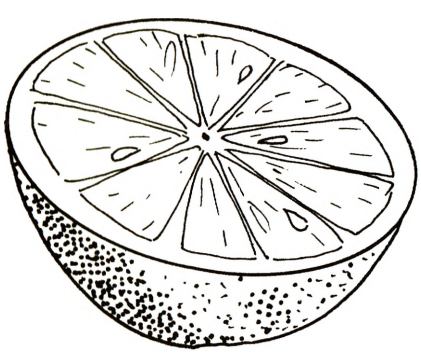
We can write a half using numbers and signs:

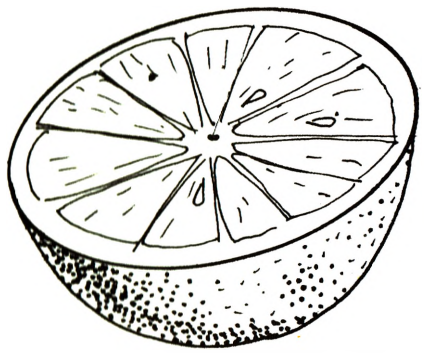
$\frac{1}{2}$ _____

- $\frac{1}{2}$ is part or a *fraction* of the whole loaf. Let us read and write the word.

fraction _____

Let us write the fraction for each piece of orange.

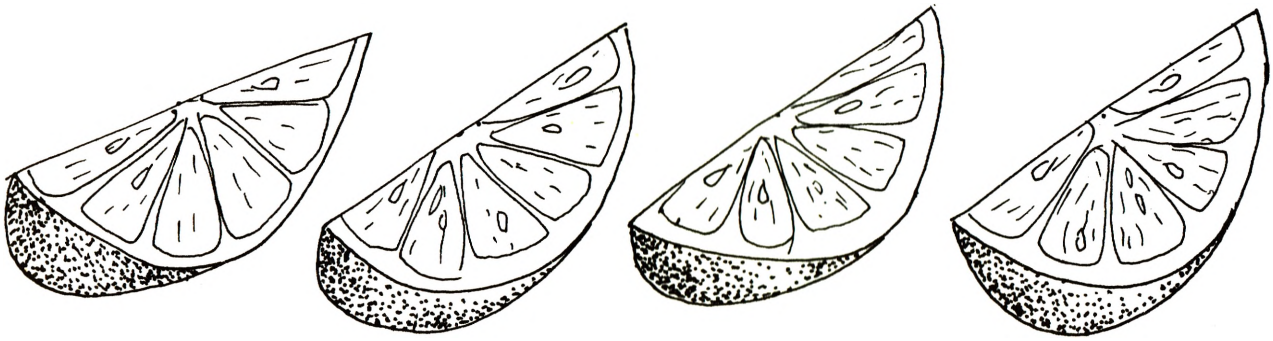




Words: _____ _____

Symbols: _____ _____

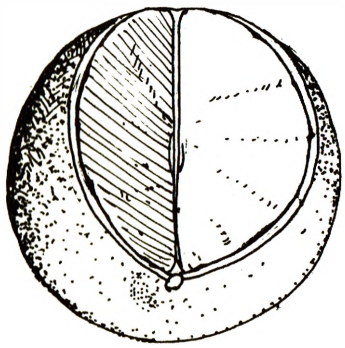
Now we divide this orange into 4 equal parts.



How is each part called?

Let us read and write the word.

Quarter _____



Here we divided 1 orange into 4 equal parts = $1 \div 4$. We can write the fraction using numbers and signs.

$\frac{1}{4}$ _____

Let us put 3 of these quarters together.

What fractions do we have now?

Let us read and write:

three quarters _____

$\frac{3}{4}$, _____

Words: _____

Symbols: _____

- Let us share $1,00 equally among two children. How much should each child get?

What fraction of the dollar is that?

If the same amount is shared equally among 4 children, how much would each get?

What fraction of the dollar is that?

Let us put the two quarters together again.

What amount do we have now?

What fraction of the dollar?

- What do you notice about two quarters ($\frac{2}{4}$) and half ($\frac{1}{2}$) of the dollar?

  Now let us put two halves together.

  How much do we have now?

- What can you say about these amounts

  two halves ($\frac{2}{2}$) and one dollar ($1)?

  Fill in $\frac{1}{2} + \frac{1}{2} =$ _____

  Let us put the 4 quarters together.

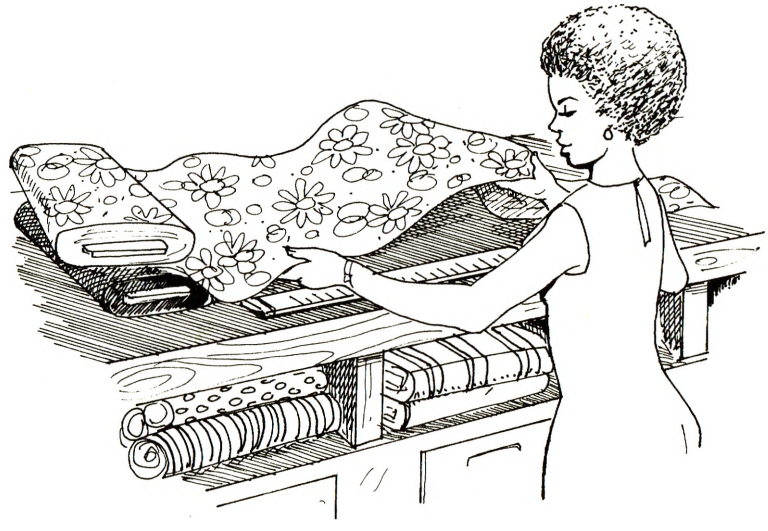
  What amount?

- Fill in $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} =$ _____

  $\frac{4}{4} =$ _____

What do you notice about these: $\frac{2}{2}$, $\frac{4}{4}$

LOOKING FORWARD TO MEASUREMENT



Very often we use statements like these:

- Sandra needs 2 yards of cloth to make her dress.
- Three yards of table cloth is enough to cover the table.
- Our neighbours live only 500 yards away from our house.

The yard like other units of measurement is a useful unit for measuring length.

Let us read and write the word and its **abreviation:**

yard _____, *yd* _____

Let us estimate and then measure the length (roughly) of some objects and write down one findings.

Item	Estimated length	Actual length

—Discussion on the use and application of the yard of cloth measurements.

Sometimes we need to find the lengths of items that are shorter than a yard. We use another unit of measurement.

—Presentation of the foot length.

Let us read and write the words and abbreviation:

foot _____ *ft.* _____

feet _____ *ft.* _____

Let us estimate and measure the lengths and widths of some items using feet. And write down our findings.

Item	Estimated length	Actual length

- How many feet are equal to the yard length?

Let us fill in the spaces:

- – – – – – – – – – *ft.* = 1 *yd.*
- How many feet would be equal to two yards?

Discussion on the use and application of the foot.

Some lengths and widths are too small to be measured with the foot length. For these we can use a smaller unit, give an example of a small length or breadth that cannot be measured in feet.

—Presentation of the inch length.

Let us read and write the words abbreviations; and symbols.

inch _____ *in* _____

inches _____ *ins* _____

Let us estimate and measure some items using inches, and write down our findings.

Items	Estimated length	Actual length

- What is the length of the **foot length** in inches? – – – – – – – – – –.
- What is the length of the **yard** in inches? – – – – – – – – – – – –.

Let us fill in the spaces:

1 *ft.* = – – – – – – – – *ins.*

1 *yd.* = – – – – – – – – *ins.*

How many inches would be equal to 2 *ft.?*
How many inches would be equal to 2 *yd.?*

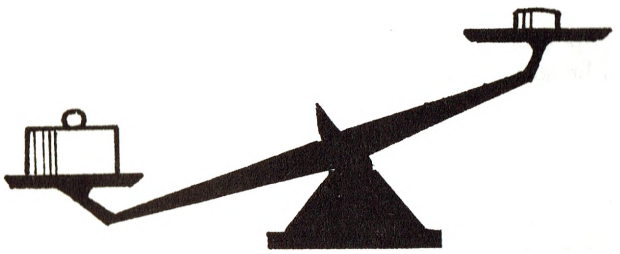
Let us multiply to find out.

- Let us measure some items using *yd. ft.* and *ins.*

Items	Length

LOOKING FORWARD TO WEIGHT

Picture discussion



Presentation of standard unit pound

pound _____ *lb* _____

pounds _____ *lbs* _____

- Discussion around the use and application of the pound, and handling of a pound weight of some item.

  Sometimes we want to measure weights that are less than a pound. For these we use smaller weigths.

- Presentation of the ounce weight

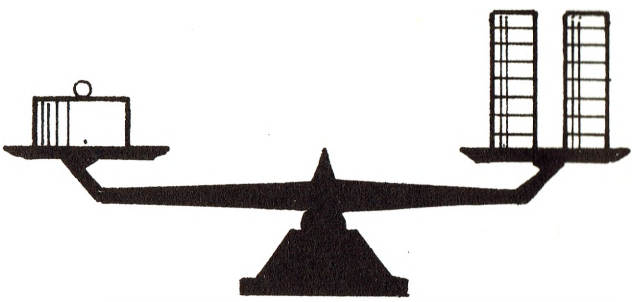
  Let us read and write the words and abreviations:

ounce _____ *oz* _____

ounces _____ *ozs* _____

  —Discussion on use and application of ounce weight and relation between the ounce and pound.

- Handling of the ounce weight.



Let us fill in the blanks:

_ _ _ _ _ _ _ *ozs.* have the same weight as 1 *lb.?*

How many *ozs* then would be equal in weight as 3 *lbs.?*
How many would be equal in weight to
How many would be equal in weight to $\frac{1}{4}$ *lb.?*

A woman bought $\frac{1}{2}$ *lb.* cheese for supper for her small family. How many *ozs.* did she get?

Natural Science

UNIT 1

THE WORLD WE LIVE IN

THE EARTH IN THE WORLD

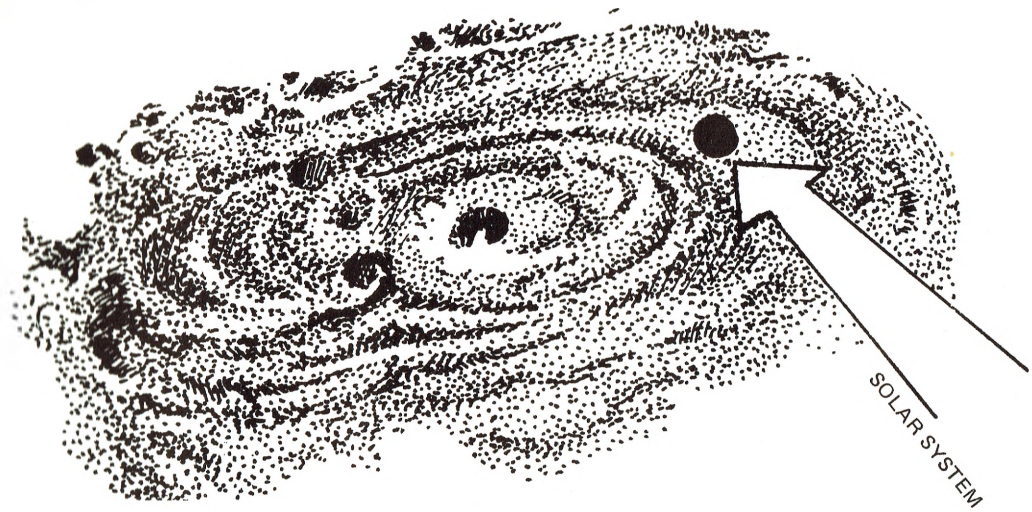
What is our planet Earth? What more is there beyond its boundaries? Is the space that surrounds the Earth very large?

Today, science can answer these questions very easily:

The Earth is one of the planets of the **Solar System.** The Solar System is part of a larger system called the universe. In the universe, there are many millions of stars and smaller Solar Systems.

This is a fairly simple way of describing it, but it is much more complicated.

Let us look at the following figure, which will give an idea of how the universe is made up.



But man did not get this knowledge about the earth and the world by chance, out of the blue. It took many centuries of careful observation of nature, many long hours of deep thought; and a fierce battle between knowledge and superstition, to reach this understanding of the world.

In ancient times, it was thought that the Earth remained in one spot always. That it was situated in the centre of the world and that the Sun, Moon, stars and other planets formed a huge shell above the Earth, which moved around and controlled it.

This understanding of the world existed for fourteen centuries, until the middle of the fifteenth century. At that time a brillant polish astronomer Nicolas Copernicus put forward a new explanation.

He lived from 1473-1543 and discovered that the Earth and the rest of the planets **rotated** around the Sun.

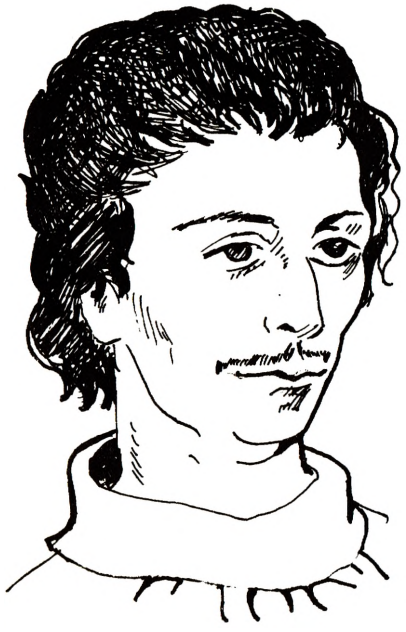
This was new and opposite to the old understanding that people were accustomed to. So that when Copernicus first put forward this explanation, most people did not believe him, but he was correct.

Nicolas Copernicus, Polish astronomer (1473-1543)

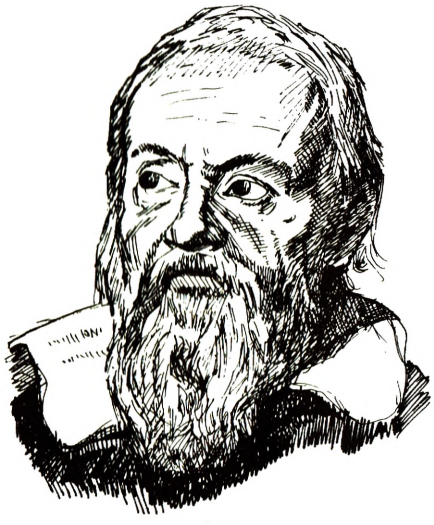
He was correct because he had observed the movements carefully and later discoveries in science proved what he had said.

Other astronomers like Giordano Bruno and Galileo Galeili who lived after Copernicus further supported his ideas and helped make the new explanation clearer and clearer so people understood more and more. This led to a revolution or great change in the understanding of the Earth and the universe.

The universe includes everything that exists. Millions of stars can be found in the universe. In order to explore and get to know the universe many instruments are used especially the **telescope.**



Giordano Bruno, Italian philosopher (1548-1600).



Galileo Galilei, Italian wise (1564-1642).

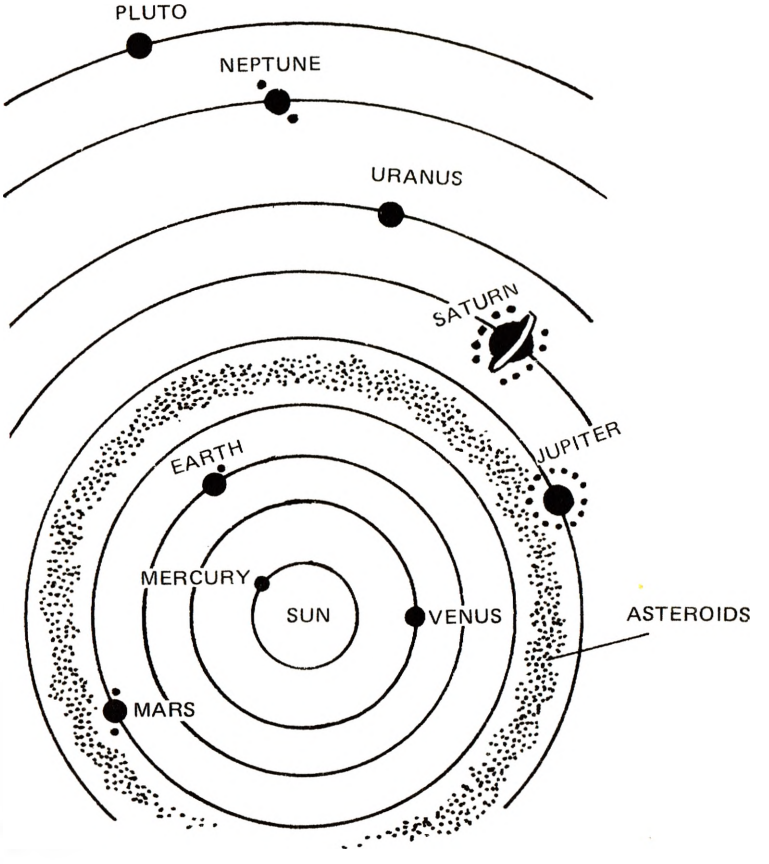
With the use of the most advanced telescopes astronomers have taken pictures of the billion of stars and planets that belong to the universe.

Exercises

1. Explain briefly what people's understanding of the universe in ancient times was.
2. Explain briefly what is the true nature of the universe.
3. Give the name of two scientists who contributed to the correct understanding of the universe.
4. What kind of scientists were they?
5. Do you know of any present day scientists like the ones mentioned above.

The Solar System

The Solar System is made up of the sun which is a very large star, and many other stars and planets which accompany it in their movement through space.



The Solar System.

The following make up the Solar System:

—The *Sun*, centre of the system

—The nine planets that are known

—Satellites that travel around some of these planets

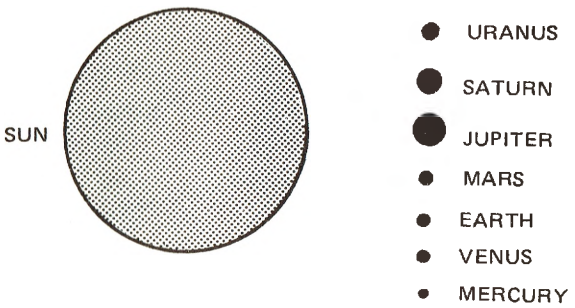
—Thousands of small stars and planets

—Comets

THE SUN

The Sun is an extremely large **illuminated** body. On its surface the temperature reaches up to 6 000° centrigrade. Remember that 100 centigrade is the temperature of boiling water. On the inside the temperature passes 15 000 000. From it, we receive the light and heat necessary for life on our planet.

The Sun is a small star compared to some other stars. On the other hand it is very large when compared to our planet, and other planets in the system.



The sun is 93 000 000 miles away from the earth, about 400 times more than the distance between the Moon and the Earth.

The Sun, like the other stars, moves continuously and in a complex way. It rotates about its axis and at the same time changes along with all the other stars that form part of its system, until it reaches a certain point.

Exercises:

—Draw a diagram showing the Solar System.

THE EARTH. ITS FORM

The Earth is the third planet in order of distance from the Sun. It does not have its own light, but reflects some of the light it receives from the Sun. It is slightly flattened at the poles and bulges at the equator. The Earth is spherical in phase. Look at the shape of the Earth carefully in the following figure:

Form of the Earth.

There are many proofs to show that the Earth is a sphere, but the surest ones are the journeys around the Earth and pictures from space flights.

Yuri Gagarin was the first to see the Earth from space. With Gagarin's great achievement, a new era was born, it is called the Space Age.

Gagarin, the first astronaut of the world wrote after his flight, about the Earth, the great distances, the Sun and the stars:

Yuri A. Gagarin, the first astronaut of the world (1934-1968).

From that height the side of the earth that has daylight can be seen very well. You can distinguish the coasts from the continents the islands, the great rivers, the great dams and the folds of the land. When passing above our Earth one can clearly see great squares of land, distinguish between cultivated land and pastures.

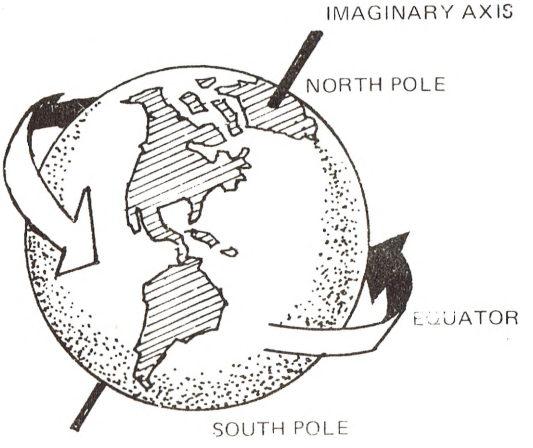
From the satel ship, I cannot see as good as from a plane but nevertheless good enough. During the flight, it was clear to me, for the first time with my own eyes, the spherical form the Earth.

MOVEMENTS OF THE EARTH

Our planet Earth has two main movements which are:

a) the rotation arounds its imaginary axis, about every 24 hours.

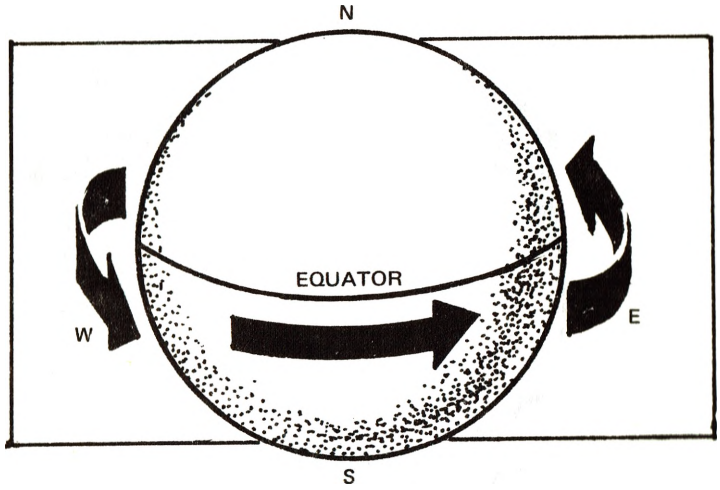
b) It's movement around the sun in every 365 days.



Rotation of the Earth.

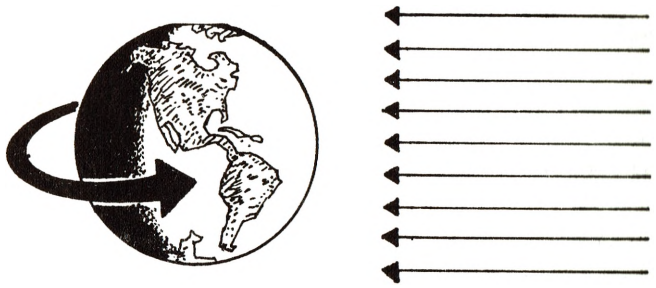
Both movements done by the Earth is like what happens when a top spins on its axis but at the same time travels along the floor.

The Earth rotates from West to East. It is because of this movement of rotation that we see the Sun **rising** in the East and **setting** in the West.



The Earth spins from West to East.

Every 24 hours the Earth completes a rotation around its axis. This period of time is called a day. This rotation causes day and night.



The rotation causes days and nights.

How does day and night occur?
In order to understand this easier let us do the following experiment.

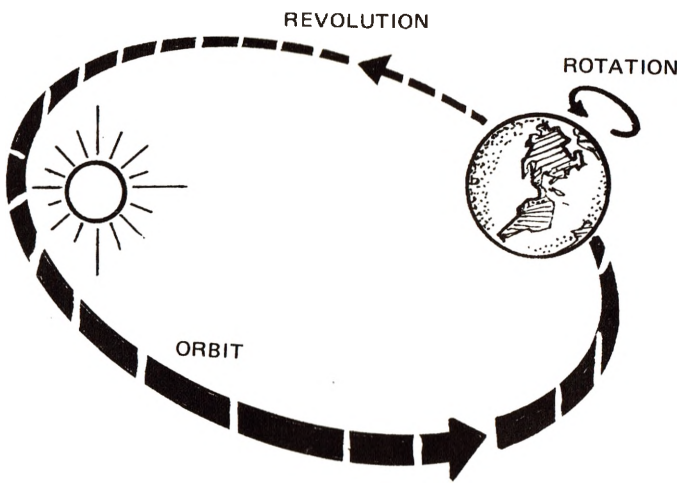
How day and night occurs.

Let us take a ball (orange or any other spherical object can be used) and mark it on the surface. Push a wire straight through it from pole to pole so that the object can spin on the wire. Put object the directly in front of the full beam of a light a candle or flash light can be used, as shown in the figure.

Rotate the object on the wire and observe that half is always illuminated or lighted up. But as it spins, it is not always the same half that is lighted up, nor always dark.

In the same way, when the Earth makes a complete **rotation** in 24 hours, every part passes at some time through a period of light, **day**; and a period of darkness, **night.**

Observe this diagram carefully:



Movements of the Earth.

The Earth, at the same time that is rotates on its axis, revolves around the Sun. This movement is called **revolution** of the Earth.

Our planet Earth take 365 days and 6 hours to complete one **revolution** around the Sun. This period of time is called one **year.**

The year has 365 days. The extra six hours are added up every four years and make up one day. The fourth year therefore has one more day which gives it 366 days. This year is called a **leap year** during which February has one more day making it 29 instead of the usual 28 days.

Do you know a short poem that describes this?

30 days has September,
April, June and November,
All the rest have thirty-one, (31)
Excepting February alone
Which has but twenty-eight (28) days clear
And twenty-nine (29) in each Leap Year.

This is a useful poem to remember as it can be recalled when you need to work out the date.

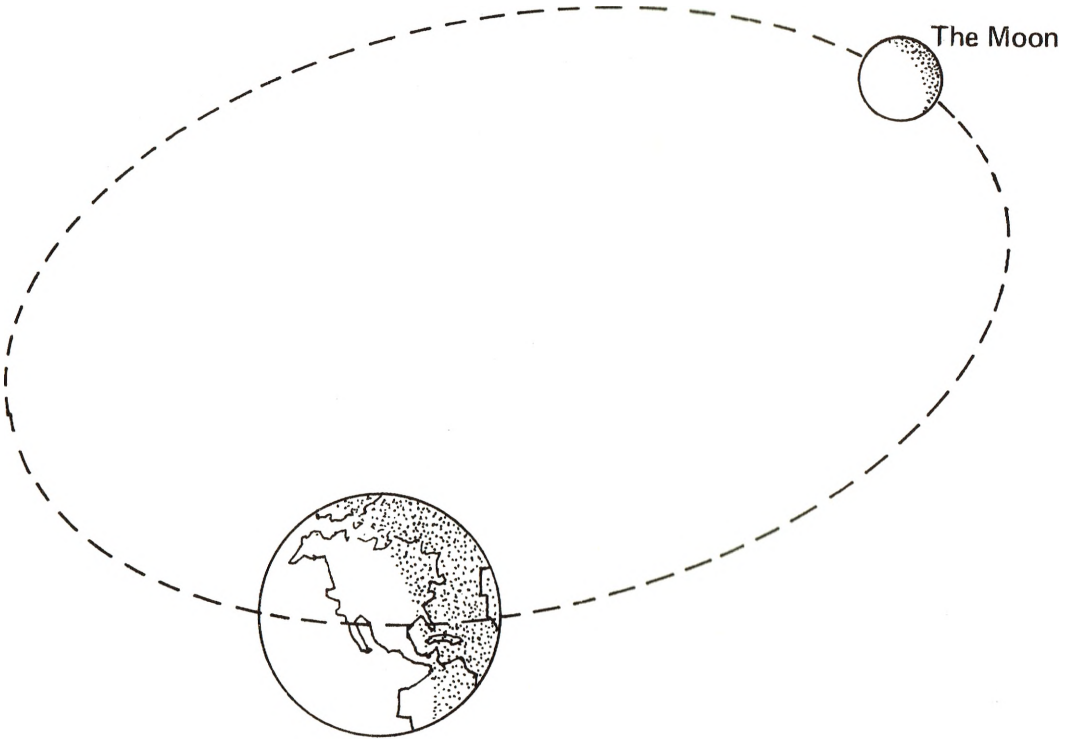
Exercises

1. There are many proofs to show that the Earth is spherical. Explain which is the surest proof of this fact.
2. The Earth has two movements. Say which one causes day and night, which causes the year.

3. Use diagrams to show the following:
   a) Rotation of the Earth
   b) Revolution of the Earth
4. Say how much time the Earth takes to rotate around its axis and make a complete revolution around the Sun.

THE MOON

The Moon is the only satellite of the Earth. That is, just as the Earth revolves around the Sun, so too the Moon revolves around the Earth.



The Moon, Earth satellite, revolving around the Earth.

It is much nearer to our planet, only 239 000 miles away. It has been studied by men for many centuries, because it is very easy to see.

The Moon does not have it own light, but it looks bright because it reflects some of the light that is receives from the Sun. Based on what is known about the Moon as far, there is no air or water on it. There is no life on the Moon.

The Moon has two main movements. It rotates about its axis and revolves around the Earth. Both movements take the same time 27 days and 7 hours. For this reason we are only able to see, from Earth, the same part of the Moon.

Until now, we do not know whether the Moon has effects on our planet such as the weather, the success of our crop and our health. On the other hand it affects the rise and fall of the tides.

Exercises

What is the distance between the Moon and the Earth?

Why does the Moon appear to be the same size as the Sun?

WATER AND AIR

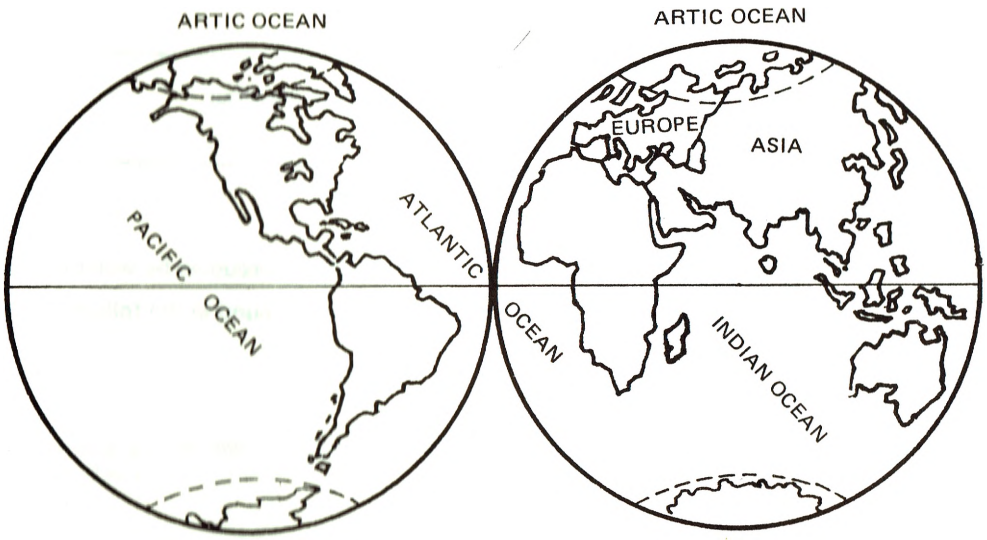
DISTRIBUTION OF LAND AND WATER ON THE EARTH

If we observe the Earth from very high up in space, we will see that surface is not smooth and even.

Some parts of the surface are high while others have great depressions or valleys.

The great depressions are covered with water and form the ocean and seas. The high areas from the continents and islands.

About three quarters to the total surface of the Earth is covered by the oceans and seas.



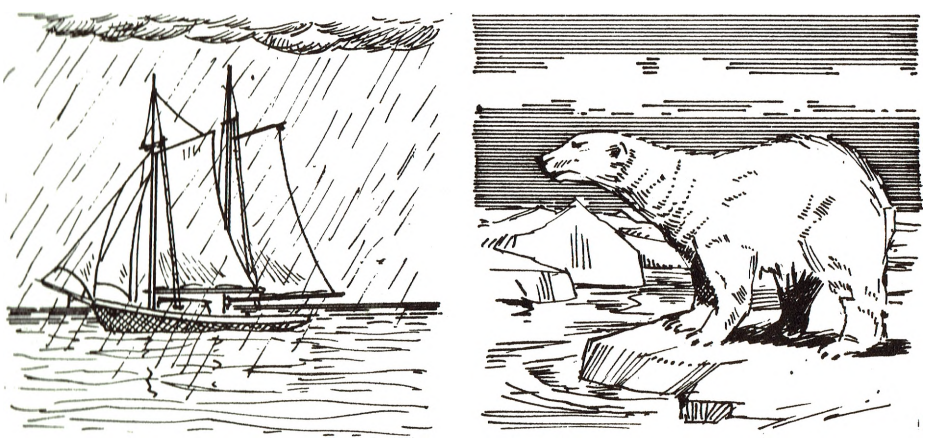
THE WATER ON EARTH

The water on Earth can be found in three states or forms:

a) liquid Ex. rivers, sea

b) solid Ex. ice

c) gas Ex. vapor



(a) Water as liquid (b) Water as solid, and gas.

State	Where found
Liquid	Oceans, seas, lakes, lagoons, rivers, dams Below the surface of the Earth you can find under-ground water, Ex. in wells and springs Plants and animals also have water in their bodies
Solid (snow and ice)	In very cold regions of the Earth especially at the North and South Poles in the form of ice and snow At the top of very high mountains in the form of snow
Gas (water vapour)	In the air as water-vapour

Exercises

1. Draw a diagram to show the surface of the Earth occupied by water and land.
2. In what places on the planet Earth can water be found in the following forms:
   a) liquid
   b) solid
   c) gaseous

WATER IN THE AIR

In the air, there is water in the gaseous state. Water in the form of a gas is called water vapour or steam.

Water vapour is colourless, and is clear. For this reason we are not able to show its presence in the air in a concrete way like we can point to ice, as the solid form of water.

We can prove that there is water in the air in the following experiment:

Put water with ice in a glass or other small container.

Allow some time to pass. Observe that the outside of the glass becomes covered with tiny droplets of water.

This happens when air gets in contact with the cold glass, the water-vapour in the atmosphere looses heat and is changed to liquid water.

The process by which water-vapour changes to water is called **condensation.**

THE FORMATION OF CLOUDS AND RAIN: THE WATER CYCLE IN NATURE

In the previous experiment we saw that water vapour in the air condensed when it comes in contact with the surface of a cold container.

How are the clouds and rain formed? When water is heated as soon as it begins to boil, a kind of small, white smoke or cloud can be seen rising out the water in the container. This happens as the water evaporates.

Evaporations is the process by which liquid water is turned to its gaseous state water-vapour or steam.

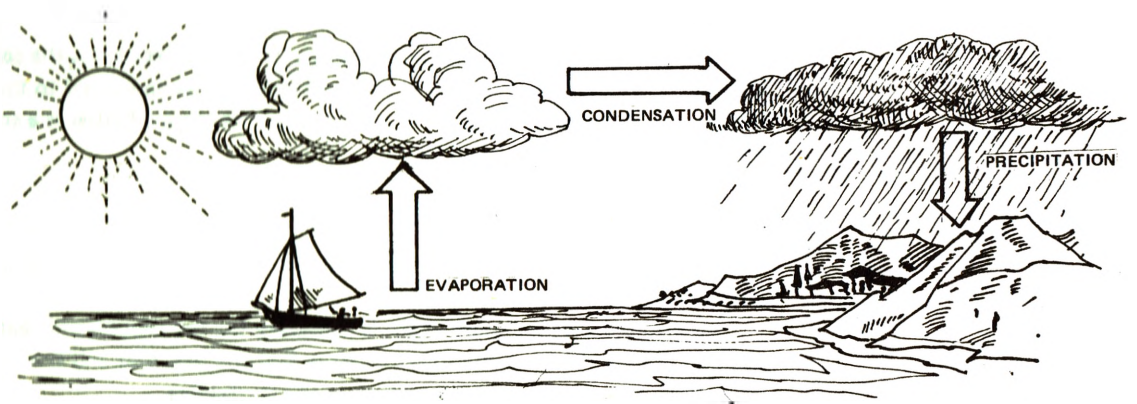
When the water-vapour which escapes from the container reaches the air that surrounds it, it is changed to small droplets of water. The water-vapour condenses.

If a plate is held over the water-vapour as it leaves the boiling water, you can observe the tiny droplets of water that are formed on the plate. These droplets become heavier and heavier until they fall.

Evaporation and condensation cause the formation of clouds and rain.

In this same way clouds and rain are formed. The heat of the Sun changes some of the water on the earth's surface to water-vapour by **evaporation.**

The water-vapour goes high up into the atmosphere by the movements of air until they are trapped by colder layers of air. When this happens they condense into very tiny droplets of water which form clouds. These droplets of water that make up the clouds get bigger and bigger all the time until their weight cause them to fall as rain.



Observe this figure carefully.

The series of changes that water goes through on our planet Earth is repeated at all times, it never stops. It is called the **water cycle.**

The instrument used to measure the amount of rainfall is called a **rain gauge.**

Exercises

1. Explain how you can prove that there is water-vapour in the air.
2. Explain briefly how rain and clouds are formed.
3. Use a diagram to show the water cycle in nature.

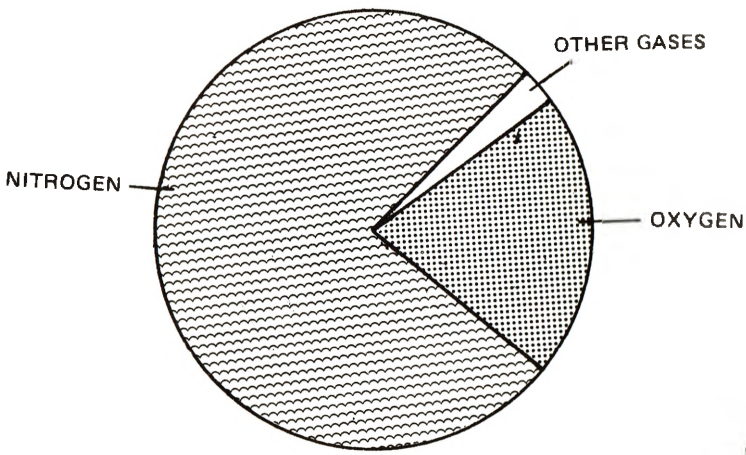
THE AIR AROUND THE EARTH: THE ATMOSPHERE

The air that surrounds the Earth is called the **atmosphere.**

Only recently it was discovered that the atmosphere extends for several thousand miles from the Earth.

COMPOSITION OF AIR

The air in the atmosphere is made up a mixture of various gases. The following figure shows the composition of air at sea level.



Gases
Nitrogen
Oxygen
Carbon-dioxide
Water-vapour
Other gases

The gas nitrogen makes up three quarter of the air, oxygen is the second largest amount. The other gases have very small amounts when compared to these two. Usually the mixture of the gases in air is always the same whether is a small container, a room or outside in the open air.

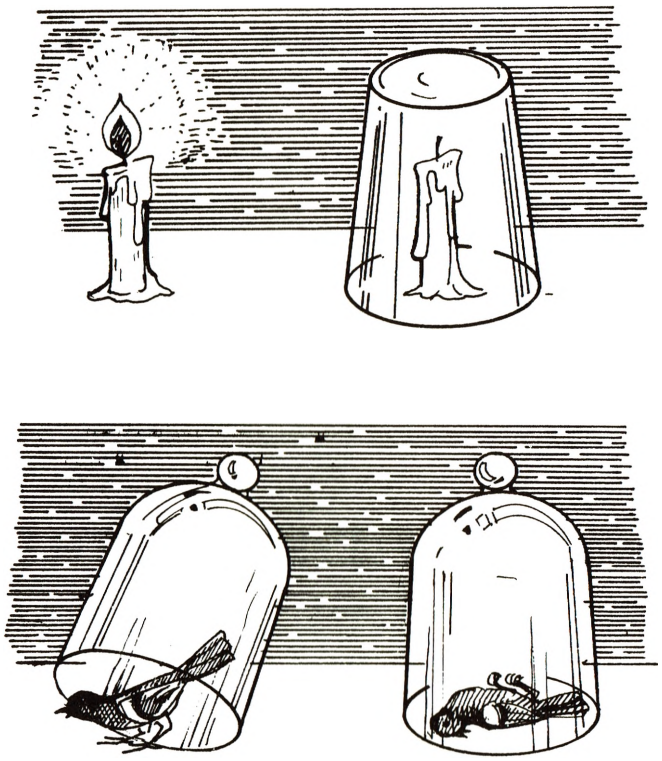
IMPORTANCE OF AIR FOR LIFE

There can be no life on earth without air. Many vital processes of life need air for them to take place.

Oxygen, one of the gases in air, is necessary for the process of breathing, and allows burning to take place. In the figure observe that the bird dies and the candle goes out, when they have used up all the oxygen in the containers.

Nitrogen and Carbon-Dioxide are also important for life. We will learn more about this in our later studies of plants and animals.

The water-vapour in the atmosphere plays a very important part in the life of our planet. It helps control the amount of heat in the atmosphere and the formation of clouds.



Oxygen is necessary for life.

The amount of water-vapour in the atmosphere is called **humidity.** This may differ in different places and at different time in the same place.

Later on in the programme, we will learn more about the atmosphere and the pressure it exerts on all that exists on Earth. We will also look at how air can be used to run some machines and to do many other things that are important for life.