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Water and sanitation

**Sanitation** is the process of keeping places around the house, schools and work places clean and healthy to prevent diseases caused by contact with human waste and dirty environment

Why one should promote sanitation

- prevent spread of diseases

Cleaning the school, work place and home

The schools, work places and home should be kept clean and tidy. The parts of the school that should be cleaned are:

1. The compound

The paths in the compound must be swept, the flowerbeds weeded and the grass cut or trimmed. Rubbish collected should be disposed of either in a dustbin or in a rubbish or garbage pit in the school.

2. The classrooms and bedrooms

The floor needs to be swept then mopped or wiped with a wet piece of cloth to remove dust and parasites like fleas and jiggers. The windows need to be wiped to remove dirt and stains that prevent entry of light. The roof should be cleaned using a cobweb remover to get rid of cobwebs and organisms such as spiders, which may be harmful. Desks and chairs need to be wiped with a damp piece of cloth to remove dust and dirt that may make books and clothes dirty.

3. Toilet, latrine and urinal

The latrines, toilets and urinals should be used properly. When using a latrine, the waste (feces

and urine) must be directed into the pit. If using a toilet, the waste must be directed into the bowl of the toilet. In the urinal, urine must be directed to the trench so that away. Do not dispose any solid substances in the urinal. We should not pass waste in the bush or on the road sides.

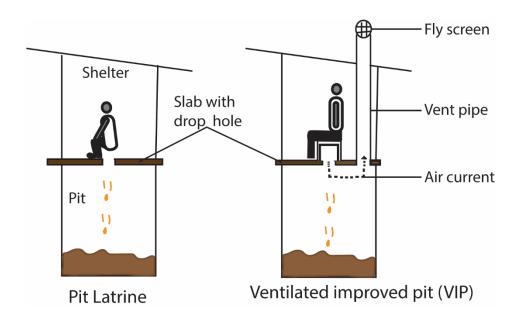
After using the toilet, one should also clean themselves well using toilet paper or water, to remove waste.

A person should then wash his/her hands with clean water and soap after using the toilet. The toilets should be cleaned using soap, water and a brush.

The brush is used to scrub the floor. It should then be rinsed with clean water. After using the latrines, the opening should be covered to keep flies away. The toilets, latrines and urinals must be kept very dean to keep away flies and bad smell.

#### Latrines

They are two type latrine



#### Pit latrine

A **pit latrine**, also known as **pit toilet** or **long drop**, is a type of toilet that collects human feces in a hole in the ground. Urine and feces enter the pit through a drop hole in the floor, which might be connected to a toilet seat or squatting pan for user comfort. Pit latrines can be built to function without water (dry toilet) or they can have a water seal (pour-flush pit latrine).

When properly built and maintained, pit latrines can decrease the spread of disease by reducing the amount of human feces in the environment from open defecation.

This decreases the transfer of pathogens (disease causing organisms) between feces and food by flies. These pathogens are major causes of infectious diarrhea and intestinal worm infections.

The World Health Organization recommends the pits are built a reasonable distance (about 10m 0r 32 feet) from the house, balancing issues of easy access versus that of smell.

#### **VIP** latrine

In addition to the pit, VIP latrine has a vent pipe.

The vent pipe should have an internal diameter of at least 110 mm and reach more than 300 mm above the highest point of the toilet superstructure. Wind passing over the top creates a suction pressure within the vent pipe and induces an air circulation. Air is drawn through the user interface into the pit, moves up carrying flies inside the vent pipe and escapes into the atmosphere.

The flies are trapped inside the vent pipes by a fly trap.

The drop hole of a VIP latrine should not be covered to enable air circulation.

# **Caring for latrines**

- Cemented latrines should be kept clean by mopping with soap water and brush and then dinfecting to reduce germs and bad smell while Mud latrine should be smoked instead.
- Pit latrine should be covered to prevent houflies from carrying germs from the pit to the food.
- VIP laterines should not be covered to allow air circulation tand flies to be trapped in the

vent.

# Tools used for cleaning the compound

- brooms
- twigs
- dust pan
- cleaning rug
- rake

The following equipment can be used to keep the environment clean



# Rubbish pit

Decomposing rubbish like plant remains should be separated from non-decomposing rubbish like plastics.

Decomposing rubbish should be turned into compost in the dust bin to be used in the gardens.

Non-decomposing rubbish should be burned regularly.

Bathing shelter

Schools, home and work places should have bathrooms to encourage regular bathing.

Bathrooms should be washed and disinfected regularly.

# **Drying racks**

Plates and utensils should be kept on a drying rack at least a meter from the ground to prevent dog cats and poultry from dirtying them.

## Kitchen

Every home should have a kitchen to prevent inhabitant from inhaling poisonous smoke in case food is prepared in the house. The kitchen should be kept clean and tidy.

#### Water

Safe water is one of the most essential commodity in a home, school and place of water.

Uses of water

Drinking

Washing hands and clothes

Agricultures

Mopping

**Industry** 

#### Water quality

The quality of water required depends on what it will be used for. Drinking water must be clean and safe to drink and protected from any contamination by pathogens or other pollutants. The primary concern must be to prevent the transmission of waterborne diseases. For other water uses such as for domestic washing or for agricultural or industrial uses, the quality is less critical.

Generally the quality of potable or water for drinking should

- 1. not be contaminated
- 2. **Mineral rich.** The natural occurring minerals in the source water are not removed through purification processes, such as reverse osmosis and distillation.
- 3. **Have alkaline pH (7-9.5);** showing that the water contains a healthy level of alkaline minerals such as calcium and magnesium.
- 4. Have a good taste.

#### **Sources of water**

# 1. Tap water

Tap water is relatively safe treated water from sea, lakes or rivers

#### 2. Rain water

Rainwater is also an important source of water, although on a relatively small scale due limited harvesting capacity such as availability of water tanks and its unreliability. Collecting rain from roofs or other hard-surfaced areas and storing it until it is needed can provide a valuable source of water for many purposes.

Rainwater has several advantages. It is free, relatively clean and usually reliable, even if it rains only once or twice a year, and a rainwater harvesting system can be easily constructed and maintained at low cost. However, it may be polluted by bird's dropping.

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# 3. Spring and wells

Springs and wells are important sources of water for many families in rural areas. They should protected from contamination by domestic animals, from feces and dung.

Spring water and wells should be protected from contamination in the following ways:

- The water source is fully enclosed or capped and no surface water can run directly into it.
- People do not step into the water while collecting it.
- Latrines, solid waste pits, animal excreta and other sources of pollution are located as far away as possible from the water source and on ground lower in elevation than the water source.
- There is no stagnant water within 5 metres of the water source.
- The water collection buckets or hand pump at the source are kept clean.

# 4. Lakes and rivers

Lake and rive water may be contaminated with excreta

#### 5. Bore hole

These have to be deep enough to extend below the water table so that water can be drawn up by bucket or by pumping.

#### Characteristic of water from borehole

- It likely to be free from pathogenic bacteria
- Often has a high mineral content

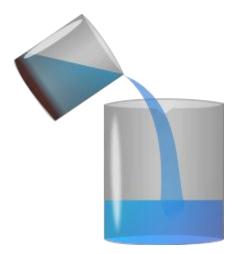
Methods of water treatment

Dirty water is made clean and safe by

- 1. Boiling
- 2. Decanting

**Decantation** is a process for the separation of mixtures of immiscible liquids or of a liquid and a solid mixture such as a suspension.

Dirty Water is placed in a container and time allowed for the solid particles to settle at the bottom of the container and then a clear liquid poured off gently so as not to disturb the sediment.



#### 3. Distillation

Here dirty water is heated to the boiling point. It evaporates into steam. Steam is cooled to form pure water. Distilled water is not fit for drinking because it does not contain minerals like calcium and magnesium.

#### 4. Filtration

This is a process used to separate solids from liquids or gases using a filter medium that allows the fluid to pass through but not the solid.

A simple filtration system that can be used in rural areas is shown below



Water obtained by the above filtration system may not be fit for drinking because filtration does not remove bacteria.

# Water borne diseases

**Waterborne diseases** are conditions caused by pathogenic micro-organisms that are transmitted in water. These diseases can be spread while bathing, washing, drinking water, or by eating food exposed to contaminated water. They include

# 1. Typhoid

# **Symptoms include:**

- A fever that increases gradually
- Muscle aches
- Fatigue
- Sweating
- Diarrhea or constipation

# 2. Cholera

# **Symptoms include:**

- Nausea
- Vomiting
- Diarrhea
- Muscle cramps

# 3. Dysentery

# **Symptoms include:**

- Stomach cramps and pain
- Diarrhea
- Fever
- Nausea
- Vomiting
- Dehydration

# 4. Bilharzia

Bilharzia, or "snail fever," is a disease caused by a parasitic worm or river fluke genus Schistosoma

It is transmitted by water snail

Symptoms of bilharzia include

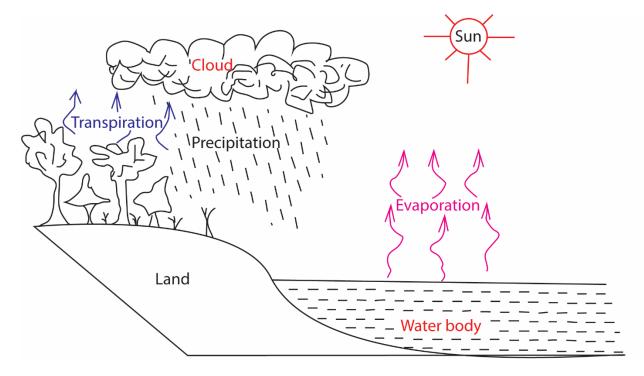
- fever
- headache
- breathing difficulties
- blood in the feces
- intestinal ulcers
- blood in the urine

painful urination

# Water cycle

The water cycle is the path that all water follows as it moves around our planet.

Of the many processes involved in the water cycle, the most important are evaporation, transpiration, condensation, precipitation, and runoff.



**Evaporation** is the change of a liquid into vapour below its boiling point.

**Transpiration** is the loss of water vapour from the plant through the stomata.

**Condensation** is process by which water vapor turns into a liquid.

**Precipitation** is any liquid or frozen water that forms in the atmosphere and falls back to the Earth in form of rain.

**Runoff**, is the waters that travel over the land surface and through channels to reach a stream.

# Water pollution

This is the release of substances into poisonous and pathogens into water bodies lakes, rivers and ocean that interfere with beneficial use of the water or with the natural functioning of ecosystems.

Sources of water pollutants

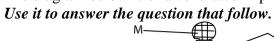
- 1. industries
- 2. sewage

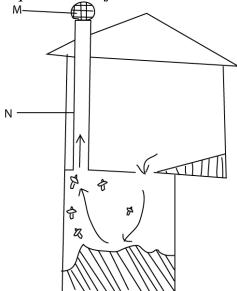
# **Revision Questions**

1.	(a) Give one way in which primary health care (PHC) is important to a community.				
(b)	State the elements of primary Health Care which is promoted by each of the following activities:  (i) Sweeping the kitchen.				
	(ii) Putting drops of polio vaccine into the mouth of a child.				
	(iii) Eating a balanced diet.				
2.	State any one principle of Primary Health care				
3.	What is the recommended minimum distance between a drinking water and VIP latrine?				
4.	How does a vent help to reduce smell in a VIP latrine?				
5.	(a) What is water pollution?				
	(b) Suggest any two ways in which a community can improve on water source.				
	(c) Why is borehole water safer to drink than well water?				
6.	Why is it important to bathe with soap?				
7.	As a pupil in a school, you are of the school health committee. What do you expect to do to make health improve in the school?				

8.	Give any one reason why a latrine should be 10 metres away from the living house.
9.	Give any one proper way of disposing off rubbish in a home.
10.	Health Committee members in your school visited an old man's home and found out that home did not have the main requirement for proper sanitation.
	Suggest any four activities that should carry out to ensure proper sanitation in the old man's home.
11.	What good health habit should be practiced after visiting a latrine or toilet?
12.	Why is a Ventilated Improved Pit latrine left without a cover?
13.	To State any one way in which health parades are important in primary schools.

The diagram below is of a ventilated improved Pit (VIP) latrine.





(a) Name the parts marked M and N
(i) <b>M</b>
(b) Give the function of the part marked <b>M</b>
(c) What do the arrows in the diagram show?
14. State any one health reason why the building of industries should be limited in an area.
15. How does boiling of water help in the control of typhoid.
16. How are green plants important in the water cycle?
17. Write one reason why people working in dirty areas should wear gumboots.
18. The diagram below shows a method of making water clean.
Use it to answer the question that follows.
dirty water  sand  gravel  stone  clean water
Name the method used above:
19. Why should communities fence open spring wells?
20. (a) Write two activities that help to promote good sanitation in a home

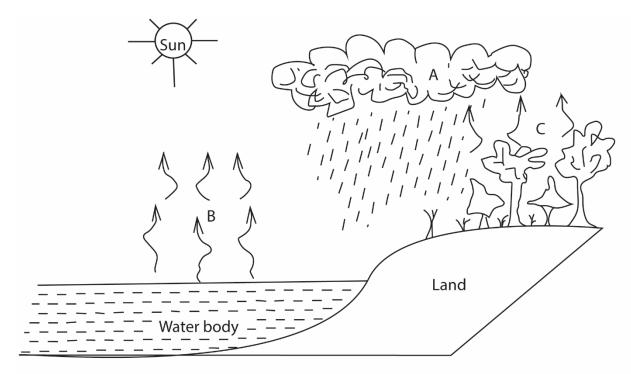
(b) Name tw	o diseases that may a	ttack a family due to p	poor sanitation.			
••••••	••••••	•••••	••••••	••••••		
21 TEL 4 11	1 1 1		C' 1 1 1.1	G. 1		
	e below shows inform the questions that follo		rive nomes nealthy su	rvey. Study it to		
Homes						
	Latrine	Rubbish pit	Bathing shelter	Drying rack		
A	X	X	V	X		
В	V	V	V	V		
С	X	V	V	√		
С	X	X	X	√		
Е	X	V	V	X		
Key						
x = Item mis	ssing					
= item pres	sent					
(b) Whic	ch home has all the sa	nitation items?				
(c) Ident	ify the sanitation item	ns absent in all homes	surveyed?			
2. Give any	one way in which pr	oper disposal of waste	es is important in our	environment.		
3. (a) State	two causes of diarrho	ea.				
(b) How can diarrhea be prevented?						
(c) Why are people encouraged to drink boiled water?						

24.	4. Why should a pit latrine be smocked from time to time?					
 25.	Bbosa shares his house with goats. State the disadvantage of this practice.					
26.	Why is it not necessary for a VIP latrine to have a lid for the hole?					
27.	Why is it not good to pour paraffin into a pit latrine?					
28.	(a) State two factors which should be taken into account when selecting site for building a house.					
	(a) How does a well-built house contribute to the health of a family?					
29.	Why should a pit latrine be covered?					
30.	What is the use of a dustbin in a home?					
31.	What happen when an industry releases a lot of smokes to the atmosphere?					
32.	What is the importance of keeping clothes clean?					
33.	(a) Name one practice which increases the spread of bilharzia.					
	(b) Which vector is important in the spread of bilharzia.					
	(c) Give any two ways of preventing the spread of bilharzia.					
34.	(a) Write two activities that help to promote good sanitation in a home					
(b)	Name two diseases that may attack a family due to poor sanitation.					
	•••••••••••••••••					

35. Give one item used for cleaning hands after visiting a latrine or toilet.
The diagram below shows how disease can be spread through the 4Fs Use it to answer question <b>36</b> .
Faeces Flies  Food
36. (a) Give the word which should be in the box marked X
(b) Name two activities which can be done to avoid the spread of diseases through food.
•••••••••••••••••••••••••••••••••••••••
(c) What structure on the body of fly makes it spread diseases?
The diagram below is of a common animal. Use it to answer question 37
37. Which disease does the above animal spread humans?
The diagram below shows a garden tool. Use it to answer questions 48 and 49

39.	How is the garden tool above important to farmers?
40.	Why is it a devisable to leave the pit of a VIP latrine open?
 41.	(a) Name any two water –borne diseases
(b)	In which two ways can water –borne diseases be preventing in the community?
	(i) (ii)
	(a) Give two ways in which Primary Heathy care (PHC) is an important program in the community
	(b) State any two roles of school healthy committee.
	(b) State any two roles of school healthy committee.
43.	(b) State any two roles of school healthy committee.

46. The diagram below shows the water cycle. Study and use it to answer the questions that follow.



(a)		type of cloud represented by letter A
(b)		processes taking place at B and C
	(i)	B:
	(ii)	C
(c)	What is th	e importance of sun in the above diagram?
••••		

1. (a) Give one way in which primary health care (PHC) is important to a community.

Promotes sanitization

Promotes immunization

- (b) State the elements of primary Health Care which is promoted by each of the following activities:
  - (i) Sweeping the kitchen.

#### Sanitation

(ii) Putting drops of polio vaccine into the mouth of a child.

**Immunization** 

(iii) Eating a balanced diet.

Nutrition

2. State any one principle of Primary Health care

Promotes sanitization

What is the recommended minimum distance between a drinking water and VIP latrine?

#### 30 meters

3. How does a vent help to reduce smell in a VIP latrine?

# Allows the air to flow through taking bad smell with it outside

4. (a) What is water pollution?

# Adding substance to water which makes unsafe for drinking and inability to support life.

- (b) Suggest any two ways in which a community can improve on water source.
  - (i) fence it to prevent stray animals from contaminating it
  - (ii) Digging around the water source
- (c) Why is borehole water safer to drink than well water?

The borehole water is not exposed like a well's water

5. Why s it important to bathe with soap?

It removes dirt

It kills germs

- 6. As a pupil in a school, you are of the school health committee. What do you expect to do to make health improve in the school?
  - Regular cleaning and maintaining the latrine.
  - regular checkup of hygiene
  - proper disposal of waster
  - mopping classes
  - regular cleaning of compound
- 7. Give any one reason why a latrine should be 10 metres away from the living house.

# To prevent flies from carrying germs to the house

8. Give any one proper way of disposing off rubbish in a home.

# **Burning rubbish**

#### Use a dust bin

9. Health Committee members in your school visited an old man's home and found out that home did not have the main requirement for proper sanitation.

Suggest any four activities that should carry out to ensure proper sanitation in the old man's home.

- (a) Mop the house
- (b) Wash plate
- (c) Sweep around the house
- (d) Boil drinking water
- (e) Dig a pit latrine 30m from the house
- (f) Iron the clothes
- 10. What good health habit should be practiced after visiting a latrine or toilet?

# Wash hands with soap and water

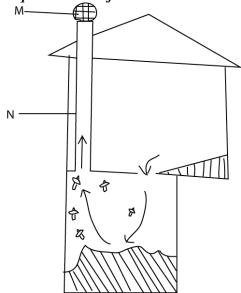
11. Why is a Ventilated Improved Pit latrine left without a cover?

To allow free flow of air through the system

- 12. State any one way in which health parades are important in primary schools.
  - (a) Educate the pupils about their body
  - (b) Sensitize the pupils for cleanness
  - (c) Educate the pupils how to avoid diseases.

The diagram below is of a ventilated improved Pit (VIP) latrine.

Use it to answer the question that follow.



- (a) Name the parts marked m and n
  - (i) M flies screen (wire gauze)

#### (ii) N Vent pipe

(b) Give the function of the part marked **M** 

# Prevent flies from escaping from the latrine

(c) What do the arrows in the diagram show?

Direction of air through the latrine

13. State any one health reason why the building of industries should be limited in an area.

# To prevent pollution in residential areas that would cause suffocation. Reduce noise in residential area that may affect the ear drum

14. How does boiling of water help in the control of typhoid.

# It kills typhoid germs

15. How are green plants important in the water cycle?

Produce water vapour through transpiration, the vapour condense to form rain

16. Write one reason why people working in dirty areas should wear gumboots.

To prevent cuts to the legs

The prevent entry of germs

To prevent acquisition of worms

17. The diagram below shows a method of making water clean.

*Use it to answer the question that follows.* 



Name the method used above: filtration

18. Why should communities fence open spring wells?

# To prevent contamination by animals

19. (a) Write two activities that help to promote good sanitation in a home

- proper disposal of rubbish
- regular cleaning of toilets and latrines
- maintaining cleanness of a house

(b) Name two diseases that may attack a family due to poor sanitation.

Cholera

**Dysentery** 

**Typhoid** 

Diarrhea

Worms

20. The table below shows information collected from five homes healthy survey. Study it to answer the questions that follow

Homes				
	Latrine	Rubbish pit	Bathing shelter	Drying rack
A	x	x	√	X
В	V	V	√	V
С	X	√	√	V
С	X	X	Х	V
Е	X	V	V	X

Key

x = Item missing

 $\sqrt{}$  = item present

(a) Which home has all the sanitation items?

R

(b) Identify the sanitation items absent in all homes surveyed?

Latrine

21. Give any one way in which proper disposal of wastes is important in our environment.

# **Prevents spread of infections**

22. (a) State two causes of diarrhea.

Eating contaminated food Eating food without washing hands Drinking contaminated water

(b) How can diarrhea be prevented?

- Washing hands before eating food
- Washing fruits before eating
- Covering food properly
- By giving a patient with diarrhea plenty of fluids.
- (c) Why are people encouraged to drink boiled water?

# It does not contain germs

23. Why should a pit latrine be smocked from time to time?

# To remove bad smell and kill flies that spread germs

24. Bbosa shares his house with goats. State the disadvantage of this practice.

The goat may spread disease to the family

The goat competes for oxygen with the family

Let out bad air

25. Why is it not necessary for a VIP latrine to have a lid for the hole?

# To allow air flow freely through the latrine.

26. Why is it not good to pour paraffin into a pit latrine?

# It suffocates maggots that decompose feces.

27. (a) State two factors which should be taken into account when selecting site for building a house.

Be ear water source

Be near social service

There should be good drainage

It should be accessible by road

- (b) How does a well-built house contribute to the health of a family?
- Has enough room to accommodate members to reduce spread of infectious disease
- Is well ventilated to allow in good air and let out bad air
- It is protected from vectors to prevent spread of diseases.
- 28. Why should a pit latrine be covered?

To reduce bad smell

# To prevent house flies from carrying germs to food

29. What is the use of a dustbin in a home?

#### To dispose of rubbish.

30. What happen when an industry releases a lot of smokes to the atmosphere?

Pollutes air

Lead to acid rain

31. Explain why a borehole water safe to drink.

# It is not easily contaminated because it is not exposed

32. Explain one way of keeping food safe and clean.

By covering it

By keeping in refrigerator.

33. Why do you wash your hands before eating?

# To remove germs

34. Name the difference between pit latrine and VIP latrine.

VIP latrine has a vent pipe latrine lacks a vent pipe.

35. Mention one reason why drinking water should be boiled

#### To kill germs

36. Mention one of the service of public Health Care (PHC)

Sanitation

**Immunization** 

Family planning

Provision of essential drugs

Personal hygiene.

37. Why should we bathe daily?

To remove germs from our bodies

To remove bad odor.

To prevent skin infections

- 38. (a) State two conditions that are likely to a family ill?
  - (iii) poor sanitation in a home
  - (iv) eating contaminated food
  - (v) Poor Family hygiene
  - (b) Mention two diseases that people who love in unhealthy conditions can suffer from.
    - (i) cholera
    - (ii) typhoid
    - (iii) dysentery
- 39. What is the importance of keeping clothes clean?

To prevent diseases like cholera

To prevent infestation of lice

40. (a) Name one practice which increases the spread of bilharzia.

**Swimming** 

Urinate in water

**Defecate** in water

(b) Which vector is important in the spread of bilharzia.

#### snai

(c) Give any two ways of preventing the spread of bilharzia.

Avoid swimming in river and ponds

Proper disposal of wastes

**Treatment of infected persons** 

Clearing stagnant water

- 41. (a) Write two activities that help to promote good sanitation in a home
  - proper disposal of rubbish
  - regular cleaning of toilets and latrines
  - maintaining cleanness of a house
- (b) Name two diseases that may attack a family due to poor sanitation.

Cholera

**Dysentery** 

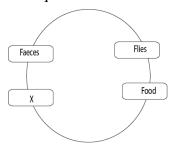
**Typhoid** 

Diarrhea

Worms

- 42. Give one item used for cleaning hands after visiting a latrine or toilet.
  - Water
  - Soap

The diagram below shows how disease can be spread through the 4Fs Use it to answer question **42**.



43. (a) Give the word which should be in the box marked X

#### **Finger**

- (b) Name two activities which can be done to avoid the spread of diseases through food.
  - (i) covering food
  - (ii) boiling
  - (iii) washing hand before handling food
  - (iv) cooking
  - (v) washing fruits before eating them
- (c) What structure on the body of fly makes it spread diseases?

#### Hair on its body

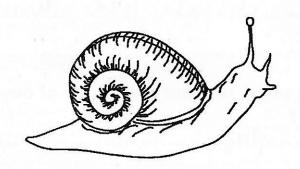
44. (a) State one primary health care activity children can do to help their mothers when cooking.

# Sweeping kitchen, washing utensils, fetching water, drying containers, whipping utensils

- (b) Write down three health care activities that can be provided to the elderly in our homes.
- (i) Bathing him/her (ii) cutting finger nail (iii) cleaning room
- (iv) washing clothes (v) feeding them (vi) giving treatment
- (vii) beddings (viii) cleaning their room (ix) iron
- 45. State any one method used to make dirty water clean.
  - Filtration
  - Distillation
  - Decanting
- 46. Give any one effect of poor disposal of human wastes in the environment.

# Spreads diseases like cholera

# The diagram below is of a common animal. Use it to answer question 47



47. Which disease does the above animal spread humans?

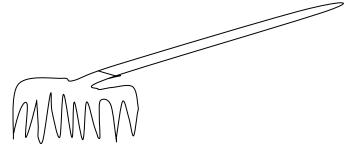
#### Bilharzia or schistosomiasis

Symptoms of bilharzia

Fever, Abdominal pain (liver/spleen area), Bloody diarrhea or blood in the stools, Cough,

Malaise; Headache, Rash, Body aches

The diagram below shows a garden tool. Use it to answer questions 48 and 49



48. Name the garden tool above.

#### Rake

49. How is the garden tool above important to farmers?

For collecting rubbish For levelling soil in a nursery bed

50. Why is it a devisable to leave the pit of a VIP latrine open?

To allow fresh air drives out bad smell To allow flies to enter

51. (a) Name any two water –borne diseases

Polio, cholera, dysentery, hepatitis A, dysentery, typhoid, bilharzia

- (b) In which two ways can water –borne diseases be preventing in the community?
  - (i) by boiling water for drinking
  - (ii) by proper disposal of wastes
  - (iii) by proper hygiene
- 52. (a) Give two ways in which Primary Heathy care (PHC) is an important program in the community
  - Controls population growth
  - Helps prevent malnutrition in babies
  - Promotes safe water and sanitation
  - Ensure care for the disadvantaged
    - (b) State any two roles of school healthy committee.
    - organizes pupils to clean the environment
    - conducts health parades
    - identify and finds a solution to healthy problem
- 53. Why is water obtained by distillation method not good for drinking?

# Lacks useful ions such as calcium for strengthening bones.

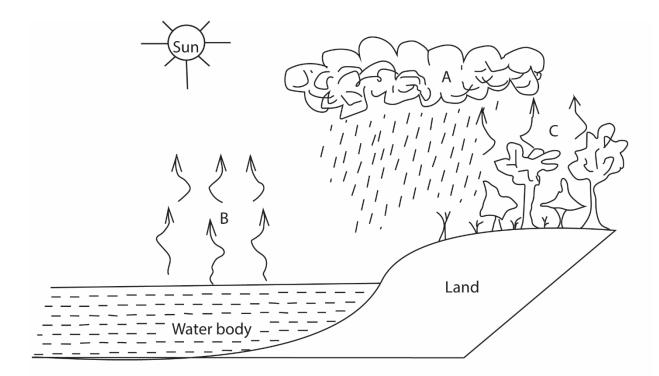
54. Give any one way in which a VIP latrine is different from an ordinary pit latrine.

A VIP latrine has
- a screen which traps flies
- vent pipe
- no lid

55. Give one way in which bacteria in pit latrine are useful

# They decompose feces

The diagram below shows the water cycle. Study and use it to answer the questions that follow.



(a) Name the type of cloud represented by letter A

# Nimbus cloud

- (b) State the processes taking place at B and C
  - (i) B: evaporation
  - (ii) C: **Transpiration**
- (c) What is the importance of sun in the above diagram?

Sun provides heat for evaporation and transpiration