FLU OUTBREAK MISSION CHALLENGE
TEACHER GUIDE

The Mission Challenges provide tools to extend Learning Blade in the classroom using interactive, group and/or problem-based exercises. These challenges allow the student to provide open-ended responses that show how he or she would solve problems related to those posed in the corresponding online mission, or to construct small projects that feature science and technology concepts from the mission.

Preparing an Action Plan

Objective:

To write a plan detailing the skills and technologies necessary to create an emergency disease outbreak response center, that will predict and respond to potential disease outbreaks.

Description:

Students imagine they've been assigned by the state's governor to setup a new emergency disease outbreak response center, and create a proposal for describing the Tools and Teammates needed.

Outcomes:

This project is designed for students to practice communicating a plan. Students are asked to consider the issues involved in controlling the outbreak of a disease within a state.

Student Brainstorming

Objective:

To practice brainstorming techniques that will help students develop creative, new ideas from fresh perspectives

Description:

These exercises take students through several brainstorming processes and apply them to the situations covered in the Flu Outbreak Mission.

Outcomes:

Brainstorming rapidly generates ideas, and is a common method of solving problems. These exercises can be used beyond the Flu Outbreak Mission and to solve a general problem.

Mission-Related Data Analysis

Objective:

To extract and compare useful information from datasets.

Description:

Students will work with sets of data relating to cases of flu in an area, exploring how the basic statistical methods of mean, media, and mode are used to provide helpful data in fighting epidemics.

Outcomes:

This project is designed to show students how a set of data can be analyzed to provide useful information. Discussion should equally focus on the method of analysis and its usefulness.

Outbreak Simulation Game

Objective:

To explore the process of preparing and executing a disease outbreak response

Description:

Students will participate in a simulation managing an emergency disease response center while a new disease sweeps through their state.

Outcomes:

While this simulation can be administered with students making individual decisions on their own Outbreak Scenario Sheets, having them form a group consensus develops communication and teamwork skills.

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FLU OUTBREAK MISSION CHALLENGE

Preparing an Action Plan

Objective:

To write an action plan detailing the skills and technologies necessary to create an emergency disease outbreak response center that will predict and respond to potential disease outbreaks

Description:

Imagine you've been assigned by your state's governor to setup a new emergency disease outbreak response center. Create a proposal for the Governor's Office describing the Tools and Teammates you'll need, and how the center will be proactive in treating widespread disease cases in the state.

Things to Remember About Reports and Presentations:

Reports and presentations use clearly written text, charts, pictures, and other media to give an audience a better understanding of the subject. In this project, you're trying to explain how you'll be performing the task of setting up the response center, and why your plan is worthwhile. Be sure to use media elements that not only explain the tools and teammates you need for the center, but that also show *why* you need them. Keep in mind that the Governor's Office needs to know you were the right person for this assignment, and this report will be the first step in reassuring them of that. Try to imagine reasons members of your audience might lack confidence in your plan and highlight the parts of your plan that address those concerns.

How to Begin:

1. Create an introductory statement or short paragraph explaining the goal of the response center and how it will benefit your state.
2. List the tools and teammates you'll need for the response center, and the functions each one will serve within the center.
3. List potential reasons people might believe the response center is unnecessary or that building one may not succeed. Then, list ways your plan addresses these reasons and increases the chances of successfully creating the center.
4. Create an outline of your plan, using the list of tools and teammates and the reasons against the response center as a guide. Describe the tools and teammates, and what objections they address. Use examples from your work on the Flu Mission to support your plan.
5. Collect media elements that communicate something important about each section. Keep in mind that different types of media are useful in communicating different things. Try to collect media elements that do a good job communicating the important aspects of each section while also maintaining the audience's interest.
6. Create a summary, or closing, section to the presentation that reinforces the need of the new response center, and communicates confidence that your plan will succeed.

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FLU OUTBREAK MISSION CHALLENGE

Student Brainstorming

Objective:

To practice brainstorming techniques to develop creative, new ideas with fresh perspectives, in order to solve typical problems covered in the Flu Outbreak Mission.

Description:

Brainstorming rapidly generates ideas, and is a common method of solving problems. Brainstorming can be done either as an individual activity, or as part of a group's efforts to solve a problem. These exercises will take you through several brainstorming processes and apply them to the situations you learned about in the Flu Outbreak Mission.

Individual Brainstorming Exercises:

Idea Generation - The most common brainstorming exercise is rapidly thinking up as many ideas as you can in a certain amount of time. In this exercise, take five minutes and list as many ideas as possible for one of the following situations:

- You are a computer programmer and a friend of yours has recently gotten sick. Brainstorm software you could program to help your friend deal with their sickness.
- You are an epidemiologist trying to raise awareness about a new disease treatment. Brainstorm ways you can tell people in your community about the treatment.
- You are an anthropologist comparing how diseases spread within large cities to inside small towns. Brainstorm public locations where you could observe the similarities and differences between the two.
- You are a computer technician working for your city government. Brainstorm ways new computer systems and devices could improve city functions.
- You are an anthropologist and one of your colleagues believes an ancient civilization went extinct due to a disease outbreak. Brainstorm ways you could gather more information to prove or disprove the theory.
- You are a computer programmer being asked by a local hospital to help them operate more efficiently. Brainstorm some ways your programming skills could be used to help the hospital.
- You are a high school principal, brainstorm ways to inform students about controlling the spread of disease.
- You are creating a database to track information on people who have the flu. Brainstorm the types of information your database should store.
- You are the Social Media Director for a college. Brainstorm words or phrases you could search for on social media to identify people who have the flu.

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Text Messaging - This exercise requires you to think of the most important information in an idea and how to effectively communicate it in the shortest way possible. Imagine you work for your local Disease Control Center. Create a text message under 140 characters for the following situations:

- Cold and flu season is coming. So make sure you get your cold and flu vaccines at your local clinic. You can also get vaccinated at your local clinic or doctor's office. Do it today and you'll be glad you did later.
- Do you or a loved one have problems with the fever, coughing, sore throats, congestion, runny nose, headaches, chills, fatigue, nausea, or vomiting? Then you might have the flu. Consult your local doctor's office or clinic today.
- The Main Street Clinic is having an open house Friday at 2:00 PM. Parents and children are invited to come meet the doctors and nurses that are in charge of helping you get well this winter.
- Be sure to check up on the elderly in your neighborhood or in your family this winter season elderly and the infirm are more susceptible to diseases.
- Tickets are still available for Thursday night's "Stomp Out the Flu" dancing competition and fundraiser for flu awareness and treatment. Tickets are $15 each and are available at the door.
- Take part in our annual disease response survey. Each person surveyed will receive a 10%-off coupon at First Street Drug & Pharmacy.

Using a Persona – It often helps to envision a single, imaginary person, called a persona, to represent a group of people with similar characteristics. Imagine you are an epidemiologist trying to study how a disease can spread through a small town. Create a persona that will represent a typical townsperson that has the flu, and describe a typical day for the persona. Be creative, and make sure to describe things like the persona's name, appearance, where they live, what they do during the day and what type of people they would come in contact with. The more realistic you can make the persona, the more useful they will be to understanding how they contributed to the spread of the flu in the area.

Roleplaying - Roleplaying is a helpful form of brainstorming that forces you to look at a problem from different viewpoints. In this exercise, write a three minute conversation between two people in one of the following situations:

- A nurse is explaining to an eight-year-old why vaccinations are important.
- A computer programmer is instructed by his or her boss to add global positioning features to a texting smartphone app.
- An epidemiologist is talking to a database administrator about collecting useful information about the outbreak of a disease in a large city.
- A statistician is interviewing someone in a local mall to collect data about how people choose to treat the flu.
- An anthropologist is hosting a local TV call-in show about a hundred-year-old drug store that was recently discovered below a building downtown.
- A doctor is explaining to a class of biology students how social media data is used to fight the spread of diseases.

FLU OUTBREAK MISSION CHALLENGE

Mission-Related Data Analysis

Objective:

To extract and compare useful information from datasets

Description:

Students will work with sets of data relating to cases of flu in an area, exploring how the basic statistical methods of mean, media, and mode are used to provide helpful data in fighting epidemics.

Situation 1:

Imagine you are reviewing information about the number of flu cases treated last week by the fifteen health clinics in a large city as shown in the spreadsheet in Figure 1. Using the data in the spreadsheet, address the following questions:

- What was the average number of flu cases treated by a clinic last week?
- Did any clinics treat an unusually high or low number of cases? If so, how did those numbers affect the average number of cases treated?
- How can you reduce the impact any unusually high or low number of cases have on your evaluation of the clinics?
- If you were planning to evaluate the clinics with the most common numbers of cases treated, how would you determine which clinics to study?

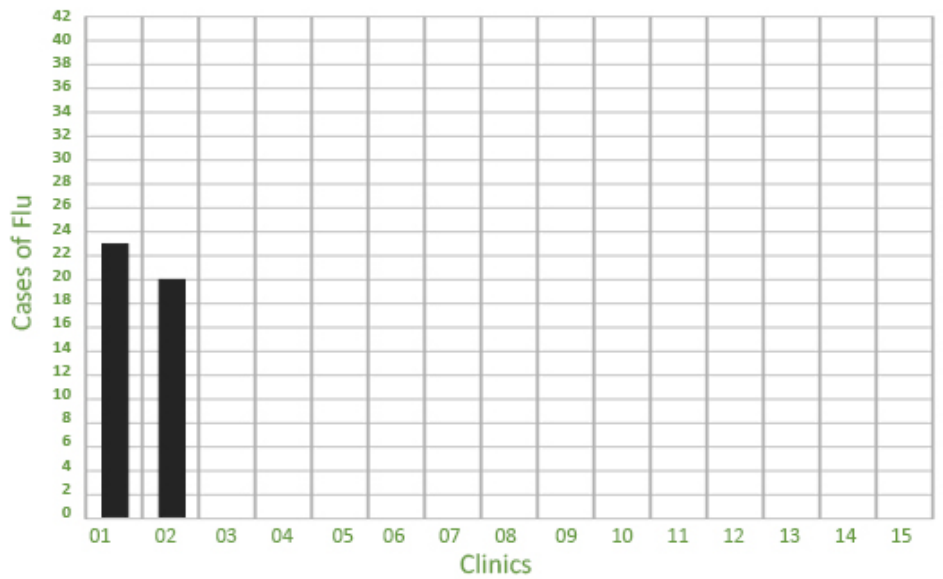
Figure 1.

	Number of Flu Cases
Clinic 01	23
Clinic 02	20
Clinic 03	12
Clinic 04	20
Clinic 05	26
Clinic 06	15
Clinic 07	15
Clinic 08	13
Clinic 09	15
Clinic 10	16
Clinic 11	14
Clinic 12	42
Clinic 13	16
Clinic 14	16
Clinic 15	22

Sometimes it helps to visualize data in chart form. Finish filling out the bar chart in Figure 2 to see the difference in the number of flu cases treated by the different clinics.

How does charting the data help you identify the relative numbers of flu cases treated? How does seeing the data in a graph help you understand the statistical methods of **mean**, **median** and **mode**?

Figure 2



Situation 2:

Now let's focus on a single clinic and examine how diseases can vary from patient-to-patient. One of the clinics in the city reported twenty flu cases last week. When we look at a spreadsheet of the reported symptoms as shown in Figure 3, we can see not every flu case involves the same combination of symptoms. The differences in symptoms affects how medical professionals diagnose and treat sicknesses. Many treatments are designed for a specific list of symptoms, and need to be used carefully.

Using the data in Figure 3, answer the following questions:

- What does this data suggest about the variety of treatments necessary to help these twenty patients?
- What is the total number of patients that have each symptom? What is the mean number of patients per symptom? Are there some symptoms that have a much higher or lower number of patients? Compare these numbers to what you see looking at the chart.
- How would you design treatment methods for that addressed these patients?
- What other information not listed in this data would be helpful in designing appropriate treatments for these patients?

Figure 3.

	fever	cough or sore throat	conjestion or runny nose	headaches	chills	fatigue	nausea or vomiting
Patient 01	x	x	x			x	
Patient 02		x	x		x		
Patient 03	x	x			x	x	
Patient 04	x	x	x				
Patient 05			x	x	x		
Patient 06		x	x		x	x	
Patient 07			x				x
Patient 08	x	x				x	
Patient 09			x				
Patient 10		x	x				
Patient 11				x	x		
Patient 12		x	x				
Patient 13				x			
Patient 14		x	x				
Patient 15		x	x	x			x
Patient 16	x	x	x				
Patient 17		x	x				
Patient 18	x		x		x	x	
Patient 19		x	x				
Patient 20		x	x			x	

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Outbreak Simulation Game

Objective:

To explore the process of preparing and executing a disease outbreak response

Description:

Students will participate in a game-based simulation managing an emergency disease response center while a communicable disease sweeps through their state. Students will determine monthly responses to the outbreak, allocate the resources required for those responses, and discover their overall effectiveness at fighting the disease.

Setting up the Simulation:

This simulation is design to either be administered to individual students, or to a group of students collaborating and forming a consensus of decisions. If administered to individual students, each student's progress may be self-recorded on their copy of the State Outbreak Chart, included on each **Outbreak Scenario Sheet**. Students should be given copies of the Outbreak Scenario Sheets before beginning the simulation. These sheets explain the overall scenario and the students' possible actions.

The Rules of the Simulation:

The Outbreak Simulation Game is made up of five months, during which the outbreak will affect the five regions of the state. Each month is broken into the following three turns:

Turn 1: Evaluation and planning – Students review the current status of the outbreak, decide which of the available actions on the Outbreak Scenario Sheet they wish to perform.

Turn 2: Allocating resources – The actions are recorded on the State Outbreak Chart.

Turn 3: Calculating the spread of the disease – Scores for each month are calculated using the **Monthly Calculation Instructions** provided to the teacher. (If students are collaborating on a single set of responses, the teacher may perform the monthly score calculations for the group on the board. If the students are participating in the simulation individually, each student would calculate and record their own scores on their Outbreak Scenario Sheet, based on the instructions read by the teacher.)

After all five months are completed, the scores for each month are added and used to determine the **Final Outbreak Response Report** read by the teacher to the students.

FLU OUTBREAK MISSION CHALLENGE

Beginning the Simulation:

Students begin the simulation by reading the following instructions:

You are the Director of the emergency disease response center for the state. Reports are coming into your office about cases of a new disease that threatens to spread across the state. Region One, Two, and Four have each reported 2 cases of this new disease. Your job is to determine appropriate monthly responses to deal with this outbreak. As Director, you have enough resources to perform two response actions in a month. Each action may only be done once per month. Your center currently has 1 healthcare team trained and ready to be deployed.

Possible Actions

Chose two of the possible actions below, unless directed otherwise:

TRAIN: Train one additional healthcare team - Adds an additional team of healthcare workers that can be deployed, beginning this month.

EQUIP: Equip the latest vaccines - Allows each healthcare team being deployed this month to treat two disease cases instead of one.

EDUCATE: Educate the public – A public information and awareness campaign will educate people on ways to treat and contain the spread of the disease, which will slow the spread of the disease.

PREDICT: Predict how the disease will spread – Examining the latest infection data will help develop statistical models of the outbreak, which are useful in forming better response plans and allowing your center to complete more actions in the upcoming month.

HEALTH DRIVE: Conduct a health drive in a region – Public health drives encourage the public to seek medical treatment and can halt the increase of disease cases in a region.

QUARANTINE: Quarantine a region – Quarantining a region is an extreme response, but it can prevent the spread of disease from regions with large numbers of cases into adjacent regions.

DEPLOY: Deploy all healthcare teams - Sending all of the center's healthcare teams into specific regions allows you to directly treat cases of the disease. Multiple teams may be deployed to the same region.

After reading the instructions, students must determine their actions for allocating the center's resources this month. The State Outbreak Chart should be used to record the actions. They should note that some actions affect the entire state (Training, Equipping, Predicting, and Educating), and are recorded to the left of each month on the chart. Other actions only affect specific regions (Health Drives, Quarantines, and Deploying teams), and are recorded in each region's monthly box. After students choose their actions, the teacher follows the Monthly Calculation Instructions below to calculate the spread of the disease. This process is repeated each month. Once the fifth month is complete, the number of monthly disease cases are added and the teacher reads the appropriate **Final Outbreak Response Report.**

FLU OUTBREAK MISSION CHALLENGE

Monthly Calculation Instructions:

Each month, after the students have determined their actions, use the following steps to calculate the number of cases at the end of the month for each region.
*Note the instructions in Step 3 change when the simulation reaches Months 4 and 5.

Step 1 - If the students chose to predict how the disease will spread, tell students they will get 4 actions next month instead of 2. Predicting the spread has no other effect on this month.

Step 2 - Identify if the region has any healthcare teams deployed. If vaccines were equipped, take the previous cases for that region and subtract 2 cases for each healthcare teams deployed in the region from the previous number of cases. If vaccines were not equipped, only subtract 1 case per healthcare team. If there are no healthcare teams in the region, the number of current cases is not reduced.

Step 3 *(Months 1 to 3) - Now take the number of current cases and identify if the region has a health drive. For any region with a health drive, the number of current cases does not increase, and you can continue to Step 5. If there is no health drive, identify if the public was educated about the disease. If the public was educated, multiply the number of current cases by 2. If the public was NOT educated, multiply the current cases by 3.

Step 3 *(Months 4) - Identify if the public was educated about the disease. If the public was educated, divide the current cases in half (round down). If the public was NOT educated, the number of current cases has no further changes. Then read the following message to the students:

> "Reports are coming in from healthcare professionals in the state that cases of the disease are starting to drop. Portions of the public are becoming resistance to the disease, limiting its spread."

Step 3 *(Month 5) - Identify if the public was educated about the disease. If the public was educated, divide the current cases in half (round down). If the public was NOT educated, the number of current cases has no further changes. Then read the following message to the students:

> "As the public recovers from the disease, many previously infected patients are showing signs of immunity to the disease, further limiting its spread."

Step 4 – Any un-quarantined region with more than 10 cases may spawn additional new cases in another un-quarantined regions. However, if all of the regions have more than 10 cases, do not add any new cases and continue to Step 5. For each un-quarantined region with more than 10 cases, add 2 new cases to the un-quarantined region with the fewest current cases. If more than one un-quarantined region has the fewest number of current cases, add 1 new case to each of those regions. If any new cases were added in Step 4, read the following message to the students:

> "Healthcare professionals are reporting new cases occurring in bus and train depots, and gas stations. They believe high concentrations of the disease in some regions may be spilling over into other regions."

Step 5 – On the State Outbreak Chart, write the number of current cases in the "Cases" line at the bottom of the region box for that month. Once all regions' cases have been calculated, proceed to the next month.

Outbreak Simulation Game – Teacher's Manual (continued)

Final Outbreak Response Report:

After the cases in Month 5 have been recorded, add the total cases for each month and then add those to determine the total number of cases during the outbreak. Using this total number, read the students the appropriate Final Outbreak Response Report listed below.

Total Cases of 90 or Less

> "Your response to the disease epidemic was incredible! You were able to keep the number of cases in the early months low, which limited the spread of the disease over time. You also exhibited a very successful usage of the variety of resources at your disposal. You managed to keep outbreaks of this new disease among the lowest in the country, making your efforts the talk of the nation. Citizens of this state feel very fortunate to have you in charge."

Total Cases of between 91 and 150

> "Your response was well executed and helped prevent a large-scale epidemic. While some regions reported high numbers of cases for a few weeks, your usage of resources kept the long-terms numbers quite low. Only a few other states in the country reported fewer cases of this new disease, so your skillful management is something most citizens in your state are very grateful for."

Total Cases of between 151 and 220

> "Your response to the disease was helpful in certain regions, but allowed large numbers of cases in others. Your earliest allocations of the available resources allowed the disease to spread, which made your later work more difficult, and less effective. Many states around the country are reporting better response results that yours, leaving citizens in the regions with the highest number of cases, unhappy with your performance."

Total Cases of 300 or More

> "Your response was very limited in how it handled the disease outbreak. The way you allocated your available resources allowed very high numbers of cases in your state. Most other states have reported better response results than yours, leading many citizens very unsatisfied with your performance."

Topics for Discussion:

This simulation creates a very simplified scenario about how a new disease might spread. It's important for students to understand that in the real world, the same overall concepts apply, but the details may be much harder to predict and understand. Encourage the students to consider the following questions and be prepared to discuss what the Outbreak Simulation showed about the issues involved:

Which monthly actions were more effective when performed earlier in the simulation?

How does the timing of an action change its effectiveness?

How would the public react to the actions needed to control an outbreak?

What good and bad effects would a quarantine have on the public?

Consider which monthly actions were done the most, and which were done the least. Why were some actions performed more often than others?

What other actions could be performed to reduce the number of disease cases?

FLU OUTBREAK MISSION CHALLENGE

Instructions:

You are the Director of the emergency disease response center for the state. Reports are coming into your office about cases of a new disease that threatens to spread across the state. Region One, Two, and Four have each reported 2 cases of this new disease. Your job is to determine appropriate monthly responses to deal with this outbreak. As Director, you have enough resources to perform two response actions in a month. Each action may only be done once per month. Your center currently has 1 healthcare team trained and ready to be deployed.

Rules of the Simulation:

The Simulation is made up of five months, during which the outbreak will affect the five regions of the state. Each month is broken into the following three turns:

Turn 1: Evaluation & planning – Students review status of the outbreak and decide which monthly actions they wish to perform.

Turn 2: Allocating resources – The students' monthly actions are recorded on the State Outbreak Chart.

Turn 3: Calculating the number of cases – The number of new cases at the end of the month is calculated using the teacher's Monthly Calculation Instructions.

After all five months are completed, the number of cases at the end of each month are added and used by the teacher to determine which Final Outbreak Response Report is read to the students.

Things to Remember:

Some monthly actions affect the entire state (**Training**, **Equipping**, **Predicting**, and **Educating**), and are recorded to the left of each month on the State Outbreak Chart. Other actions only affect specific regions (**Health Drives**, **Quarantines**, and **Deploying teams**), and are recorded in each region's monthly box.

Topics for Discussion:

This simulation creates a very simplified scenario about how a new disease might spread. In the real world, the same overall concepts apply, but the details may be much harder to predict and understand.

Consider the following questions and be prepared to discuss what the Outbreak Simulation showed about the issues involved:

Which monthly actions were more effective when performed earlier in the simulation? How does the timing of an action change its effectiveness?

How would the public react to the actions needed to control an outbreak? What good and bad effects would a quarantine have on the public?

Consider which monthly actions were done the most, and which were done the least. Why were some actions performed more often than others?

What other actions could be performed to reduce the number of disease cases?

Monthly Actions:

Train one additional healthcare team - Adds an additional team of healthcare workers that can be deployed, beginning this month.

Equip the latest vaccines - Allows each healthcare team being deployed this month to treat two disease cases instead of one.

Educate the public – A public information and awareness campaign will educate people on ways to treat and contain the spread of the disease, which will slow the spread of the disease.

Predict how the disease will spread – Examining the latest infection data will help develop statistical models of the outbreak, which are useful in forming better response plans and allowing your center to complete more actions in the upcoming month.

Conduct a health drive in a region – Public health drives encourage the public to seek medical treatment and can halt the increase of disease cases in a region.

Quarantine a region – Quarantining a region is an extreme response, but it can prevent the spread of disease from regions with large numbers of cases into adjacent regions.

Deploy all healthcare teams - Sending all of the center's healthcare teams into specific regions allows you to directly treat cases of the disease. Multiple teams may be deployed to the same region.

State Outbreak Chart

Starting # of Teams: 1

	Region 1	Region 2	Region 3	Region 4	Region 5	
	Starting Cases: 2	Starting Cases: 2	Starting Cases: 0	Starting Cases: 2	Starting Cases: 0	
Month 1 (Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___)	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Total Cases: ___
Month 2 (Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___)	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Total Cases: ___
Month 3 (Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___)	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Total Cases: ___
Month 4 (Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___)	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Total Cases: ___
Month 5 (Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___)	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: ___	Total Cases: ___

Total Number of Cases During the Outbreak: _____

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State Outbreak Chart

Starting # of Teams: 1

	Region 1	Region 2	Region 3	Region 4	Region 5	
	Starting Cases: 2	Starting Cases: 2	Starting Cases: 0	Starting Cases: 2	Starting Cases: 0	
Month 1 Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Total Cases: _____
Month 2 Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Total Cases: _____
Month 3 Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Total Cases: _____
Month 4 Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Total Cases: _____
Month 5 Train? ☐ Equip? ☐ Predict? ☐ Educate? ☐ # of Teams: ___	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Health Drive? ☐ Quarantine ☐ # of Teams Deployed: ___ Cases: _____	Total Cases: _____

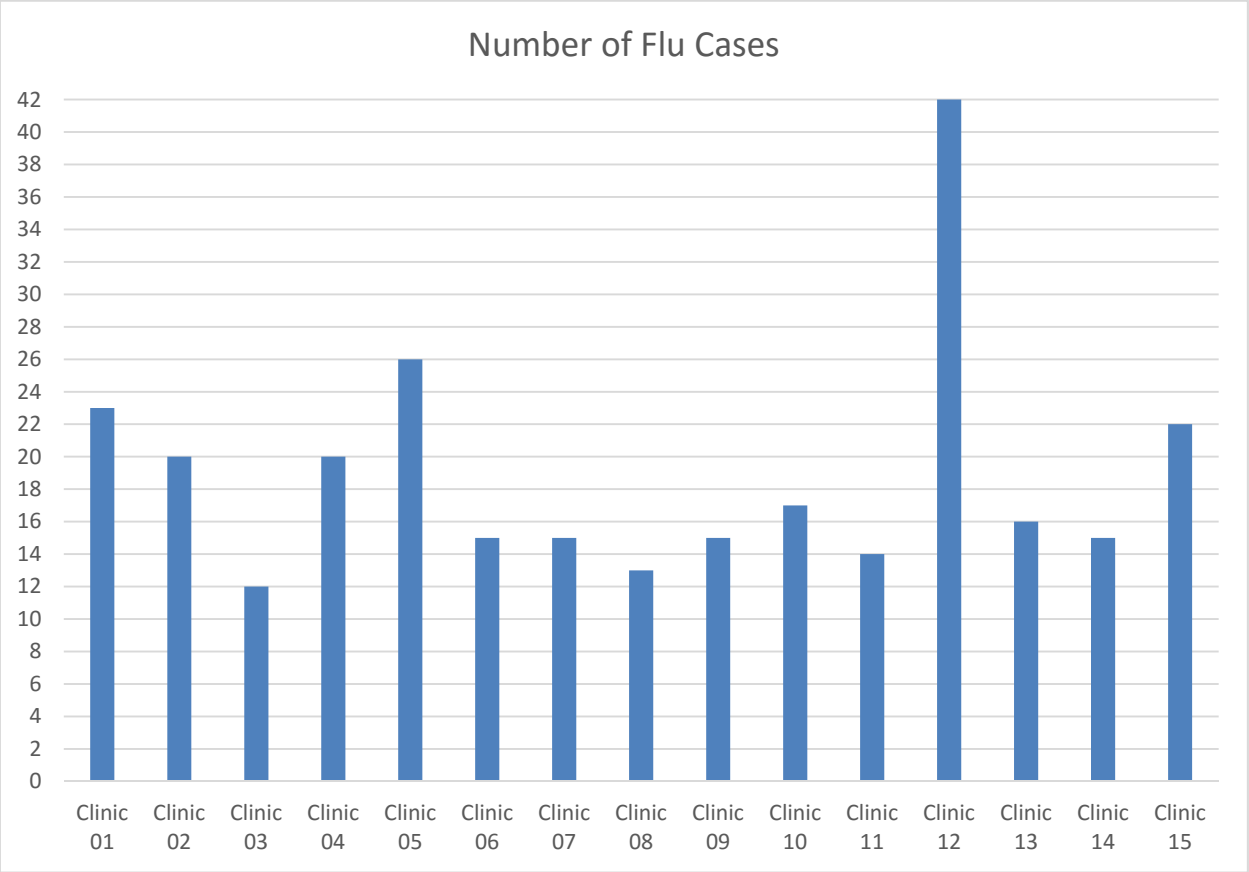
Total Number of Cases During the Outbreak: _____

Answers to Quantitative Data Analysis Questions
(Students may suggest their own answers to other questions.)

Situation 1:

- What was the average number of flu cases treated by a clinic last week?
  Answer: 19
  (Mean = 19, Median = 16, Mode = 15)

- Did any clinics treat an unusually high or low number of cases? If so, how did those numbers affect the average number of cases treated?
  Answer: Clinic 12 had an unusually high number of cases (42).



Situation 2:

What is the total number of patients that have each symptom?
Answers: Fever 7; Cough 14; Congestion 16; Headaches 4; Chills 6; Fatigue 6; Nausea 2

What is the mean number of patients per symptom? Answer: 7.9

Are there some symptoms that have a much higher or lower number of patients? Answer: Yes, cough and headaches.