LESSON 1: Use of Adverbs

Learning Outcomes

By the end of this lesson, you should be able to:

i) identify ways of doing things.

ii) use of adverbs in your daily life activities.

You will need:

• a pen

• a book

Introduction

An adverb is a word that tells more about a verb, an adjective and another adverb. Adverbs tell us how an action is done: when? why? how? and where?

Examples

i) The cyclist is riding slowly.

ii) Children should cross the road carefully.

Activity 1

Use the correct form of the word in the brackets to complete the sentences below. Examples have been given to guide you.

1. Tino cleverly avoided the punishment. (clever)

2. Uganda's population is steadily rising. (steady)

3. St Thomas choir sang the second compulsory song beautifully. (beauty)

4. The host welcomed us cheerfully. (cheer)

5. We patiently waited for his return from Ojipaku market. (patience)

6. Italians have seen the coronavirus attacked worst. (worse)

7. They answered the question wisely. (wise)

8. A machete is usually bigger than a knife. (usual)

9. The hungry boy ate the mango greedily. (greed)

10. The hunter bravely attacked the lion in its den. (brave)

Activity 2

Order of Adverbs

When more than one adverb is used in a sentence, they usually follow in this order: manner (how?), place (where?) and time (when?).

Example

The pedestrian crossed the road carefully (how?) at the zebra crossing (where?) yesterday (when?).

From the sentences below, underline the adverbs of manner, place and time.

1. The traffic officer called the driver loudly at the junction in the morning.

2. Many cyclists ride carelessly at the traffic lights every day.

3. The bus driver spoke politely to the passenger on the bus on Tuesday.

4. My mother nicely made cakes from the kitchen last weekend.

5. It rained heavily in our area last year.

LESSON 2: Informal Letter Writing

Learning Outcomes

By the end of this lesson, you should be able to:

i) express your views on safety on the road.

ii) write a letter about safety on the road.

Introduction

Letter writing is one way of sending a message between or among people. You can write a letter to a friend, parents, relatives and many others.

Activity 1

1. (a) Write a letter to your father appreciating him for his effort to keep everybody well in this period of COVID-19 pandemic. Wish him a longer stay in this life. Use your school address.

   (b) The letter below has some words missing. Using the words in the box, complete it by filling in the gaps correctly.

   reap advise purpose academic not arua discussions hear dear examinations
1. **WORD PROCESSING**

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3. **ELECTRONIC PRESENTATION**

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4. **DATABASE MANAGEMENT**

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5. **WEB DESIGNING**

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**COMPUTER STUDIES PAPER ONE QUESTIONS (OCOMP009)**

**SECTION A**

1. An antivirus such as Avast is an example of:
   A. A user interface  
   B. An operating system  
   C. An application software  
   D. A utility program

2. One of the following is not a programming tool:
   A. Debugger  
   B. An interpreter  
   C. Notepad  
   D. Compiler

3. On the computer keyboard, the spacebar
   A. Erases unnecessary characters  
   B. Controls the keyboard  
   C. Space characters  
   D. Cancels a command

4. On the computer desktop, a graphical representation of a program or application is called
   A. Scroll button  
   B. Dialogue box  
   C. Checkbox  
   D. Icon

5. When working with Word processing, one of the following displays the name of the current document:
   A. Title bar  
   B. Status bar  
   C. Menu bar  
   D. Tool bar

6. Which software would you need to open and view webpages?
   A. Website  
   B. Web browser  
   C. Web application  
   D. Google

7. Your school has opened a network to be used for collaboration. As a student, which of the following would you need to be able to log onto the network?
   A. Memory card  
   B. Hard disk  
   C. Flash disk  
   D. Modem

8. Checking a computer program for errors is referred to as
   A. Debugging  
   B. Bugging  
   C. Correction  
   D. Programming

9. A computer that links several personal computers together on a network is called
   A. Gateway  
   B. Server  
   C. Router  
   D. Client

10. The difference between hardware and software is that hardware is:
    A. Tangible while software is intangible  
    B. Metallic while software is plastic  
    C. Permanent while software is temporary  
    D. Reliable while software is unreliable

11. A grid in a spreadsheet program where entries are made consists of:
    A. Rows, columns and diagonals  
    B. Rows, columns and worksheets  
    C. Workbooks and worksheets  
    D. Rows and columns

12. Which of the following database objects is used to find answers to questions about data?
    A. Macro  
    B. Module  
    C. Form  
    D. Query

13. The main purpose of a screen saver is to:
    A. Help prevent screen burnout  
    B. Brighten the screen  
    C. Show that the screen is able to show various graphics  
    D. Entertain the computer user

14. When using Internet, the …………….. is used to translate data for transmission along the telephone line.
   A. Memory card  
   B. Hard copy  
   C. Soft copy  
   D. Modem

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**SECTION B**

15. While working with spreadsheet software, the ★★★★★ signs can fill a cell. What would you do?
   A. Make the cell active  
   B. Enter the formula  
   C. Widen the column  
   D. Recalculate the column

16. One of the following components of a central processing unit directs all activities with it:
   A. System clock  
   B. Memory unit  
   C. Control unit  
   D. Registers

17. The text and graphics which is always displayed on the screen of a smartphone can be termed as…………….
   A. Photoscopy  
   B. Hardcopy  
   C. Master copy  
   D. Soft copy

18. A person who accesses a computer network illegally is called
   A. Criminal  
   B. Wizard  
   C. Hacker  
   D. User

19. One of the students lost her work during the computer exams. This is because she
    A. Forgot to………..  
    B. Wrote the formula  
    C. Wasn’t able to………..  
    D. Forgot to save

20. What is a mouse in relation to computing?
    A. A small destructive rodent  
    B. A round plastic container near the computer  
    C. A pointing device that controls a pointer on the screen  
    D. A device for typing
21. (a) Explain the following terms as used in computer software.
(i) System software.
(ii) Application software.
(iii) Utility programs.
(b) Of what use is the operating system?
(c) Explain at least two examples of a Utility program.

22. (a) Mention at least three ways that can be used to ensure
(i) Safety of the computer devices
(ii) Health of the computer user
(iii) Security of data.
(b) What feature would you use to ensure that your word document is not opened by unauthorised people?

23. (a) In reference to the internet, define netiquette.
(b) Explain at least three practices that exhibit proper netiquette.
(c) What possible risks does a Facebook user face?
(d) Explain the safety practices that can be adopted to avoid or reduce the impact of the risks mentioned in (c) above.

24. (a) In relation to spreadsheet, define
i. Workbook.
ii. Relative cell referencing.
iii. Absolute cell referencing.
(a) State two data types that can be entered in a spreadsheet program.
(b) Under what circumstances would it be best to use spreadsheet software.

25. In relation to Database Management Systems
(a) Explain the following terms
(i) A record
(ii) Primary key
(iii) Caption
(b) State one example of a database management system.
(c) Explain at least three facts to justify the increased use of databases for large storage of data.

26. (a) Define a computer.
(b) Explain three reasons why you think computer education should be taught in schools.
(c) How can computers be used at our homes?

SECTION C

26. You and your friends are starting a bank/SACCON saving scheme. Your friends think buying a computer is a waste of time.
(a) Explain with reasons why you would need a computer in your bank
(b) What particular computer devices and tools would you purchase?
(c) Discuss the possible challenges you would face when using the computers.

27. (a) Discuss the common health problems that can arise from long-term usage of computers.
(b) What good practices can be adopted when working with computers to avoid the health problems mentioned in (a) above.
(c) In what ways can a computer user ensure the long life of computer devices?

29. (a) “Computers are an aid to education”. Discuss with examples.
(b) Discuss the negative effects of...
9. Let $AT = x$
$x^2 + x^2 = 10^2$
$x = \sqrt{50}$

10. Average speed = \frac{Total distance}{Total time}
Total distance = 2D
Total time = \frac{D}{16} + \frac{D}{12} + \frac{2D}{12} = \frac{2D}{12}
Total distance, S = 2D
Average speed = \frac{\frac{2D}{12} \times 3600}{16 + 12} = 3809.5 m/s

### SECTION B

11. For line M
(1, 0) and (-1, 4)
Gradient of M = \frac{4 - 0}{-1 - 1} = -2

Equation of the line M
Considering (1, 0) and (x, y) is -2 (gradient of a straight line is constant)
y - 0 = -2(x - 1)
y = -2x + 2

The equation of the line M is y = -2x + 2
Equation of a line N which is a perpendicular bisector M
The line N passes through the mid-point of line M
Gradient of line \times gradient of line M = -1
Gradient of N = \frac{1}{2}

Mid = point of line M = \left(\frac{1 + 2}{2}, \frac{0 + 4}{2}\right) = (0.5, 2)

### Question 12

a) n(x) = 100
n(BuLuu) = 52
n(BrLuu) = n(BrLuu) = n(SnLuu) = 2n(BrLuu) = 2n(BrLuu) = 4n(BrLuu)

Let
n(BrLuu) = x
4n(BrLuu) = 4x
n(SnLuu) = 4x
n(SnLuu) = 4x
n(Luu) = 2x
n(Leu) = 4x
n(Leu) = 4x
n(Luu) = 4x
n(SnLuu) = 4x
n(BrLuu) = 4x

b) (i) Cars with faulty steering
4x + 3x + 2x + x + x + x + 4x + 52 = 100
16x + 52 = 100
16x = 48
x = 3
Cars with faulty steering = 4x + 2x + 4x = 10x = 10 \times 3 = 30

### Question 13

a) Let the distance between A and B be D km.

13. a) Let the distance between A and B be D km.

b) Let the extra distance Denis covered before they meet be X km and let the meeting point be M.

### Question 13

**c) Extra time** Denis remains in motion when Edmond has reached town B = \frac{96}{36} - \frac{96}{36}

Let the time Denis’ time be \(l_d\)

Speed = \frac{distance}{time}

\(S_d = \frac{117 - 21}{36}\)

12 = \frac{96}{l_d}

\(l_d = \frac{96}{12}\)

You can use this formula to find the time Denis took to move from M to B and add 2h to come up with the 8h above

Difference in time = \(l_d - l_t = 8 - \frac{96}{12} = 4\frac{3}{4} = 4.75h\)

The extra time Denis remains in motion when Edmond has reached town B is 4.75h for 4h and 45 minutes

### Diagrams

- Gradient of point (0, 2) and any other point (x, y)
- Equation of line M
- Equation of line N
- Cars with faulty steering
- Cars with one fault only
- Diagram showing extra time
15. (i) Calculate \( A_2 \) and \( AB \)
\[
\begin{align*}
A & = (300000 + 300000 + 300000 + 867834.496) - 1600000 \\
& = 1767834.496 - 1600000 \\
& = 167834.496
\end{align*}
\]
(ii) Find the inverse of \( A_2 \)
\[
A_2^{-1} = \frac{1}{3}AT
\]
(iii) \( OT \)
\[
OT = OA + AT = a + \left(b - \frac{1}{2}g - q\right) = a - \frac{1}{2}g + \frac{1}{3}b + \frac{1}{3}h = \frac{1}{3}(2a + b) + \frac{1}{3}(2a + b)
\]
(iv) \( AR \)
\[
AR = AO + OR = OA + \frac{a}{b}OB = -OB - OA = -b - q
\]
\[
\begin{align*}
& \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} & \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} \\
& \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} & \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}
\end{align*}
\]
Equating the corresponding terms in the expressions of \( OR \)
\[
0 - 3a + \frac{1}{2}b + \frac{3}{2}b + \frac{1}{2}b
\]
\[
1 - \frac{1}{3}k = \frac{2}{3}L
\]
\[
\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}
\]
Substitute \( i + j + i + j \)
\[
1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}
\]

17. (a) Draw a graph of \( y = \frac{2x^2 - x - 15}{4} \) for values of \( x \) ranging from \(-3\) to \(+4\)

(b) Use your graph to solve the equations below
\[
\begin{align*}
& i) \ 2x^2 - x - 15 = 0 \\
& ii) \ 2x^2 = x + 19
\end{align*}
\]
11. a) i) Magnesium is a very reactive metal when stored it reacts with oxygen to form a layer of magnesium oxide on its surface this layer of magnesium oxide is quite stable and prevents further reaction of magnesium with oxygen the magnesium ribbon is cleaned by sand paper for removing this layer so that the underlying metal can be exposed to air.

ii) \( Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g) \)

b) i)  

ii) \( 38 \ \text{cm}^3/s \)

10

c) i) and ii) See the graph.

12. a) i) This is because magnesium displaces copper forming magnesium sulphate which is a colourless solution.

ii) The piece of iron bar reacts with the oxygen rich rain water forming a brown coating called rust.

b) Divide the solution into two parts:

- To the first part, add excess aqueous ammonia: a white precipitate is formed, it is insoluble in excess.
- To the second part, add potassium iodide solution: no observable change confirms presence of aluminium ions in solution.

c) i) The hydrated compound was heated strongly evaporating off all the water vapour and remaining with anhydrous substance.

ii) Mass of water vapour lost = \( (5 - 2.25) = 3.25 \) g

Determine moles of \( Na_2SO_4 \) and \( H_2O \)

\[
Na_2SO_4 \rightarrow 2.205 = 0.01553 \text{ moles} \\
H_2O \rightarrow 3.25 = 0.181 \text{ moles} \\
\text{Find mole ratio:} \\
\text{water: sodium sulphate} \\
0.181 : 0.01553 \\
12 : 1 \\
\text{the value of } X = 12
\]

13. a) i) The figure below shows a method of separation of a mixture.

b) a) In which states of matter must the components of the mixture be for this method to be effective?

ii) A graph of temperature against volume of sodium hydroxide.

\[
\begin{array}{|c|c|c|c|c|c|c|}
\hline
\text{Volume of sodium} & 0 & 10 & 20 & 30 & 40 & 50 & 60 \\
\text{hydroxide (cm}^3\) & 0 & 27.0 & 31.0 & 31.0 & 30.0 & 29.0 \\
\text{Temperature of} & 25.0 & & & & & & \\
\text{mixture (°C)} & & & & & & & \\
\hline
\end{array}
\]

\[
\begin{align*}
\text{i) } & \text{HCl(aq) + NaOH(aq)} \rightarrow \text{NaCl(aq) + H}_2\text{O(l)} \\
\text{ii) } & \Delta H = \text{MC} \\
\text{d) } & \text{Calculate:} \\
\text{i) } & \text{AH = MC} \\
& = (35 + 500) x 4.2 x 10^{-3} \\
& = 3570 \text{J} \\
\text{ii) } & \text{The value would be less, this is because ethanoic acid is a weak acid therefore it would partly ionise thence fewer hydrogen ions consequently little heat.}
\end{align*}
\]

14. a) i) Ores are naturally occurring rocks that contain metals or metal compounds in sufficient amounts to make it worthwhile extracting.

ii) Chalcopyrite, Chalcocite and Covellite.

b) i) \( 4CuFeS_2(s) + 15 O(g) \rightarrow 4CuO(s) + 2FeO_3(s) + 8SO_2(g) \)

c) \( 2CuO(s) + C(s) \rightarrow 2Cu(s) + CO_2(g) \)

d) Copper made by this reduction is impure. Impure copper can be purified using electrolysis.

i) Copper (II) sulphate solution

ii) cathode:

- \( Cu^{2+}(aq) + 2e^- \rightarrow Cu(s) \)

b) a) State and explain two observations that would be made at the end of the experiment.

b) i) How does your observation in (a) above affect the daily use of iron wool?

ii) Write a possible reaction for your observation in (a) above.

iii) Suggest how you would make the experiment go faster.

3. Below is a table showing the solubilities of salts Q and R at different temperatures.

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<th>30</th>
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<td>Q solubilities in grams per 100 g of water</td>
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<td>5.0</td>
<td>7.4</td>
<td>10.0</td>
<td>14.0</td>
<td>19.0</td>
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<tr>
<td>R solubilities in grams per 100 g of water</td>
<td>15</td>
<td>15.0</td>
<td>20.7</td>
<td>25.7</td>
<td>28.7</td>
<td>33.0</td>
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</table>

a) Define the term “solubility of salt”.

b) i) From the table, give a general comment about the solubilities of the salts.

ii) If both salts Q and R are present in 100 cm³ of saturated solution at 50°C, what will be the total mass of crystals formed if the solution was cooled to 20°C?

b) State one application of solubility.

c) The spots in the diagram below represent a paper chromatogram for three brands of soda suspected to contain unwanted food additives.
SECTION B:

13. a) Describe how a sample of hydrogen chloride gas can be prepared in the laboratory.
b) The Figure below demonstrate a fountain experiment.

![Fountain experiment](image)

i) Write an equation for a reaction between hydrogen chloride and water.
ii) The solution in b(i) above was reacted with silver nitrate solution. State what was observed and write an equation of the reaction.
iii) Watch-glasses of aqueous ammonia and concentrated hydrochloric acid were placed near each other on a table. At first no white fumes were seen. After a short time, white fumes were seen between the watch-glasses.

![White fumes](image)

Explain:
i) How the dense white fumes were formed
ii) Why the fumes were closer to a watch glass with hydrochloric acid than that of ammonia.
iii) Write an equation of reaction leading to the formation of the white fumes.
d) Dilute hydrochloric acid was added to a solution containing lead (II) ions.
i) State what was observed
ii) Write an equation of reaction.
c) The resultant mixture in (d) above was heated.
i) State what was observed
ii) Write an equation of reaction

14. a) i) What is rust?
ii) Write an equation that leads to the formation of rust.

b) i) Describe an experiment to demonstrate rusting using iron wool.
ii) How does rust affect efficiency of moving parts in machines?

The hull of a ship is made from steel (mainly iron). Metal blocks are placed on the ship's hull to prevent rusting.

![Rusting experiment](image)

Explain why:
i) Magnesium is suitable to use as the metal blocks
ii) Copper is not suitable to use as the metal blocks

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From page V

The results showed the presence of unwanted food additives in N and P only on the chromatogram.
a) Label solvent front and base line.
b) On the diagram, circle the pure component in the sodas
c) State one application of chromatography.

5. The sketch was obtained when 2g of magnesium was reacted with excess of 2M hydrochloric acid. The volume of hydrogen was then plotted against time as shown below.

![Hydrogen volume vs time](image)

a) On the same axis, plot the graph that would be obtained if 1M hydrochloric acid was used instead of 2M hydrochloric acid.
b) Explain the significance of the flat portion BC of the curve.
c) Explain how the use of powdered magnesium would affect the reaction.

6. A student summarised and reported the results shown below;

![Diagram of particle](image)

i) Sugar
ii) Sodium chloride.
b) Write an equation of reaction between concentrated sulphuric acid with sugar and sodium chloride.

9. Study the flow chart below and use it to answer the questions that follow.

![Flow chart](image)

a) Identify:
   i) Reagent X
   ii) Gas A
   b) Identify process B.
c) Write an equation for:
   i) The formation of gas C.

10. Below is a dot (•) and cross (x) diagram of a particle.

![Particle diagram](image)

a) Identify the bond type(s) in the diagram.
b) The compound whose particle is shown above was reacted with sodium hydroxide and warmed.
i) State what was observed
ii) Write an equation of reaction.

11. a) Crude oil is a major source of many hydrocarbons.
   i) Name the process used to separate the hydrocarbons in crude oil
   ii) Upon which physical properties are the hydrocarbons separated?
   b) Under certain conditions, hexane can be converted to two products. The formula of one of the compounds is C6H12.
i) Write the formula of the other product.
   ii) Identify a reagent which can be used to distinguish the two products and state what is observed in each case.
   c) Ethyne is another hydrocarbon in crude oil. Write an equation and name the product formed when ethyne reacts with:
   i) Chlorine
   ii) Hydrogen chloride gas
   d) The apparatus below was used to prepare ethene in the laboratory.

![Ethene preparation](image)

Identify substance T.

ii) State the property of ethene which allows it to be collected as shown.
iii) Ethene can form polymers. Write the equation of polymerisation of ethene.

12. a) Describe an experiment to determine heat molar heat of combustion of ethene.
   b) In an experiment to determine molar heat of reaction 0.15g of Magnesium powder was added to 25.0cm³ of a 2M copper (II) sulphate solution. The temperature of copper (II) sulphate solution was 25°C, while the mixture recorded a temperature of 43°C.
i) Other than increase in temperature, state and explain any other observation.
   ii) Calculate the heat capacity during the reaction (specific heat capacity of the solution is 4.2J/g°C and its density is 1g/cm³).
   iii) Determine the molar heat of displacement of copper by magnesium (Mg = 24).
c) Write an ionic equation for the reaction.

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