



The Gleamer's youthlink

CSEC STUDY GUIDE



IAN ALLEN/STAFF PHOTOGRAPHER

Dasha Satchwell (left), playing for Arnett Gardens in 2014, tackles Tivoli Gardens Weston Forrest during their Premier League match at the Edward Seaga Sports Complex.

Preparing for the meeting

HYACINTH TUGMAN
Contributor

HI, STUDENTS. I hope you have already put in some very productive work by completing your SBA and getting ready to hand in your final copy.

I will now continue from where I stopped the last time.

A chairperson controls every meeting. Before the chairperson declares the meeting open, a quorum of members must be present. This is the minimum number of people who are required to conduct the business of the meeting as outlined in the regulations. If a quorum is not present, the chairperson may wait until sufficient members arrive or he/she may postpone the meeting. If the chairperson is absent, then the vice-chairman or deputy will chair the meeting.

At any time during the meeting, the secretary is the person who must be able to advise the chairperson on points which may arise during discussion.

On the day of the meeting, the secretary should check the room or rooms to be used to make sure that everything is in order. The following items should be checked carefully:

Atmosphere: The temperature of the room should be comfortable, and there should be adequate light and ventilation.

Furnishings: There should be enough tables and chairs, and they should be set up so that the participants can see each other.

Equipment: All the necessary equipment should be in the meeting room and each piece should be checked to ensure that it is working properly. The equipment might include a video recorder, a screen, a tape recorder or a computer.

Supplies: Any special supplies that the participants may need should be placed in an organised manner on the tables where the participants will be seated. Customary supplies include pens, pencils, paper and folders containing special materials for the meeting. Name tags are often provided with these supplies.

Refreshments: Typical refreshments are coffee, tea, juice and soft drinks, along with sandwiches, fruit or light foods. The time of day of the meeting controls the types of refreshments to be served.

Follow-up tasks: A follow-up should be conducted shortly after the meeting has occurred. Common follow-up tasks include completing reports and writing letters or other types of communications, determined by what went on at the meeting.

Most meetings involve note-taking and the preparation of a report based on the notes. The report may be in the form of a summary for the participants of an informal meeting, or it may be



Dasha Satchwell (left), playing for Arnett Gardens in 2014, tackles Tivoli Gardens' Weston Forrest during their Premier League match at the Edward Seaga Sports Complex.

an official record of the meeting – called the minutes. Minutes of meetings are kept in an organisation's permanent files. Minutes are very important, since they are often used for future reference. When transcribing notes into minutes, actions should be emphasised rather than what each member said.

An evaluation is another important follow-up task after a meeting. Review your meeting files, and consider the points that made the meeting successful or points that might improve another similar meeting in the future. You may evaluate the speaker(s), the venue, or special services used for the meeting.

I will now summarise some of what was done in this unit.

- Meetings are held primarily to conduct business, to pass on needed information, or to follow up on a particular activity of the business

- Meetings may be formal or informal, depending on their purpose.

- The three basic types of meetings held in the office are staff meetings, committee meetings and individual meetings.

- The meeting room needs to be reserved beforehand.

- Meeting participants should be notified in advance of the meeting as to the topic being discussed as well as to their role in the meeting.

- Agendas must be distributed in advance.

- Meeting room should be checked carefully for all necessary items, including supplies, equipment, refreshments, furniture and atmosphere.

- A follow-up should be conducted shortly after the meeting has taken place.

- Minutes of the meeting should be distributed to those attending and others who would need to know what happened.

Have a wonderful week.

Hyacinth Tugman is an independent contributor. Send questions and comments to kerry-ann.hepburn@gleanerjm.com

Personal budgeting and saving

YVONNE HARVEY
Contributor

GOOD DAY to you all. This is a topic of great interest to all persons, regardless of age. Especially in this time of world economic recession, it is important that persons have a clear budget to which they can stick.

A budget is a financial plan of proposed or expected income and expenditure. All individuals SHOULD relate what they spend to what they earn. The art of doing so is through proper budgeting. Budgeting means planning what you pay out in relation to what you earn. If careful budgeting is not practised, one will spend unwisely and not have enough to spend on what is necessary. The key to proper budgeting is to know one's income and to balance expenditure in line with income.

In the same way that a country publishes its annual budget, its income and expenditure for each year, individuals or families SHOULD have an idea of how much they earn and how much they intend to spend. They should try to maintain a balance between their income and expenditure.

To persistently spend more than one earns will, in the long run, lead the person into serious debt. Everyone should have a financial plan or budget. It is unwise to spend all of one's income immediately; something should be put aside for a 'rainy day'.

Here is a simple example of a budget, with expected or proposed income on one side and expected or proposed expenditure on the other side.

Proposed Expenditure	\$	Proposed Income	\$
Rent	10,000	Salary	70,000
Food	30,000	Sale of Cottage Products	25,000
Utilities	20,000		
Gasoline	15,000		
Credit cards etc.	5,000		
Miscellaneous	5,000		
Subtotal expenditure	85,000		
Savings	10,000		
Total expenditure	95,000	Total Income	95,000

Savings is shown separately. It is regarded as expenditure and is put on that side of the proposed budget. One should attempt to set aside something on a regular basis and put it into some interest-bearing account in some financial institution like a commercial bank, credit union, building society, insurance company, etc.

PERSONAL SAVINGS

Many people save a part of their income. To save means to refrain from spending on consumer goods and services.

There are specific purposes or reasons for which savings are used (motives for saving):

1. To provide for a 'rainy day'.
2. To use during emergencies.
3. To start or complete planned long-term projects.
4. To pay for a vacation
5. To pay for major surgery.
6. To pay for higher education and different forms of personal development.
7. To pay the deposit on house, land, cars, etc.
8. To invest in a new business.
9. To buy stocks, shares, Treasury bills and bonds, etc.
10. To use as an inheritance to leave for children and other relatives.
11. To pay for car repairs, car insurance and other car payments.
12. To pay for personal items, e.g., clothes, shoes, and hairdresser, etc.
13. To put aside money for retirement, especially if no pension is expected.

There are various ways and means a working person may save earnings. Consider the following ways:

- Put in a commercial bank or other financial institution on different types of deposit accounts.
- Through an insurance company, especially with an endowment policy which matures before the death of the insured person – this is an important means of saving.
- Partner, also known as sou -sou.
- Saving in piggy bank or money box (no interest received).
- Thrift club – no or very low interest.
- Purchase securities on the stock exchange.
- Vaults.

Many people find it easier to save if they sign a standing order to transfer 'X' amount of money each month to a savings account from their current accounts. Some employers will make deductions from wages, if requested by employees, and pay these into a financial institution on behalf of their employees.

Now, your task is to draw up a personal income and expenditure for yourself. Be sure to include savings and miscellaneous items. Afterwards, suggest TWO forms in which you would like to save and TWO reasons for saving. Bye for now.

Yvonne Harvey is an independent contributor. Send questions and comments to kerry-ann.hepburn@gleanerjm.com

Control accounts and subsidiary ledger

ROXANNE WRIGHT
Contributor

THE PRESENTATION this week will be the control accounts. There are some basic terms and definitions you should know. I will highlight them then give a worked example.

CONTROL ACCOUNTS

The control accounts are drawn to check the arithmetical accuracy of the relevant ledgers. Always remember the:

- i. Sales ledger control account checks the sales ledger balance
- ii. Purchases ledger control account checks the purchases ledger balance.

SALES LEDGER CONTROL ACCOUNT

Date		\$	Date		\$
	Balance b/d	xxx		Sales Returns	Xxx
	Credit Sales	xxxx		Discount Allowed	Xxxx
	Dishonoured Cheque	xxxx		Bank	Xxx
	Interest on overdue Debts	xxxx		Bad Debts	Xxx
	Balance c/d	xxxx		Contra: Purchases	
		xxxx		Ledger	Xxx
				Balance c/d	Xxx
					xxxx
	Balance b/d	xxx		Balance b/d	xxx

- Note well:
- a. Debit balance in the sales ledger control account is the amount of closing debtors.
 - b. Credit balance is the amount owed to debtors by the firm as a result of:
 - i. Advanced payment
 - ii. Cash returned
 - iii. Goods returned after account was settled.

PURCHASES LEDGER CONTROL ACCOUNT

Date		\$	Date		\$
	Purchases Returns	Xx		Balance b/d	Xxx
	Bank	Xxx		Credit Purchases	Xxx
	Discount received	Xxx		Interest on overdue bills	Xxx
	Contra: Sales Ledger	Xxx		Balance c/d	Xxx
	Balance c/d	Xxx			
		Xxx			Xxx
		xxx		Balance b/d	xxx

- Note well:
- i. The credit balance in the purchase account is the amount of closing creditors.
 - ii. The debit balance is the amount owed by the creditors to the firm as a result of:
 - a. advanced payment made to the firm.
 - b. cash refund from creditors.
 - c. goods returned after account was settled.

CONTRA ENTRY

This is the amount owed by debtor and is written off against what the firm owes him as a creditor.

RECONCILIATION OF CONTROL ACCOUNTS AND SUBSIDIARY BOOKS

- Step 1: Analyse the errors.
- Step 2: Identify the effects of errors on subsidiary ledgers and control accounts.
- Step 3: Make all the necessary adjustments in the control accounts.
- Step 4: Prepare reconciliation statements.

WORKED EXAMPLE

Nathaniel Marshal's books show the following details for the month of June 2015:

2016		\$	Dr./Cr
June 1	Sales Ledger Control account balance b/f	75000	Dr.
	Purchases Ledger Control account balance b/f	60000	Cr.
June 30	Total Purchases for the month	90000	
	Total Sales for the month	120000	
	Returns inwards	7500	
	Payments to creditors	82500	
	Receipts from debtors	116250	
	Customer's cheque returned unpaid by bank	3750	
	Bad debts written off	2250	
	Discounts received	3750	
	Discount allowed	4000	
	Transfer of debt balance from Sales Ledger to Purchases		
	Ledger during the month	2500	
	Credit balances in Sales Ledger June 30, 2015	3500	
	Debit balance in Purchases ledger June 30, 2015	1000	

- You are required to:
- a. Prepare the sales ledger control account and the purchases ledger control account for June 2015.
 - b. Name two of the sources of the information contained in the control accounts.

SOLUTION

SALES LEDGER CONTROL

2015		\$	2015		\$
June 30	Balance b/f	75000	June 1	Returns inwards	7500
	Sales	120000	June 30	Cash at Bank	116250
	Dishonoured Cheque	3750		Bad debts written off	2250
	Balance c/f	3500		Discounts allowed	4000
				Contra	2500
				Balance c/f	69750
		202250			202250
July 1	Balance b/f	60750	July 1	Balance b/f	3500

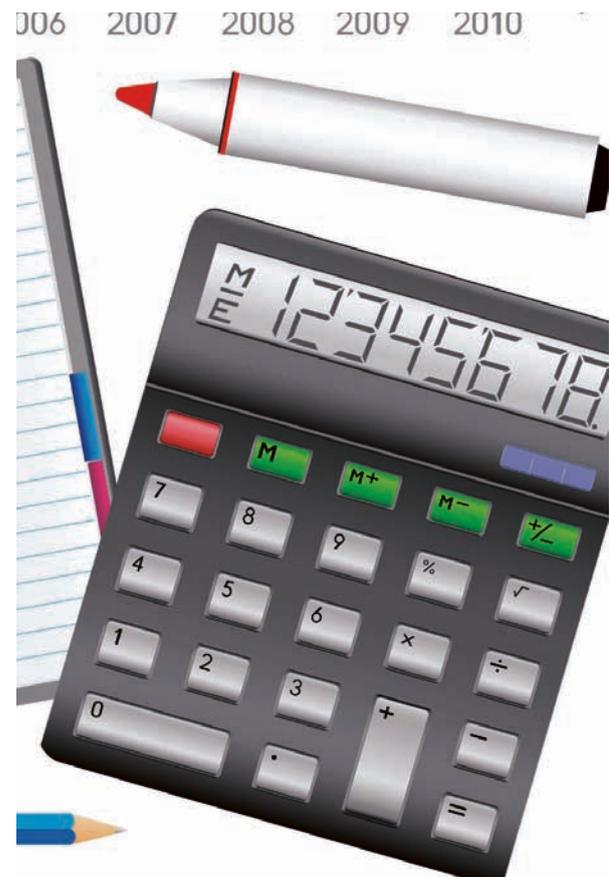
PURCHASES LEDGER CONTROL

2015		\$	2015		\$
June 30	Cash at Bank	82500	June 1	Balance b/f	60000
	Discount Received	3750	June 30	Purchases	90000
	Contra	2500		Balance c/f	1000
	Balance c/f	62250			
		151000			151000
July 1	Balance b/f	1000	July 1	Balance b/f	62250

- b) Two of the sources of the information contained in the control accounts.
 - i. Sales invoice.
 - ii. Bank statements for dishonoured cheques.

This is where we will end for this week. Join us next week as we continue to complete the syllabus. Grasp the concepts and retain them. You will need them as you progress to excellence. See you next week.

Roxanne Wright teaches at Immaculate Academy. Send questions and comments to kerry-ann.hepburn@gleanerjm.com

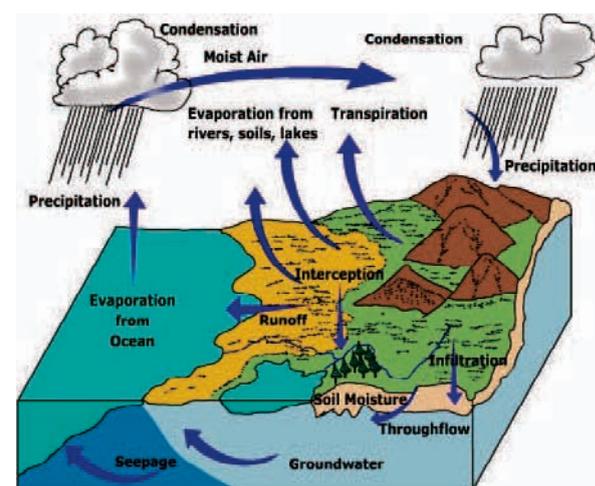


Properties and treatment of water

FRANCINE TAYLOR-CAMPBELL
Contributor

HOW IS WATER MADE AVAILABLE TO LIVING ORGANISMS?

Water is needed for life in its liquid form. It is cycled through nature and made available to living organisms through the water cycle.



Water is evaporated from water bodies such as oceans, seas and rivers by the sun's heat. Water is also lost from plants as water vapour through the process of transpiration. The vapour is cooled and condenses on particles in the atmosphere as clouds. When the clouds become too heavy, precipitation occurs in the form of rain, hail, sleet or snow.

HOW DO THE PROPERTIES OF WATER INFLUENCE ITS USE?

Water is colourless, odourless and tasteless.

Water freezes at 0°C and boils at 100°C.

It is a polar molecule with a high specific heat capacity.

Properties of Water

- Due to its polarity, water has special properties...
- Water as a liquid
- Cohesion/Adhesion
- Viscosity
- Surface Tension
- Ice Floats



These properties cause water to exhibit some unique behaviour. Solid water (ice) is less dense than the liquid, so it floats on top of the water. In areas such as ponds and lakes that freeze in the winter, organisms can still survive at the bottom, as the waters freeze from the top to the bottom.

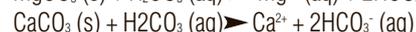
The high specific heat capacity of water means that large amounts of energy are needed to raise the temperature by 1°C. Organisms that depend on water will, therefore, exist in a stable environment as the water's temperature remains relatively constant.

Polarity of water means that it has unusually stronger bonds than other simple covalent molecules. This results in higher-than-expected boiling and melting points.

By far, the most important use of water is as a solvent. Since water is polar, it can dissolve both ionic and other polar covalent compounds.

DIFFERENTIATE BETWEEN TEMPORARY AND PERMANENT HARDNESS OF WATER.

When magnesium and calcium ions dissolve in water, it causes the water to become 'hard'. These ions enter the water when slightly acidic rainwater, or river water containing carbonic acid, (H₂CO₃) flows over rocks containing calcium or magnesium salts. Examples of these rocks are limestone (calcium carbonate), gypsum (calcium sulphate) and dolomite (calcium/magnesium carbonate).



Water that contains Ca²⁺, Mg²⁺ and HCO₃⁻ ions is said to be 'temporary hard' water.

Water that contains other calcium compounds, such as calcium sulphate from gypsum, is said to be 'permanent hard' water.

HOW CAN WATER HARDNESS BE REMOVED?

When boiled, the calcium and hydrogen carbonate ions can react to form insoluble calcium carbonate, which can then be removed from the water. This is usually seen as lime scale in kettles and hot-water pipes.



The sulphate ions (SO₄²⁻) from permanent hard water cannot be removed by boiling. Permanent hardness can be removed by using washing soda (Na₂CO₃), which reacts with the calcium ions to form insoluble calcium carbonate.



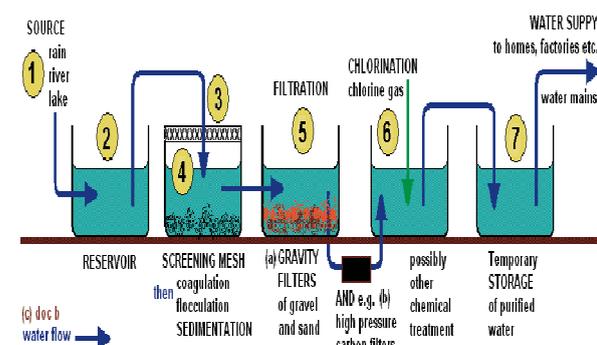
Another way to remove permanent hardness is the use of ion-exchange columns containing resins with sodium (Na⁺) or hydrogen (H⁺) ions. The calcium ions are replaced in the hard water by sodium or hydrogen ions. Calcium ions remain stuck in the resin.

In distillation, the water evaporates leaving the dissolved ions

behind. The vapour is condensed and collected as pure water.

EXPLAIN HOW WATER IS TREATED TO MAKE IT SAFE FOR DRINKING?

Simplified 'FLOW' diagram of some of the ways water is treated and purified for domestic and industrial consumption



Source: www.docbrown.info

To obtain clean, potable water, many dissolved substances and microorganisms must be removed. This involves a series of steps.

1. Aeration – water is stirred to allow oxygen to mix into it. Iron (II) ions are removed in this way as they precipitate out as iron (III) hydroxide.

2. Sedimentation – large particles are allowed to settle out in sedimentation tanks. Tiny particles that cannot settle out (clay) are removed by reacting with aluminium sulphate. The Al³⁺ ions react with the clay particles by coagulating the clay; that is, form clumps which settle out of the water. The sludge at the bottom of the tanks is collected and dumped.

3. Filtration – the water is passed through beds of sand and gravel to remove all solid particles. Adding carbon slurry helps to get rid of substances that can give the water an unpleasant odour or taste.

4. Chlorination – chlorine is added to kill bacteria in the water. Ozone or UV light can also be used. To remove excess chlorine, sulphur dioxide is added to get rid of the chlorine smell and taste.

Additions – Fluoride can be added to the water to prevent teeth from decay. The pH of the water may also be adjusted to 7 before it reaches the tap, as chlorine is acidic.

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Decomposers and nutrient cycles

MONACIA WILLIAMS
Contributor

"Land, then, is not merely soil, it is a fountain of energy flowing through a circuit of soils, plants and animals."

– Aldo Leopold

HELLO, STUDENTS. How are you this week? I hope you have been having a good week so far and that you are keeping your resolve to work hard at your studies. Remember, success only comes from hard work! You cannot just want to do well; you must work hard in order to do so! Keep on working!

Plants need nutrients in order to grow. These nutrients are usually found in the soil and are removed from the soil by plants through their root system. Why doesn't the supply of nutrients become depleted? How do these nutrients get back into the soil after they have been removed by the plants?

Now comes the 'aha' moment – something must be putting back into the soil what the plants are removing! Then we read that science has a name for the process and this name is 'nutrient cycling'.

This week, as we begin our study of the process, we will be looking at the role of decomposers in the cycling of nutrients. Do you remember these decomposers? We met them when we were studying soils. Do you remember that they are a part of the living matter in the soil. Decomposers include bacteria and fungi. Why are they called decomposers? They are so called because they obtain their food from the remains of dead organisms. All living organisms will eventually die and when the decomposers feed on them, they cause them to decay and decompose. They also break down the waste matter (urine and faeces) of animals. This is why they are called decomposers.

These bacteria and fungi are also known as saprophytes. As they carry out the decomposition, they return the nutrients that were trapped in the organism's body to the soil. Plants will take up these nutrients and pass them on to the animals that use them for food. In doing so, they help in the cycling of the nutrients, in particular nitrogen and carbon, so they can always be available to living organisms.

The tissues of dead organisms contain proteins, lipids and carbohydrates; decomposers feed on these and produce ammonia (NH₃) and carbon dioxide (CO₂). They use enzymes to digest the organic matter. This form of digestion differs from digestion in animals in that it is done externally. As the food is digested and made soluble, the soluble products of digestion – glucose, amino acids, fatty acids and glycerol – are taken up by the decomposers and used by them for growth and to provide energy. Ammonia (from waste) is released into the soil, where it combines with other substances to form ammonium compounds.

As the decomposers respire, they produce carbon dioxide. The work of the decomposers is made easier with the help of the detritivores. Do you remember these? Do you remember that detritivores are also a part of the living part of the soil but that these are neither bacteria nor fungi, but small animals such as earthworms and woodlice? The detritivores break up the dead organic matter into smaller pieces, making it easier for the decomposers to act on them.

Let us take a look at how carbon is cycled.

CARBON CYCLE

All living things contain carbon; carbon is found in carbohydrates, proteins and lipids. This makes

it one of the most important elements in nature. Carbon comes from carbon dioxide in the air. Plants use it for photosynthesis to make food, and animals eat the food made by the plants. How is it recycled?

■ Plants and animals use the food for respiration; as they respire they produce carbon dioxide, which is released into the air.

■ Decomposers use the dead organic matter for growth and so the carbon becomes incorporated into their bodies. They also respire and by so doing, they return carbon dioxide to the air.

■ Fossil fuels such as coal, gas and peat contain carbon and when they are burnt, they also release carbon dioxide into the air.

Figure 1 shows the carbon cycle in diagrammatic form. Look carefully at the diagram; notice that for living organisms, two processes dominate the cycle, photosynthesis and respiration. Photosynthesis is the only process that utilises carbon in the form of carbon dioxide, while respiration returns it to the atmosphere in that form. However, the diagram fails to show that carbon dioxide is also found dissolved as hydrogen carbonate in rivers, lakes and oceans, and that photosynthesis also takes place in these parts of the earth.

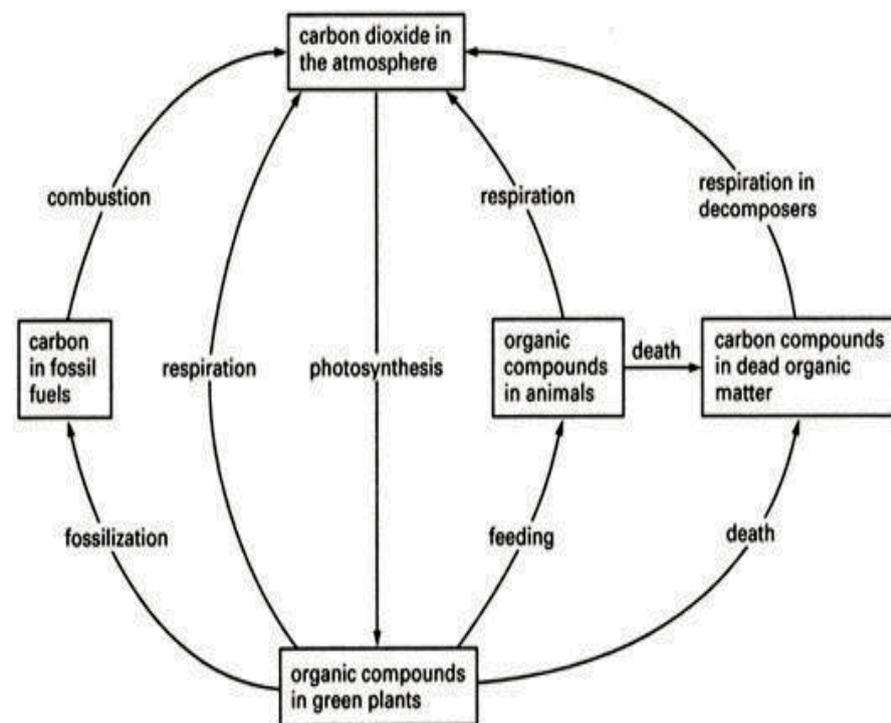


Figure 1

These processes work together to keep the amount of carbon dioxide in the air constant at 0.03%. Sad to say, this is changing because of man's interference with nature. Our continued use of fossil fuels and destruction of trees, whether for industry or recreation, is causing changes in the carbon dioxide levels. Think about it, burning fossil fuels increases the amount of carbon dioxide going into the air; cutting down trees removes the only organisms that can reduce the increased levels. This has led to the problem of global warming. Here is homework! Read up on global warming!

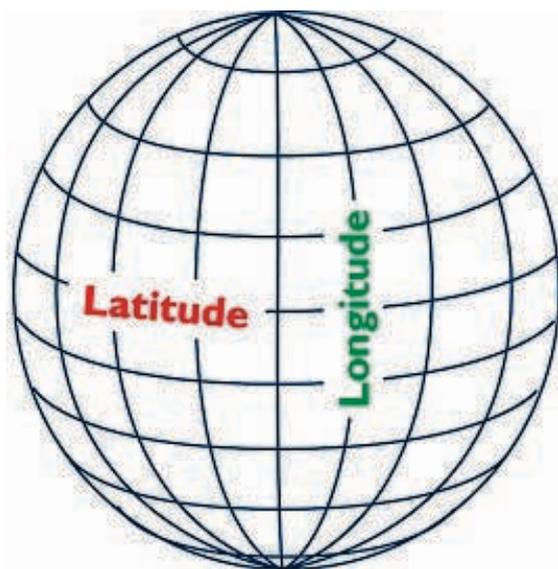
See you next week, when we will look at the nitrogen cycle.

Monacia Williams is an independent contributor. Send questions and comments to kerry-ann.hepburn@gleanerjm.com

Location and time

FOCUS QUESTIONS

- What is the line of latitude?
- What is the line of longitude?
- List the main lines of latitude and longitude.
- Name and locate a place from its latitude and longitude.



LINES OF LATITUDE

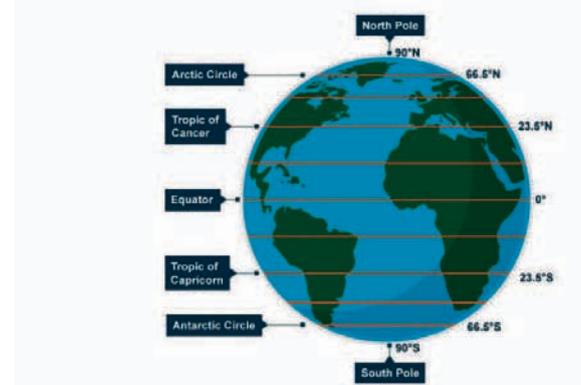
- Lines of latitude measure north-south positions between the poles.
- The equator is defined as 0° , the North Pole is 90° north, and the South Pole is 90° south.
- Lines of latitude are all parallel to each other, thus they are often referred to as parallels.

The memory rhyme I use to help remember that lines of latitude denote north-south distance is: 'Tropical latitudes improve my attitude'.

- Latitude lines are a numerical way to measure how far north or south of the equator a place is located.
- The equator is the starting point for measuring latitude – that's why it's marked as 0° latitude.
- The number of latitude degrees will be larger the further away from the equator the place is located, all the way up to 90° latitude at the poles.
- Latitude locations are given as (1) degrees north or (2) degrees south.
- They are like imaginary horizontal 'hula hoops' around the earth, with the biggest hoop around the equator, and then

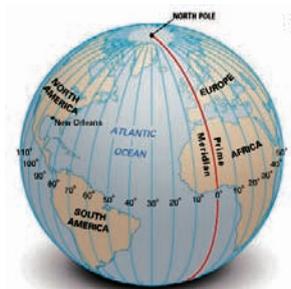
progressively smaller ones stacked above and below it to reach the North and South Poles.

Important Lines of Latitude



FACTS ABOUT LINES OF LATITUDE

- Are known as parallels.
- Run in an east-west direction.
- Measure distance north or south from the Equator.
- Are parallel to one another and never meet.
- Cross the prime meridian at right angles.
- Lie in planes that cross the Earth's axis at right angles.
- Get shorter toward the poles, with only the Equator, the longest, a great circle.



FACTS ABOUT LINES OF LONGITUDE

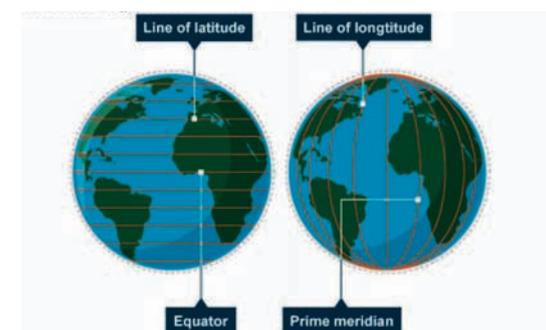
- Are known as meridians.
- Run in a north-south direction.
- Measure distance east or west of the prime meridian.
- Are farthest apart at the Equator and meet at the poles.
- Cross the Equator at right angles.
- Lie in planes that pass through the Earth's axis.
- Are equal in length.
- Are halves of great circles.

UNDERSTANDING LATITUDE AND LONGITUDE

- Every location on earth has a global address.
- The address is in numbers; people can communicate about location no matter what language they may speak.
- A global address is given as two numbers called coordinates.
- The two numbers are a location's latitude number and its longitude number ('Lat/Long').
- Using lat/long is different from using a street address.

Instead of having a specific street address, lat/long works with a numbered grid system, like what you see when you look at graph paper.

- Horizontal lines and vertical lines intersect.
- A location can be mapped or found on a grid system simply by giving two numbers which are the location's horizontal and vertical coordinates; to say it another way, the 'intersection' where the place is located).



Please keep in mind that lat/long lines encircle the earth, either as horizontal circles or vertical half-circles.

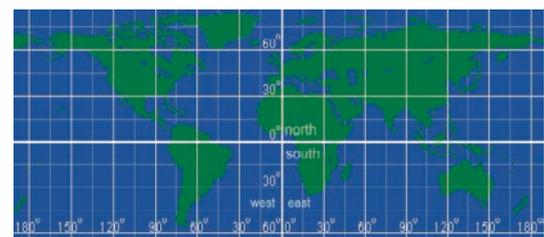


To measure longitude east or west of the prime meridian

- There are 180 vertical longitude lines east of the prime meridian and 180 vertical longitude lines west of the prime meridian.

So longitude locations are given as – degrees east or – degrees west.

The 180° line is a single vertical line called the International Date Line, and it is directly opposite of the prime meridian.



Send questions and comments to kerry-ann.hepburn@gleanerjm.com

The electoral process

MAUREEN CAMPBELL
Contributor

OBJECTIVE

Describe the electoral processes and systems used to elect a government in the Commonwealth Caribbean.

We need to say to everyone on election day,
"Those of you who helped make this a good day,
you need to go out and help us finish the job."
— Mitch McConnell

Government is a group of people with the authority to:

- Set goals and make policies for the good of a country.
- Enforce compliance with the laws and regulations.
- Make laws and regulations defining how people are to go about achieving these goals.

Election is the principal means of choosing the representatives of the executive and legislative offices of the country.

THE ELECTORAL COMMISSION OF JAMAICA

The objective of the commission is to safeguard the democratic foundations of Jamaica by enabling eligible electors to elect, through free and fair elections, their representatives to govern Jamaica.

Mission Statement

The mission of the Electoral Office of Jamaica is to so conduct national elections that no unfair advantage is given to any party or individual contesting the polls, ensuring that the objective of one man one vote is met under the six stated principles of Universal Adult Suffrage.

THESE PRINCIPLES ARE:

THE VOTE IS UNIVERSAL

All citizens who meet the qualifications established by law have the right to vote.

THE VOTE IS FREE

The elector is entitled to vote free.

THE VOTE IS SECRET

The process guarantees not to publicise the preference or will of any elector.

THE VOTE IS DIRECT

The citizen elects the representative of his choice.

THE VOTE IS PERSONAL

The elector shall attend in person at his/her designated polling station.

THE VOTE IS NON-TRANSFERABLE

The elector cannot transfer to anyone his right to vote.

GETTING READY FOR AN ELECTION

1. Divide the country into constituencies.
2. Prepare and amend the voters' lists ... register eligible voters.
3. Issue voters' ID.
4. Register candidates on nomination day.
5. Prepare and distribute election notices, ballot papers and ballot boxes.
6. Supervise the voting process on election day.
7. Tally the votes.
8. Declare results.
9. Audit candidate election expenses.

VOTING PROCEDURES IN JAMAICA

1. All registered voters/enumerated must find out where exactly they will vote: that is, their polling station before the election day.
2. On election day, present voters' ID card and follow the instructions given by the presiding officer.
3. Voters without their voters' ID card will still be allowed to vote once their names can be found on the voters' list, and their identity can be confirmed. This, however, will take some additional time, so it is better to have the voters' ID card.

4. If a polling station is using the electronic voter identification and ballot Issuing system, voters will be asked to place a specific finger on a fingerprint scanner. Once their identity has been verified, they will be issued a ballot.

5. Once issued a ballot and informed of what is required by the presiding officer, voters go behind the voting booth and clearly mark an 'X' for the candidate of their choice in the space provided. They should use the pencil provided in the voting booth.

6. The ballot should be folded twice, as instructed by the presiding officer, to protect the secrecy of the vote, leaving the flap out. Nobody should SHOW ANYONE WHOM HE OR SHE HAS VOTED FOR because it is illegal to do so.

7. The folded ballot should be given to the presiding officer so that he or she can detach the flap.

8. The voter's right index finger (pointer finger) should be dipped in the integrity ink while he/she watches his/her unopened ballot being put in the ballot box.

9. Once he/she has witnessed the unopened ballot paper being placed into the ballot box, the voting process is now complete, and the voter should leave the vicinity in a peaceful manner.
<http://www.eoj.com.jm/content-26-138.htm>

ELECTORAL SYSTEMS

An electoral or voting system is how votes are translated into seats. A voting system enforces rules to ensure valid voting and how votes are counted and aggregated to yield a final result. Common voting systems used in the Caribbean include proportional representation and first-past-the-post.

FIRST-PAST-THE-POST VOTING (FPP)

This system of vote counting is the simplest – the voter only votes for one candidate and whoever gets the highest number of votes is elected. It is the easiest vote-counting system to calculate results. The winning candidate is the one who gains more votes than any other candidate, but not necessarily an absolute majority.

FPP is used in Jamaica, Trinidad, Barbados and other countries.

PROPORTIONAL REPRESENTATION (PR)

Proportional representation is the general name for a class of voting systems that attempt to make the percentage of offices awarded to candidates reflect as closely as possible the percentage of votes that they received in the election. It is the most widely used set of electoral systems in the world.

■ It is based on the assumption that parties are the real contestants and on the principle that their seat shares should accurately reflect their vote shares.

■ Counting and seat determination processes are generally complex and not immediately transparent.

■ Candidates are elected based on the total percentage of votes cast for their party.

■ The candidates on the party list will be given seats in order of preference.

In this system the country is treated as a whole; that is, as one single constituency. Political parties involved in the election will prepare a list of candidates; this is based on the number of seats in parliament. This list is made in order of preference by the party leader. People vote for the party and not the candidates.

THE PR IS USED IN GUYANA

Advantages and Disadvantages of the electoral systems used in the Caribbean:

ELECTORAL SYSTEM ADVANTAGES

FIRST-PAST-THE-POST

1. It is simple to use and easy to understand.
2. It ensures that the candidate with the highest number of votes wins the constituency.
3. Allows for an independent candidate to be elected in a constituency.
4. Each constituency can decide, by voting, its own representative. Allows voters to choose individuals based on competence rather than just for a party.
5. With each constituency having a candidate

CONTINUED ON PAGE 24

Measures used to control enslaved Africans

DEBBION HYMAN
Contributor

AT THE end of the lesson, you should be able to:

1. Identify three forms of control used against enslaved Africans.
2. For each form identified, provide two examples of measures employed against enslaved Africans.
3. Explain two insurrectionary and two non-insurrectionary methods of slave resistance.

Local colonial assemblies and individual planters introduced measures to repress their slave populations. Many of these methods could be categorised as legal, social, economic and psychological controls.

ECONOMIC CONTROL MEASURES

There was severe limitation on free time for the enslaved as free time was equated to loss of production time on the estate. As a result, a structure of economic dependence was created whereby enslaved Africans relied to a great extent on the planter for their basic amenities. Though there was the development of an internal marketing system by the enslaved population, the planters instituted several measures that sought to limit its viability. Severe restriction was placed on the ability of the enslaved Africans to carve out an economic livelihood, for instance, growing provision crops to be sold in the market.

LEGAL CONTROL MEASURES

a) British laws – The British Caribbean had no universal slave code but rather, individual colonies created their own laws. Throughout the colonies, however, there was a common thread with some of the legal slave control measures. These included:

- a) Slaves not being allowed to leave the estate without permission.
- b) Slaves not being allowed to congregate in large numbers because this would suggest unity, which could possibly lead to revolt.
- c) Slaves not being allowed to beat drums, blow horns and carry weapons.
- d) Reading and writing and slave marriages being forbidden.



The students at Merl Grove High School listen keenly to Sashelle Gooden, senior communication specialist at the Jamaica Productivity Centre, as she provides guidance and tips on how to study.

e) Enslaved persons not being allowed to rent houses or land or buy liquor without their masters' consent.

f) Obeah and group meetings carrying the death penalty.

g) Manumission (the ability to purchase one's freedom) being discouraged.

b) French Laws (*Code Noir*/Black Code) – These laws were directly drawn up in France. The articles in the code:

- a) Allowed enslaved Africans.
- b) Gave them the ability to marry with their master's consent.
- c) Suggested that planters were to provide food and clothing for slaves and to provide care for the elderly and disabled.

d) Provided slaves with the ability to appeal to legal offices known as procureur-général (attorney general) to complain against ill-treatment and neglect but, at the same time, the code stated that the slaves could be punished by means of flogging, branding, mutilation and execution for theft, assault and attempts to escape.

c) Spanish laws (*Las Siete Partidas*) – The Spanish laws governed the treatment of enslaved Africans. The laws:

- a) Outlined that enslaved peoples should not be overworked, starved or unlawfully punished by their master.
- b) Gave slaves the right to buy their freedom,

to marry and appeal to the court against illegal treatment.

c) Made masters obliged to provide the basic amenities for their slaves.

SOCIAL CONTROL MEASURES

In the bid to control the enslaved population, underlying as well as overt social control measures were encouraged. For instance, there was the creation of a rigid social divide in the wider society as well as amongst the slaves. For instance, domestics were usually the 'lighter-skinned' slaves and they were entrusted with their master's valuables and children. They were allowed to wear better clothes; the females were allowed to wear necklaces, bracelets and earrings. Some also learnt to cook, sew, read and write. These slaves were loyal to their masters and were most likely to report plans of rebellion.

Also, skilled slaves/artisans were highly valued by their masters and were sometimes hired out. They had also more freedom of movement than other slaves on the plantation. The field slaves were seen as the 'worse class' on the sugar estate and were the ones to usually receive the harsher punishments – reflecting the whole system of divide and rule amongst enslaved labour.

PSYCHOLOGICAL AND IDEOLOGICAL CONTROL MEASURES

Enslaved Africans were also subjected to

psychological and ideological control, but they continued to resist the system of slavery. They did this by running away, malingering and rebelling. Enslaved women also participated in the resistance movement and used their bodies as weapons in resisting slavery. They practised what was described as 'gynaecological resistance'. Undoubtedly, the plantation society created a culture whereby the practices of the whites were seen as superior to that of the 'Africans'. As a result, African cultural practices were denigrated.

FORMS OF RESISTANCE

Resistance took the form of insurrectionary and non-insurrectionary methods.

a. Insurrectionary methods tended to be violent and caused more damage to the plantation and whole system of slavery. Such methods included:

1. Destruction of property – damage to plantation tools and machinery done in such a manner so as to appear accidental. Over a prolonged period, this caused considerable cost to the plantation in terms of repairs.

- Murder of plantation owner(s) – poisoning was one such method used by the domestics.
- Running away/maroonage.
- Rebellions

b. Non-insurrectionary methods were a prolonged non-violent approach to resisting slavery.

Such methods included:

1. Gynaecological

- a) Exaggerating female complaints.
- b) Inducing abortion.

c) Prolonging the period of gestation, sometimes opting to breastfeed babies for as long as two years. Pretending not to understand the language to evade working.

- Malingering/pretending to be ill or exaggerating any existing ailment, or sometimes even injuring themselves.

- Suicide.

Debbion Hyman is an independent contributor. Send questions and comments to kerry-ann.hepburn@gleanerjm.com

Short stories – Cont'd

BERYL CLARKE
Contributor

"Hi. Ashanti, stop noh! How yu walking so fas? Is the story that Miss say we must read that you going to finish?"

"Yes, my girl. I'm looking a little shade to go read one more of the short stories. By the way, you read it yet, Kimberly?"

"Which one? The one 'bout the two grandmothers?"

"Same one. You see my granny a country, she love church and no ask if me never haffi go with her when I visit her. Sometimes, Grandma Del in the story remind me a little of her. Funny, but mi can't stand the 'young' grandmother Towser."

"What! A she me love ..."

HAVE YOU and your classmates been discussing this story like Ashanti and Kimberly? I hope so, because it is really full of interesting things to talk about. Here we have a young girl who lives with her dark-skinned father and her mother, who appears to be of a lighter hue. She spends holidays visiting her paternal grandmother and her maternal grandmother alternately. Her visits provide her with two completely different experiences. Clearly, the grandmothers have opposing attitudes to life and contrasting ways of bringing up a child.

Now I know that each of you will, it is likely, prefer one to the other, and that is good and natural. I would like you, however, not just to choose, but to think about the reasons for your preference. Have you got a picture of both ladies in your mind yet? Take a few moments and ponder from your reading on them. Below is a start of how you can record the 'facts' about these ladies. This will not only enable you to collate the information, but make it easy make the comparison.

GRANDMA DEL

Lives a simple life in a little house. Has no electricity.

GRANDMA ELAINE

Lives a flashy life in a house with modern amenities; wears make-up.

This very interesting short story presents two women whose conduct and attitude come into conflict. It does much more than that, as you may have already realised. Set in Jamaica, we are presented with two Jamaicas. What? Yes. You see,

Grandma Del and her community represent one lifestyle, while Towser, as she prefers to be called, even by her grandchild, represents the other. Consider the following:

Del lives in a village that has no electricity. The pastor is the only one who drives a car at the church that she attends. We meet three girls/young women, Pearlie, Eulalie and Ermandine, there. Pearlie is from a poor home. At an age when she should have been getting an education, she has to be taking on the role of mother to her younger siblings. This is clearly unfair and, as if this is not enough, she is punished whenever one of her brothers breaks something. She, like her brothers, hardly owns any clothes. Her mother is the sole

breadwinner and it is obvious that she does not earn enough to take care of the family. Do you know anyone whose education is being hampered because of a family situation?

The sisters Eulalie and Ermandine are more fortunate than Pearlie, in that they get the opportunity to attend high school. Apparently, they do not appreciate what they have and so, much to the granddaughter's confusion, they 'fell.' Obviously uninterested in returning to school, each of them then begins to produce children rapidly. The chance of any of these three girls being able to spend time vacationing abroad or even elsewhere in Jamaica is remote, and shows clearly the gulf between them and Del's granddaughter.

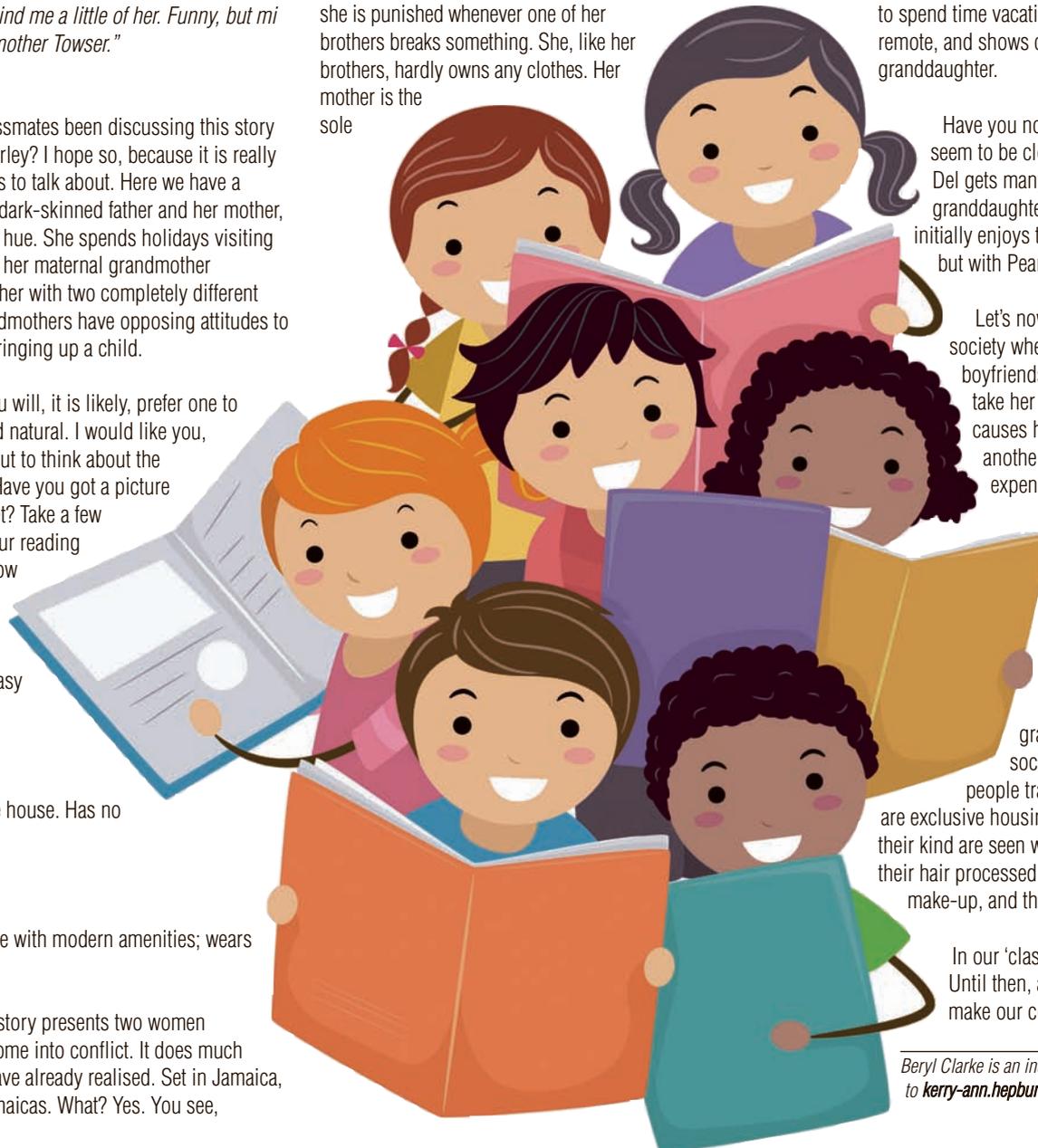
Have you noticed, though, that the community members seem to be closely knit. People greet each other. Grandma Del gets many visitors and they are interested in her granddaughter, who is taught by her to be polite. The child initially enjoys this interaction and not only with the adults, but with Pearlie and Eulalie, her sister, and their babies.

Let's now visit Towser. Here, we are in the type of society where a grandmother, who wears make-up, has boyfriends, one who drives a Benz, another who can take her on holiday to Mexico, and yet another who causes her grandchild to wonder if he is going to be another husband. Towser shops in Miami, and wears expensive clothing and jewellery. Unlike the other grandmother, Towser is unconcerned about attending church. She swears before the child and has a definite bias against what she calls 'tough' hair and, as you know, she is talking about the unprocessed, natural hair of most Jamaicans.

What is the message she is sending to her grandchild? This is the part of the Jamaican society where money is not a problem, where people travel to foreign countries regularly. Here, there are exclusive housing estates where only helpers and others of their kind are seen walking or working outdoors. Young girls get their hair processed, attend charm school, practise how to put on make-up, and think about entering the Miss Jamaica Pageant.

In our 'class' next week, we will have more to 'talk' about. Until then, ask yourself what you can do and will do to make our country better. God bless!

Beryl Clarke is an independent contributor. Send questions and comments to kerry-ann.hepburn@gleanerjm.com



Summary writing – Cont'd

HELLO, STUDENTS. I hope you have been gaining a lot from the lessons thus far. In this week's lesson, the focus will be on two passages that have formed part of previous exams.

I have written a typical instruction that you will see for each summary passage. Also, I have underlined the important points that should be considered for your summary.

SUMMARY PASSAGE # 1

Read the following article on tattoos carefully and list FIVE MAIN points discussed, then write a summary of the article in NOT MORE THAN 120 words.

TATTOOS

Since the beginning of civilisation, they have served as marks of identification, spiritual protection and decoration. Now at the cusp of another millennium, tattoos and other varieties of body markings are resurfacing as a popular form of individual self-expression.

Tattoos are timeless and can be as unique as the bearers they adorn. They don't fade away like favourite T-shirts, or get lost or broken like school rings. They stay with you forever, until death. They become a part of you from the day you sit in the artist's chair, etching your emotions alongside the needle's sting, transforming an instant of your life into a symbol for the world to see.

Tattoos and other body markings arrived in the Caribbean with African slaves and indentured workers from China and India. They were sometimes the only permanent keepsakes of peoples snatched from their ancestral places. The Caribbean's original Amerindian inhabitants also used tattoos to mark spiritual milestones.

The Taino of the Northern Caribbean Islands, for instance, used vegetable dyes to affix images of their guardians on to their skin. These images also indicated an individual's lineage, or his or her social position. Each tattoo was both a personal history book and a mark of belonging.

Over the centuries, however, tattoos and other forms of bodily adornment have mutated, exchanging religious and cultural significance

for individualist associations. Sometimes that mark of individuality has been confused with rebellion and nonconformity, often alluding to a stain of bad character. Tattoo wearers have seemed wild, dangerous, even just plain bad.

But today, tattoos have come full circle. Celebrities, writers, lawyers, housewives, all proudly display their marks of rebellion. An entirely new perception of the art of tattooing has arisen, which is more than just a preoccupation with style. This rediscovered form of expression has spawned an entire subculture of individuals among us. They carry this common bond of distinction through their daily routines. Via the images on their forearms, shoulders, ankles, or torsos, they connect to each other, announcing to the world that it is OK to be unique and different.

Adapted from **Pictures made flesh. Caribbean Beat**, July/August 2003.

Total 25 marks

POINTS

- Tattoos are permanent markings which have been around from the beginning of civilisation.
- They were brought to the Caribbean from Africa, China and India, but the Amerindians wore them even before.
- They were used by people in the Caribbean for religious, ethnic and cultural purposes.
- Over the years, they have come to be personal expressions identified with rebellion and deviance.
- Attitudes have changed towards tattoos and today they have become acceptable as marks of uniqueness and difference.

(5 marks)

SAMPLE SUMMARY

From the beginning of civilisation tattoos and other body markings have been marks of identification, spiritual protection and decoration. Tattoos are permanent markings which vary greatly and can be personally very revealing. A tattoo is an instant of your life etched forever on you for the world to see. Tattoos and other body markings were characteristic of the Amerindians of the

Caribbean as well as of the Africans, Chinese and Indians who came there. For all these people they had cultural, spiritual and ethnic significance. Over the centuries tattoos and other body markings have changed back and forth from group significance to individual significance, presenting a daily image of difference and uniqueness.

(20 marks)

SAMPLE PASSAGE # 2

Read the following article on brain health carefully and list FIVE MAIN points discussed, then write a summary of the article in NOT MORE THAN 120 words.

People generally take the brain and its functions for granted, especially in the first forty years of life. Even though the brain is considered to be one of the most important organs in the human body, we don't pay much attention to keeping it fit and healthy. This is an understandable situation since life forces us to be active on many levels in our younger years, but we need to pay more careful attention to brain health, especially in light of the demands of modern life. Generally, when people think about staying fit, they only focus from the neck down. However, the health of your body should also include your brain. A healthy brain plays a critical role in almost everything you do: thinking, feeling, remembering, working, playing and even sleeping. Improving your brain health can protect you from dementia, increase your memory and sharpen your concentration.

There is much that can be done to keep the brain healthy at any age. Lists widely offered include simple, and even funny things, like brushing your teeth with the unfamiliar hand, or showering in the dark, walking and gardening, all of which are low, or free of cost. Recommended routines include physical activity, which increases the flow of blood to the brain; maintaining social contacts and having intelligent conversations; sleeping well. On the other hand, there is a list of things to avoid. Examples from the list include that you should be careful not to drink to excess, you should not ignore any changes in your physical or mental health, try not to be isolated in your home, and

certainly do not entertain the idea that you are too old to take up something new. The most outstanding of all the recommendations is physical activity.

Physical activity is one of the best ways to promote the growth of new brain cells and keep the brain healthy. Exercise increases levels of brain chemicals that encourage the growth of nerve cells and this explains, to some extent, why aerobic activity enhances memory skills, and why moderately strenuous activity is strongly associated with successful brain ageing. An interesting form of physical activity is dance. Learning a dance can nourish brain cells, which translates to cognitive skills in the real world, and dancing requires twists and turns that strengthens the brain connections.

There is always the caution attached, that you use common sense when increasing physical activity. Extra care is necessary when you have not exercised for a long time, and it is very important to consult with your doctor or healthcare provider before starting an exercise programme or increasing your activity.

Keeping Your Brain Healthy The Barbados Advocate

October 4, 2009, p. 26

POINTS

- The health of the brain is often not taken seriously.
- The brain's health must be taken into consideration when one thinks of the body's health, because the brain plays a vital role in our daily lives.
- There are several simple and routine ways the brain can be kept healthy, but there are also things you should avoid.
- Physical activity is the most significant of these ways.
- Caution must be taken when increasing physical activity.

SAMPLE SUMMARY

MAINTAINING BRAIN HEALTH

Although the brain plays an important role in our bodies, its health is often downplayed.

CONTINUED ON PAGE 24

System and application software

NATALEE A. JOHNSON
Contributor

GOOD DAY, students. This is lesson 16 in our series of lessons. In this week's lesson, we will continue to look at system and application software. At the end of this lesson, you will be able to distinguish between at least two types of processing modes, compare at least two types of user interface, and state the advantages and disadvantages for the three main user interfaces.

The choice of an operating system is also dependent on the processing environment required by the user. The types of processing environment or processing modes are listed below:

1. Batch processing.
2. Time-sharing multiprocessing.
3. Single-user processing system.
4. Real-time online processing.
5. Single-user multitasking processing.

BATCH PROCESSING

These are systems that provide multi-programming of batch programs but have few facilities for interaction or multi-access. Commands or jobs are collected in groups and processed in the order in which they are placed; that is, in a 'first in, first out' sequence. Each group of commands or jobs is called a batch. The jobs are entered in a batch queue and then run one or more at a time under the control of the operating system. A job may wait in a batch queue for minutes or hours, depending on the workload. No amendments are possible during processing. Batch processing is often used in utility bill preparation and salary preparation (payroll), which is generally prepared and sent to out, for example, at the end of the month to customers or employees, respectively.

TIME-SHARING MULTIPROCESSING

The processor's time is divided into small units called time slices and shared in turn between users to provide multi-access. These systems allow the CPU to switch between different programs rapidly so that users are unaware that they were 'time-sharing' the CPU with others. Several persons can connect to the

main computer via dumb terminals and access different application programs.

SINGLE-USER PROCESSING SYSTEM

These systems came on the scene with the advent of personal computers. The majority of small microcomputer-based systems have operating systems which allow a user to operate the machine in an interactive, conversational mode (response to the user's message is immediate), but normally only one user program can be in main storage and processed at a time; there is no multiprogramming of user programs. Multiprogramming occurs when more than one program in main storage is being processed apparently at the same time. This is accomplished by the programs taking turns at short bursts of processing time.

SINGLE-USER MULTITASKING

This system only allows one person to use the computer at a time to do multiple tasks.

REAL-TIME PROCESSING

This is a system that is able to process data so quickly that the results are available to influence the activity currently taking place. There is often a need for multiprocessing. Multiprocessing is the name for the situation that occurs if two or more processors are present in a computer system and are sharing some or all of the same memory. In such cases, two programs may be processed at the same instant. These systems are used mainly in critical systems. Critical systems are systems where delay in the processing of data after its input can lead to the destruction of life and property. Examples of critical systems are systems that monitor critically ill patients, nuclear plants, the engine of an aeroplane, etc.

ONLINE PROCESSING (ALSO KNOWN AS TRANSACTION)

This is when the data collected is processed and updated immediately. The user can interact directly with the computer at any desired time. The computer responds to the user's input by outputting some data before the user can do any further input. Daily transactions that involve

online processing are as follows: the use of an automated teller machine to make deposits and withdrawals, flight reservations and when we pay our bills online, the customer's account is automatically updated from the withdrawal made to make the bill payments.

USER INTERFACES

The interaction between end users and the computer is said to take place at the 'human computer interface' (HCI) point. The term 'human computer interface' is meant to cover all aspects of this interaction, not just the hardware. One of the most important features normally required in an HCI is that it be 'user-friendly'. As the name suggests, a user-friendly interface is one that the end user finds helpful, easy to learn and easy to use. It is easy to recognise unfriendly interfaces, but not so easy to design one that is certain to be user-friendly.

THE MAIN TYPES OF USER INTERFACE

The user interface is made up of a hardware interface and software interface.

HARDWARE INTERFACES

Hardware interfaces would include the use of following:

- Touch screens
- Monitors
- Keyboards
- Braille keyboards and sensors are non-visual interface components.

Additionally, there are three main types of software interfaces which are listed below:

- Command-driven interfaces
- Menu-driven interfaces
- Graphical user interface

Note: In some situations, two different types of interfaces may be combined, for example, a menu interface with command options.

COMMAND-DRIVEN INTERFACES

One of the long-established methods by which a user can interact with the computer is by the use of commands. Commands enable the user to quickly and simply instruct the computer

on what to do. However, they require the user to already have knowledge of what commands are available, what they do and the rules governing how they should be typed, so they are more suited to experienced users than the novice end user. A technical person such as a computer operator or programmer would be familiar with the commands, or where the end user continually works with the same program and, therefore, can gain mastery of the commands.

ADVANTAGES OF COMMAND-DRIVEN INTERFACE

1. Faster to use once you have learnt the commands.
2. For a computer programmer, command-driven interfaces are cheaper to implement.

DISADVANTAGES OF COMMAND-DRIVEN INTERFACE

1. It is sometimes difficult to remember all the commands; therefore, users have to constantly refer to the software user manual.
2. The user is restricted to using only the keyboard as the interfacing device, while with other interfaces, a wide variety of input devices can be used.
3. Commands must be entered at a special location on the screen and in a set format.

MENU-DRIVEN INTERFACES

Menus provide another popular form of user interface. There are many different alternative forms of menus. The simplest menus provide the user with a number of options and a simple means of selecting between them. The user is presented with a choice and, therefore, does not have to remember any commands. The interface is, therefore, suitable for beginners and infrequent users. All the user has to do is to make a choice.

A special type of menu is called a pop-up menu; an additional submenu pops up as a selection is made. You can click anywhere on a given document using the right-click mouse button to allow a pop-up menu to appear.

CONTINUED ON PAGE 24

CLEMENT RADCLIFFE
Contributor

IN THIS week's lesson, we will complete the review of functions. This is to be followed by the introduction to aspects of coordinate geometry. We will begin with the homework which was given last week.

- The function f is defined as $f(x) = \frac{3}{4}x + 1$
- a. Find the sum of $f(4) - f(2)$.
- b. Find the value of x for which $f(x) = 4$.
- c. Determine the value of $f^{-1}(x)$.

SOLUTION

(a) Since $f(x) = \frac{3}{4}x + 1$,
Then $f(4) = \frac{3}{4} \times 4 + 1 = 4$
Similarly, $f(2) = \frac{3}{4} \times 2 + 1 = \frac{3}{2} + 1 = \frac{5}{2}$
 $f(4) - f(2) = 4 - \frac{5}{2} = \frac{3}{2}$
Answer: $\frac{3}{2}$

(b) Since $f(x) = 4$, Then $\frac{3}{4}x + 1 = 4$.
Multiply all terms by 4.
 $3x + 4 = 16$
 $3x = 12$
 $x = 4$
Answer: 4

(c) Since $f(x) = \frac{3}{4}x + 1$, Let $f(x) = y$
 $4y = 3x + 4 + 1$
 $3x + 4 = y - 1$
Multiply all terms by 4
 $43x = 4y - 4$
 $4x = 4y - 4 / 3$
Interchanging x for y ,
 $y = 4x - 4 / 3$
 $y = f^{-1}(x) = 4x - 4 / 3$
Answer: $f^{-1}(x) = 4x - 4 / 3$

■ f and g are functions defined as follows:
 $f : x \rightarrow x + \frac{3}{2}$
 $g : x \rightarrow 2x + 5$

- (a) Calculate the value of $f(-3)$.
- (b) Write expressions for (i) $f^{-1}(x)$.
- (ii) $g^{-1}(x)$
- (c) Hence, or otherwise, write an expression for $(gf)^{-1}$

SOLUTION

Since $f : x \rightarrow x + \frac{3}{2}$,
(a) Then $f(x) = x + \frac{3}{2}$
 $f(-3) = -3 + \frac{3}{2} = -\frac{3}{2} = -1.5$
 $f(-3) = 0$

(b) (i) $f(x) = y = x + \frac{3}{2}$

Functions

Since $y = x + \frac{3}{2}$, then $2y = x + 3$
 $x = 2y - 3$

Interchanging x for y
 $y = 2x - 3$
 $f^{-1}(x) = 2x - 3$

(ii) $g : x \rightarrow 2x + 5$
Then $g(x) = y = 2x + 5$
Since $y = 2x + 5$
 $2x = y - 5$
 $x = \frac{y - 5}{2}$
Interchanging x for y
 $y = \frac{x - 5}{2}$
 $g^{-1}(x) = \frac{x - 5}{2}$

(c) Since $(gf)^{-1}(x) = f^{-1}g^{-1}(x)$
 $= f^{-1}(\frac{x - 5}{2})$
From above, since $f^{-1}(x) = 2x - 3$
 $(gf)^{-1}(x) = 2(\frac{x - 5}{2}) - 3$
 $= x - 5 - 3$
 $(gf)^{-1}(x) = x - 8$

We will now complete algebra by reviewing aspects of graphs.

GRAPHS

Please be reminded that you are required to be able to draw straight line and quadratic graphs. In doing so, it is important that you pay attention to the following:

- You need to complete accurately an appropriate table of variables, e.g., x and y values.
- The x and y axes must be CLEARLY LABELLED.
- The scale used must be appropriate to the problem. If one is given, it must be accurately used.
- A ruler must be used to draw the straight line, while free hand must be used to draw the curve.
- The use of a suitable pencil (HB) is required.

APPLICATIONS

- Graphs may be used to solve:
- Quadratic equations
 - Simultaneous equations
 - Other problems, e.g., finding maximum or

minimum value and equation of axis of symmetry.

In all cases, the solution of quadratic or simultaneous equations is represented by the x and y coordinates at the points of intersection of the line and the curve.

EXAMPLE 1

Plot the equation $y = x^2 - 3x + 2$ and, hence, solve $x^2 - 3x + 2 = 0$.

SOLUTION

x	-2	-1	0	1	2	3	4
y	12	6	2	0	0	2	6

- Plot the equation $y = x^2 - 3x + 2$
- Completing the table : $y = x^2 - 3x + 2$
- Plot the values in the table above.

At the point of intersection of the curve and the x axis, $y = 0$, that is $x^2 - 3x + 2 = 0$.

Therefore, the x coordinates of the points of intersection are the solutions of the equation, $x^2 - 3x + 2 = 0$.

The points of intersection are $(1, 0)$ & $(2, 0)$
The values are : $x = 2$ & 1 .

EXAMPLE 2

Plot the equations $y = x^2 - 3x - 3$ and $y = x - 3$.
Hence: (a) Solve the equation $x^2 - 3x - 3 = 0$.
(b) Solve both equations simultaneously

x	-2	-1	0	1	2	3	4	5
y	7	1	-3	-5	-5	-3	1	7

x	0	1	2
y	-3	-2	-1

Completing the tables:
 $y = x^2 - 3x - 3$ $y = x - 3$
(a) The solution of $x^2 - 3x - 3 = 0$ is the x coordinates of the points of intersection of the curve and the x axis.

As the x axis is $y = 0$, then at the points of intersection of $y = 0$ and $y = x^2 - 3x - 3$,

$y = x^2 - 3x - 3 = 0$. Therefore, the x values are: 3.80 and -0.80

The solution of the equation $x^2 - 3x - 3 = 0$ is therefore $x = 3.80$ OR -0.80
Answer: 3.80 or -0.80

(b) The points of intersection of the curve $y = x^2 - 3x - 3$ and the line $y = x - 3$ represent the solution of the simultaneous equations. Since the points of intersection are $(0, -3)$ and $(4, 1)$, therefore, the solutions are: $x = 0, y = -3$ or $x = 4, y = 1$.

NB: At the points of intersection of the curve and the line, $x^2 - 3x - 3 = x - 3$

Simplifying: $x^2 - 3x - x - 3 + 3 = 0$
 $x^2 - 4x = 0$. The values of x above also represent the solutions of the equation $x^2 - 4x = 0$.

PRACTICE EXAMPLE

- Plot the graph, $y = 6 - x - x^2$
- Plot the graph of $y = 4x^2 - 8x - 2$

HOMEWORK

x	-2	-1	0	1	2	3	4
y							

■ The function $y = x^2 - 2x - 3$ is defined in the domain $-2 \leq x \leq 4$.
(i) Complete the table below.

(ii) Using the scale 1cm representing 1 unit on both axes, draw the graph of $y = x^2 - 2x - 3$

(iii) By using the plot, find the following:
a) The x value at which the minimum value of $y = x^2 - 2x - 3$ occurs.
b) The values of x for which $x^2 - 2x - 3 = -x + 3$.

■ Plot the graph, $y = x^2 - 2x - 15$.

Using the graph, determine:
1. The points of intersection with the x axis.
2. The solution of the equation, $x^2 - 2x - 15 = 0$.

■ The functions $P(x)$ and $Q(x)$ are defined as:
 $P(x) = 3x - 4$ $Q(x) = 1 + x^2$

- i) Evaluate $P(5)$
- ii) Determine $P(x)$
- iii) Determine $PQ(x)$
- The functions $f(x)$ and $g(x)$ are as follows:
 $f(x) = 2 + 3x$ $g(x) = x^2 - 1/3$

CONTINUED ON PAGE 24

Research – Cont'd

TRUDI MORRISON
Contributor

THIS WEEK, we will take a look at some advantages and disadvantages of some methods of data collection.

INTERVIEWS

ADVANTAGES

- Provides in-depth information.
- Allows the researcher more flexibility.
- Can yield a high volume of data.
- Respondent can be observed for non-verbal cues, which could lead to the interviewer asking follow-up questions or detecting deception.

DISADVANTAGES

- May collect unnecessary information.
- Can be affected by researcher's biases.
- Can be time consuming.
- Heavily dependent on the respondent's availability/schedule.
- Information given could be based on the respondent's memory (poor memory may affect accuracy of the information).

OBSERVATIONS

ADVANTAGES

- Reduced occurrence of respondents' bias.
- Can yield a high volume of data.
- Allows for researcher flexibility.

DISADVANTAGES

- Reactions of the respondents may be misinterpreted.
- Important data could be missed because of the time the observation takes place.
- Persons being observed may alter their natural behaviour because they are being observed.
- Can be affected by researcher's biases.

DOCUMENT REVIEWS

ADVANTAGES

- Allows access to (otherwise) inaccessible

information.

- Relatively low cost.
- Access to very detailed information.

DISADVANTAGES

- Information stored in the documents could be incomplete.
- Time-consuming.
- Information may be outdated.
- Information may be biased.

QUESTIONNAIRES

ADVANTAGES

- Facilitates the collection of data from a large population.
- Less time-consuming than some other methods.
- Allows for anonymous responses.
- Is easily administered.

DISADVANTAGES

- Uneconomical (If done on paper this can be very expensive).
- Does not allow for follow-up/probing questions.
- Responses provided can be misleading.
- Responses provided can be misunderstood.
- May be affected by respondents' literacy levels.

SURVEYS

ADVANTAGES

- Relatively easy to administer.
- Can be developed in less time (compared to other data-collection methods).
- Cost-effective, but cost depends on survey mode.
- Can be administered remotely via online, mobile devices, mail, email, kiosk, or telephone.
- Conducted remotely can reduce or prevent geographical dependence.
- Capable of collecting data from a large number of respondents.
- Numerous questions can be asked about a subject, giving extensive flexibility in data analysis.
- A wide range of data can be collected.

DISADVANTAGES

- Respondents may not provide accurate, honest answers.
- Respondents may not feel comfortable providing answers that present themselves in an unfavorable manner.
- Surveys with closed-ended questions may have a lower validity rate than other question types.
- Data errors may exist due to question non-responses.

This is not an exhaustive list of the advantages and the disadvantages of the methods.

So, by now you must have considered the method of collecting the data you will need for your research for your internal assessment, but how much thought have you actually given to the source of the data? We spoke in previous lessons about the importance of finding persons who are considered authorities on the topic being investigated, and we mentioned the need for these sources to be free from bias in order to ensure that the information is reliable and valid. Let us look very briefly at some of the types of bias we need to safeguard against interfering with our research.

TYPES OF BIAS

1. CULTURAL BIAS

If the data has been collected from someone from a different culture, the researcher must be mindful of how the data that has been collected is interpreted. Similarly, if the researcher is researching something within his own culture, he must be careful not to overlook certain responses because one is accustomed to the same belief system.

2. POLITICAL BIAS

The possible political bias of the respondent can influence his outlook on certain situations based on his political affiliation (to a political party) or his political ideology (for example socialism vs capitalism). Imagine that you are researching how crime impacts the educational

achievement of teenage boys in an inner-city community and you wanted to look at the solutions for Jamaica's crime problem. Consider how diverse the response from the current national security minister would be from the response from the current opposition spokesperson on security.

3. SOCIAL BIAS

Factors such as age, race, gender and social class can colour an individual's perspective on any matter.

Two other things to be mindful of in order to avoid bias when collecting data are:

1. SAMPLE

In order to present a balanced perspective on the issue being investigated, you may need to have a wide enough sample that covers a variety of perspectives spanning age, race, gender, social class and educational level. If your research is confined to a specific population, for example, teenage boys in the Waterworks Valley, then you need to ensure that you speak to quite a number of the boys in order to have a representative sample. There are several sample designs that can be used to determine your sample size and profile, depending on your research.

2. FAULTY RESEARCH METHODS

Ensure that your research tools are carefully assembled and used responsibly in order to capture reliable data about the issue you are researching. A questionnaire that asks the wrong questions cannot provide the answer to the research question guiding the research. Likewise, responses which are improperly coded and misinterpreted by the researcher can lead to faulty conclusions at the end of the research.

The topic of research, as you can tell, is a pretty extensive one. Continue reading your texts and seeking your teacher's guidance as you undertake your research for your internal assessment and beyond.

Next week, we will look at some common fallacies that occur in reasoning. We will also tie all of this together in the context of the expository speech presentation. How fun will that be?! Yay!

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Development through the arts

GOAL

For students to evaluate the ways in which the arts and popular culture impact Caribbean society.

OBJECTIVES

1. Describe how human and cultural development contribute to a sense of identity.
2. Describe how the development of the arts contributes to employment.
3. Examine the contributions made by noted Caribbean nationals to the development of art forms in the region.

IDENTITY AND BELONGINGNESS

A sense of identity and belongingness can be developed in the Caribbean when artists, musicians, poets and various performers develop a sense of self-worth for the work they do by marketing themselves internationally. This international recognition facilitates the development of a Caribbean identity through their achievements in literature, music and dance. The successes enjoyed by our singers, musicians, dancers and writers give Caribbean people a sense of pride in their heritage. This feeling suppresses Eurocentric beliefs and cultural imperialism from the colonial legacies, and leads to the empowerment of the human being, which is a necessary requirement for human development. Caribbean arts also contribute to the empowerment of man, because people can grow intellectually through their dedication to a particular discipline, for example, Rex Nettleford for his work in dance movement.

CONTRIBUTION TO EMPLOYMENT

The development of the arts across the Caribbean is a great opportunity for the creation of unconventional employment opportunities. It is important to note that in this case, the artiste is not the only one who benefits, but also those who are integrally involved in the production process, including promoters and even those who manage successful artistes. The rise of the arts has created a range of new types of jobs in the Caribbean.

CONTRIBUTIONS BY NOTED CULTURE ICONS

The arts has contributed to the development and definition of Caribbean culture, not only for those living within it and those in the diaspora, but also to people looking at the culture from outside, in the wide world (Muhammed, 2015).

REX NETTLEFORD

"Patriotism is not short, frenzied outbursts of emotion, but the tranquil and steady dedication of a lifetime," said former United States Presidential nominee Adlai Stevenson. With a lifetime of

dignified and distinguished service to Jamaica and the wider Caribbean, Professor the Honourable Ralston Milton 'Rex' Nettleford has established himself as the quintessential Caribbean patriot. His contributions will forever be etched into the annals of the region's history.

■ Nettleford was a prominent Jamaican historian, sociologist, dancer and choreographer. He was considered by many to be Jamaica's Cultural Ambassador to the world.

■ He was the co-founder of the National Dance Theatre Company in Jamaica in 1962 and led the organisation for almost 50 years.

■ He studied the Rastafari movement in West Kingston, Jamaica, after returning from Oxford University.

■ He founded and ran the Trade Union Education Institute.

■ He was the vice-chancellor of the University of the West Indies in Kingston, Jamaica.

■ He was one of four alumni awarded an honorary degree in 2003 in celebration of the 100th anniversary of the Rhodes Scholarship at Oxford University in Oxford, Oxfordshire, England.

■ He earned a Rhodes Scholarship to study political science at Oxford University in Oxford, Oxfordshire, England, while he was a student at the University of West Indies in Kingston, Jamaica.

■ In describing his legacy, it seems that no other words are more fitting than, Rex Nettleford, a nation, his monument.

LOUISE BENNETT-COVERLEY

Poet and social activist Louise Bennett-Coverley was born in Jamaica and received her formal education at Ebenezer Primary School, St Simon's College and Excelsior High School.

From an early age, she had the taste for the theatrical, and at 17 she recited her first poem at a concert at Coke Methodist Church in 1936. Her early work was not greatly appreciated and did not gain much momentum, mainly because of her use of the Jamaican dialect. The British language was highly admired at that time. Nevertheless, Louise Bennett remained persistent in using the Jamaican dialect in her poetry, as she wanted her poems to be a reflection of the life and philosophy of the Jamaican people.

Her poems were first published in a Sunday newspaper by Michael deCordova and this proved to be a huge success for Bennett. Her poem *Colonisation in Reverse* (1966) gained widespread attention. It reflected the thoughts of the minorities of postcolonial times who were residing in the United Kingdom. In this poem, she touched on the sensitive topic of racial inequality experienced by Jamaicans as well as South Asians under the postcolonial rule, especially those who had moved to England in search of better jobs but were facing oppression at the hands of the British.

In 1945, Bennett went to the Royal Academy of Dramatic Art in England, then she later joined the British Broadcasting Corporation and hosted 'Caribbean Carnival' and 'West Indian Night' on radio. She later married Eric Winston Coverley in 1954

and in 1956 she became the drama officer at the Jamaica Social Welfare Commission. She was later appointed as its director. Bennett also taught drama at the University of the West Indies Extra Mural Department and at some other agencies. She was subsequently named Member of the British Empire for her work in the Jamaican theatre, and received several other awards nationally and internationally. She was granted the Order of Jamaica in 1974 by the Government of Jamaica for her extraordinary contribution in the field of literature and arts.

MARTIN CARTER

One of the most important poets to come out of the Caribbean, Martin Carter, has been compared to literary lions such as W.B. Yeats and Pablo Neruda. His most famous work was fueled by the political turmoil that gripped his native Guyana in the 1950s and 1960s. He told fellow Guyanese writer Bill Carr, in an interview for the Guyanese magazine *Release*, that politics and poetry were inseparable.

"[If] politics is a part of life, we shall become involved in politics, if death is a part of life, we shall become involved with death, like the butterfly who is not afraid to be ephemeral."

Unfortunately, because of the popularity of his politically charged poems, Carter has often been pigeon-holed as a revolutionary poet. However, as Guyana's *Stabroek News* wrote, "There were other voices in Martin Carter, strains of tenderness, love poems of moving fervour, agonies expressed that have nothing to do with politics, insights into all of human nature."

During his life, Carter received limited recognition outside of Guyana, mainly because he refused to abandon his country. A friend of his told the *Guyana Chronicle*, "Exile for him was not going overseas like so many of the Caribbean's best writers, but exiled within his own country; in his own way, and fighting the fight at home." As he fought that fight, he wrote words of defiance, beauty, pain, and hope, leaving a literary legacy that, finally, in the 21st century, is receiving worldwide critical respect.

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CONTINUED FROM PAGE 16

who is responsible for it, this ensures accountability. Representatives can deal specifically with the needs of their constituencies.

6. Citizens in each constituency can appeal directly to their representative to fulfil their needs. Enables direct interaction with representatives and the people.

1. Opposition candidates constituencies may be neglected or, worst, victimised.

2. A party with a minority of votes overall may form the government. This may happen as the number of voters in a constituency is never equal.

3. This system may encourage gerrymandering.

4. MPs may focus on the interests of their constituencies rather than on the national interest.

PROPORTIONAL REPRESENTATION

1. This system allows representation from minority parties in parliament.

2. There are no controversies with gerrymandering, as there are no constituencies.

3. Representation in parliament is a true reflection of the strength of the party, as parties are given/allocated seats in proportion to the percentage votes they receive.

4. MPs are more likely to focus on national interests rather than on narrow constituency interests.

1. There is the strong possibility of coalition government.

2. Votes may be spread thinly because of the many small parties in the country.

3. It weakens the relationship between the candidate, the constituency representative and the voters.

4. This can lead to the presence of a number of small parties in parliament, making it difficult to form a coherent opposition.

5. Can lead to hung parliaments.

ACTIVITIES

1. Identify and describe the election system used in Jamaica.

2. Outline the advantages and disadvantages of the FPTP and the PR systems.

3. Suggest THREE reasons for your preference for a type of election system that you would want to see used in your country.

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yl: english language

CONTINUED FROM PAGE 19

However, the brain's health must be emphasised as well when one thinks of the health of one's body. Its role is significant in our daily activities and a healthy brain promotes improved memory and focus. There are several ways the brain's health can be maintained, and these include simple activities as well as particular routines like exercising, socialising and resting. However, one must avoid excessive drinking and neglecting changes to one's health. Above all, physical activity is the most recommended way to achieve brain health, as it facilitates the development of new brain cells. Before intensifying physical activity, though, be careful, and see a doctor.

I do hope the point outlines and the sample summaries prove useful. See you next week.

Vocabulary Top-Up:

Kingpin – the most important person in an organisation

Kinetic – relating to or caused by motion.

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CONTINUED FROM PAGE 20

A pull-down menu is a special type of menu used in windowing; it was briefly introduced. It is a menu displayed as a vertical list which hangs from a horizontal bar on the screen in order to elicit a choice from the user.

ADVANTAGES OF MENU DRIVEN INTERFACES

1. The user is presented with a list of options to choose from; he does not need to remember the commands

2. Free from typing errors, because the user does not have to type the commands.

3. A wide variety of input devices can be used to interface with a menu.

DISADVANTAGES OF MENU-DRIVEN INTERFACE

1. Several steps are required to issue a command

2. Once the user has learnt the menu system, it is bothersome to have to wait on the package to present the questions before the commands can be entered.

We have come to the end of this lesson. See you next week, when we will conclude looking at user interfaces and the topic system and application software. Remember, if you fail to prepare, you prepare to fail.

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yl: information technology

yl: mathematics

CONTINUED FROM PAGE 21

- i) Calculate $g(5)$
- ii) Find $f^{-1}(x)$
- iii) Express $gf(x)$ in its simplest form.

We will continue the review of graphs next week.

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'Woody' in a scene from the live-action film 'Woody Woodpecker'.