

APPENDIX B

SENIOR PHASE PILOT 2001

LEARNING AREA:

NATURAL SCIENCES

COMMON ASSESSMENT TASK (CAT)

GRADE EIGHT

NAME OF LEARNER:

TIME: hours

60 marks

17 million Africans have died since the AIDS epidemic began in the late 1970's. Of these, more than 3.7 million were children. In addition, AIDS in Africa has caused 12 million children to become orphaned. An estimated 8.8% of adults in Africa are infected with HIV/AIDS.

This Common assessment Task (CAT) is designed to help you explore the causes and effects of this disease. It also requires you to respond by making some constructive and creative suggestions that might contribute to the fight against AIDS/HIV.

Write all your answers in the spaces provided on the question paper.

GRADE 8 COMMON ASSESSMENT TASK - 2001

NATURAL SCIENCES

LEARNER INSTRUCTION SHEET

TO BE DISTRIBUTED TO LEARNERS JUST BEFORE THEY CARRY OUT THE ACTIVITY

A Game to simulate the transmission of HIV

In this game you will each play the role of person who behaves in a particular way. Your role is described to you on a small slip of paper. You need to read the description on the slip of paper and keep your role a secret. The group playing a particular game may be as big as 27. During the game some players will exchange 5 drops of a clear solution that they carry in a small container with another player. You exchange the 5 drops of solution with another player in your group using a straw or stick or medicine dropper. Your educator will explain how to do this if you need help. However, remember that an **exchange** occurs when one learner, John say, add 5 drops of his solution to the container of another player, Joan say, and Joan also adds 5 drops of her solution to John's container. After this exchanging of fluids (solutions) goes on for about 5 to 10 minutes your educator will stop you and tell you what to do next.

Material

You must collect

- ◆ a container (small glass or plastic bottle, test tube, ...) in which your educator has placed about 2 teaspoonfuls of clear solution
- ◆ a straw or medicine-dropper
- ◆ a slip of paper describing the role you must play in the game.

FOLLOW THE INSTRUCTIONS THAT YOUR EDUCATOR GIVES YOU.

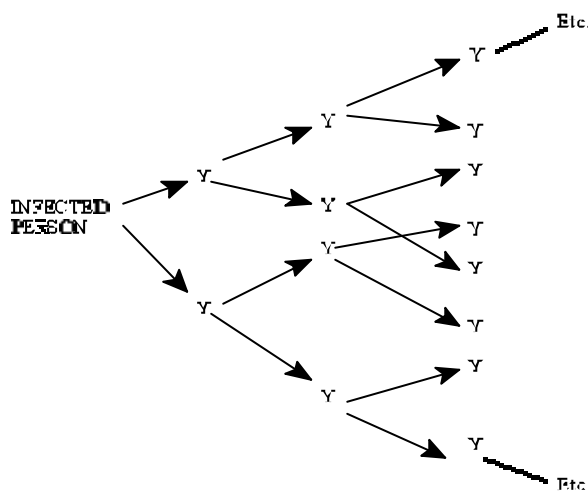
Read the passage that follows. It will help you to answer all the questions on this paper, so you will often have to look back at the passage for help.

What is HIV/AIDS?

Like we have a digestive system we have an immune system. It is this system that quietly works away defending us from diseases and infection. Human Immunodeficiency Virus (HIV) damages our immune system. HIV causes Acquired Immunodeficiency Syndrome (AIDS). In this way, people with AIDS can get diseases which they would normally be protected against by their immune system.

How is HIV/AIDS Passed From One Person To Another?

HIV has a structure that makes it hard to destroy and enables it to multiply very rapidly in the human body. Infection occurs when the virus is transferred from person to person via body fluids. This usually occurs during sexual intercourse. It can also take place when the blood of an infected person gets into the blood of another. This might happen when someone is dealing with an accident or drug abusers share needles, and when tattooing, ear-piercing or acupuncture is not sterilised. Pregnant women can also pass on the virus to their developing babies.



Before writing the CAT, you may have had the opportunity to play a game. The idea of the game was to show how a virus, such as HIV, is passed from one person to another by the mixing of body fluids.

The diagram on the left shows how the infection would spread if each person who is infected, infects two more people. If we suppose contact occurs between different persons twice a week, at the end of 3 weeks this initial contact will result in 16 people being infected.

How Can the Spread of HIV/AIDS be Prevented?

Treating HIV is difficult. However, there are several ways that people can prevent the spread of AIDS. The more sexual partners you have the greater the risk of having sex with an infected person. Using condoms during sex prevents the mixing of body fluids and so reduces the risk of infection. One should never inject drugs or share razors.

Any tattooing or acupuncture treatment should be carried out with sterilised equipment. Those giving first aid should always wear rubber gloves.

Question 1

AIDS/HIV: About the disease.

Here are the descriptions of the roles given to class members in the game that some of you may already have played.

Role 1:	Exchange fluids as often as you want with anybody. If someone does not want to exchange fluids, find ways to persuade him/her. Your aim is to exchange fluids as often as possible.
Role 2:	Always say “no” if someone wants to exchange fluids with you.
Role 3:	Exchange fluids only with your first partner and encourage him/her also to do so. Say “no” to anybody else. Try to prevent your partner exchange fluids with anyone else. You may exchange fluids with this partner as often as you want.

The table below shows the results for the games played by three different groups of 25 learners. The number of learners given each role was different in each game.

	Total number of players	Number of learners playing each role			Number “infected” after 5 min (infection rate)
		Swap as often as possible	Always say no	Claims to swap with 1 partner only	
Game 1	25	17	5	3	15
Game 2	20	12	5	3	7
Game 3	34	12	5	17	16
Game 4	41	12	10	17	-
Game 5	39	17	5	17	-

In question 1.1 to 1.3, try to use your experience of the game and the Information Passage to make an *estimate* of a number. An exact calculation is not necessary.

1.1 Which of the three roles causes the highest infection rate?

(1 mark)

1.2 In all the games, only one person started with the infection. What would happen to the results if two people started with the infection? Ring the answer of your choice. The rate of infection would:

INCREASE

DECREASE

REMAIN THE SAME

(1 mark)

1.3 Based on the article and the game, list as many factors as you can, that influence the rate of infection.

(6 marks)

1.4 From your list of factors that you gave as an answer to the previous question, list those that an individual can control. Base your answer on your understanding of the game and of the passage about HIV/AIDS.

(3 marks)

1.5 Try to predict the infection rate in Game 4 and Game 5 by filling in an estimate of the missing figures on the table. (4 marks)

1.6 Refer to Games 3, 4 and 5.

1.6.1 Compare games 3 and 4. What variables are kept constant?

(2 marks)

1.6.2 Compare games 4 and 5. What variable is changed?

(1 mark)

1.6.3 What variable do we 'measure' when we play the game?

(1 mark)

1.7 Imagine you are a scientist and you have developed a new drug to use in the fight against HIV. You want to test the drug.

1.7.1 Give the sequence of steps you would use to test the drug. Use the jumbled list of steps in the table to help you. You can use the numbers only once but the letters as often as you like. Answer by giving the numbers 1 to 7 and the letters *a* to *b* in a sequence. for example an answer:

b	1	a	4	a					
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means

Monitor harmful side effects; Select thousands of patients; Measure the amount of HIV in the blood; Select small animals; Measure the amount of HIV in the blood.

	Steps
1	Select thousands of patients
2	Select a few terminally ill patients suffering from HIV/AIDS
3	Select larger animals, like dogs and monkeys
4	Select small animals, mice, rats and guinea pigs
5	Select a small group of patients who are HIV positive
a	Measure the amount of HIV in blood
b	Monitor harmful side effects
c	Give the drug

(6 marks)

1.7.2 Thalidomide was given as a sedative to pregnant women in Europe during the late 1960's. Many of these women produced very badly deformed babies. It is widely believed that the reason for this disaster was that the drug company that made thalidomide did not test it enough. There is, today, huge pressure from many

HIV/AIDS patients to be given experimental drug treatment. What should be done?
Give two advantages and two disadvantages of this moral dilemma we face.

Advantages and disadvantages of supplying drugs for HIV/AIDS that have not been fully tested	
Advantages	Disadvantages

(6 marks)

- 1.8 To prevent the spread of HIV/AIDS communities need to work together. First they must know about HIV/AIDS. Write down there the three most important things about HIV/AIDS that you think people in your community should know.

(8 marks)

Question 2

The table gives the numbers of people living with HIV/AIDS around the world at the beginning of the year 2000.

Map Key	Region	Number of people living with HIV/AIDS (in millions)
1	Latin America	1.4
2	Caribbean	0.39
3	North America	0.92
4	Sub-Saharan Africa	25.3
5	South/Southeast Asia	5.8
6	Western Europe	0.54

- 2.1 Plot a bar graph that clearly represents this information.
In your graph, you will be expected to refer to all the regions listed in the table and to provide a suitable scale for one axis and labels for both axes.

(6 marks)

In 2.2 and 2.3, write the numbers out in full

- 2.2 How many people are living with HIV/AIDS in North America?

- 2.3 How many people are living with HIV/AIDS in sub-Saharan Africa?

(2 marks)

- 2.4 You are to use this bar graph as part of an item on a television news programme. What point can you highlight using this bar graph? What story does it tell about AIDS/HIV around the world?

(4 marks)

Question 3

AIDS/HIV in Southern Africa: The Figures

The paragraphs below give information about the AIDS situation in seven countries in Southern Africa. The statistics are based on figures at the end of 1999. Read the text and then **draw up a table that represents the information.**

Make sure that you record all the information given in your table. Use headings and columns. Your table should be clear and well structured.

- # In Botswana 290 000 people are living with HIV/AIDS. 36% of the adult population have the disease and 24 000 people die each year.
- # 130 000 people live with HIV/AIDS in Swaziland. More than 25% of adults in Swaziland have HIV/AIDS and 7 100 die each year.
- # In Zimbabwe 1.5 million have HIV/AIDS. A quarter of the adult population live with the disease and 160 000 people die in a year.
- # south Africa has the largest number of people living with HIV/AIDS - 4.2 million. 25% of adults have the disease and 250 000 people die each year at the present time.
- # Although Lesotho is a very small country, 240 000 of its inhabitants have HIV/AIDS. 24% of the adult population are infected and 16 000 die each year.
- # In Zambia 870 000 people live with HIV/AIDS. Of all the adults in the country, 20% are infected. 99 000 Zambians died in 1999.
- # In Namibia 160 000 people live with HIV/AIDS and most are women. 19.5% of all adults have the disease and 18 000 die each year.

(9 marks)

[Total: 60 marks]