

TOP SECRET

CITY OF JACKSONVILLE

POPULATION: 853,382

HOSPITALS: 10

ALL INDIVIDUALS HANDLING THIS INFORMATION ARE REQUIRED TO PROTECT IT FROM UNAUTHORIZED DISCLOSURE IN THE INTEREST OF THE NATIONAL SECURITY OF THE UNITED STATES.

TASK FORCE MEMBERS

Name: _____

Date: _____

CONFIDENTIAL DOCUMENT ANALYSIS

Memorandum #1: Mayor, Ned Merrill

1. Why is the Mayor panicked in his letter to you?

2. Who is Donald Westerhazy and what will he be writing you about?

3. The Mayor is asking you and your Task Force team to write him back. What does the Mayor ask you to include in your letter?

Name: _____

Date: _____

Memorandum #2: Lead Scientist, Donald Westerhazy

1. Describe the lifecycle of someone who has been infected with ZLI. (How long after someone contracts the disease are they official declared dead? How long after that do they regain consciousness? What is the lifecycle of a “zombie”?)

2. How many uninfected humans will a “zombie” infect before expiring? Use this information to complete the table below.

DAY	TOTAL INFECTED PATIENTS (ZOMBIES)
0	12
1	48
2	
3 (Today)	
4	
5	
6	

Name: _____

Date: _____

Memorandum #2: Lead Scientist, Donald Westerhazy

3. Based on the table from questions #3 and your cities total population, **make a prediction about the number of days** that it would take for your entire cities population become infected with ZLI if it is not treated? **Justify your prediction in the space below.**

4. What is the cure for ZLI and how does it work?

Name: _____

Date: _____

Memorandum #3: Director of City Hospitals, Shirley Adams

1. Locate and record the information below:

a. # of Hospitals in your city _____

b. # of people in your city _____

2. How many doses of ozycndifentalin are currently available for immediate use?

3. Across all hospitals, how many doses of ozycndifentalin can **your city** produce every day? How many doses of ozycndifentalin can **each hospital** produce in a day? **Show all work.**

4. Use your answers from the previous question to complete the table below.

DAY	TOTAL DOSES AVAILABLE
0	unknown
1	unknown
2	unknown
3 (Today)	327
4	
5	
6	

Name: _____

Date: _____

WORST CASE SCENARIO

Use your Memorandums and the questions below to describe the worst case scenario for your city.

1. Write a function that can be used to model the total number of Zombies that would exist after each day that ZLI goes untreated. Make sure to **define all variables** used in your equation. (See your table for from Memorandum #2.) **(HSF.LE.A.3)**

2. Use your function and your city's population, to determine the exact number of days that it would take for your entire city's population become infected with ZLI if it is not treated? Round your answer to the nearest day. **Show all work below.** **(HSF.LE.A.4)**

If ZLI is untreated, it will take _____ days for our entire city's population to be infected.

Name: _____

Date: _____

BEST CASE SCENARIO

Use your Memorandums and the questions below to describe the best case scenario for your city.

1. How many doses of ozycndifentalin can your city produce and administer each day? (See your calculations from Momorandum #3) **Show all of your work below.**
2. Write a function that can be used to model the total number of doses that can be produced each day after today (day 3). Make sure to **define all variables** used in your equation. **(HSF.LE.A.3)**
3.
 - a. On day 3 how many doses do you have that you can immediately administer?
 - b. How many infected patients are there in your city on day 3?
 - c. Use the answer to **a.** and **b.** to determine the number of infected and undosed patients that would remain after day 3. (Place your answer in the cell marked with a “*”).

Name: _____

Date: _____

BEST CASE SCENARIO

Use your Memorandums and the questions below to describe the best case scenario for your city.

4. Complete the table below using your knowledge of ZLI and the available doses of ozycndifentalin in your city.

DAY (<i>d</i>)	TOTAL INFECTED PATIENTS ("ZOMBIES")	DOSES ADMINISTERED	INFECTED PATIENTS UNDOSED (<i>U</i>)
0	12	-	12
1	48	-	48
2	192	-	192
3 (Today)	768		*
4			
5			
6			

5. Based on the table above, will you be able to wipe out all infected patients ("zombies) after 6 days? If not, how many infected zombies remain? If you are able to, what is the remaining population of your city? **Show all work below.**

Name: _____

Date: _____

BEST CASE SCENARIO

Use your Memorandums and the questions below to describe the best case scenario for your city.

6. Use the table from the previous question to write a **recursive equation** that can be used to determine the number of infected patients undosed (***U***) based on the number of days (***d***). Make sure to **define all variables** used in your equation. **(HSF.LE.A.2)**

7. Use the equation you wrote from the previous question to calculate the number of infected patients undosed (***U***) on day 5 (***d = 5***). **Show all work below.**

8. Use your table and your recursive function to determine the number of days it will take to wipe out all infected patients (“zombies”) in your city? What will the population of your city be after eliminating all cases of ZLI? **Show all work below.**

Name: _____

Date: _____

My Letter Draft

Draft a letter to the Mayor and his team describing the worst case and best case scenarios for the spread of ZLI.

INTRODUCTION

- What is your name?
- Why are you writing to the Mayor?

BODY 1: WORST CASE SCENARIO

- If ZLI is left untreated, what will happen?
- How many infected patients (“zombies”) will exist after each day that ZLI goes untreated?
- How many days will it take for the disease to wipe out your entire city?
- **Make sure to reference specific calculations for the Mayor and his team.**

Name: _____

Date: _____

BODY 2: BEST CASE SCENARIO

- If treated immediately, what is the best case scenario for your city?
- What is the treatment plan that the Mayor and his team should implement?
- How many days will it take to wipe out all infected patients completely?
- What will be the remaining population of the city after all treatment is completed?
- ***Make sure to reference specific calculations for the Mayor and his team.***

CLOSING

- Thank the Mayor and include any other closing information that might be helpful to him and his team as they begin to fight ZLI.

Dear _____,

Sincerely,



Name: _____

Date: _____

United States Apocalypse

Extension Activity

After the first day of vaccinating the infected patients (day 3), Donald Westerhazy writes you to let you know there have been instances of the ZLI found all over the United States. Answer the questions below to help the Mayor and his team understand the severity of the outbreak in the United States.

If untreated, determine the total number of days that it would take for ZLI to wipe out the entire population of the United States. *Round your answer to the nearest tenth of a day.* **Show all work below.**

Given that every US city is capable of producing 1,400 doses of ozycandifentalin a day, determine the number of days it will take to completely wipe out the ZLI virus. What will be the remaining population of the United States after all infected patients have been dosed. **Show all work below.**