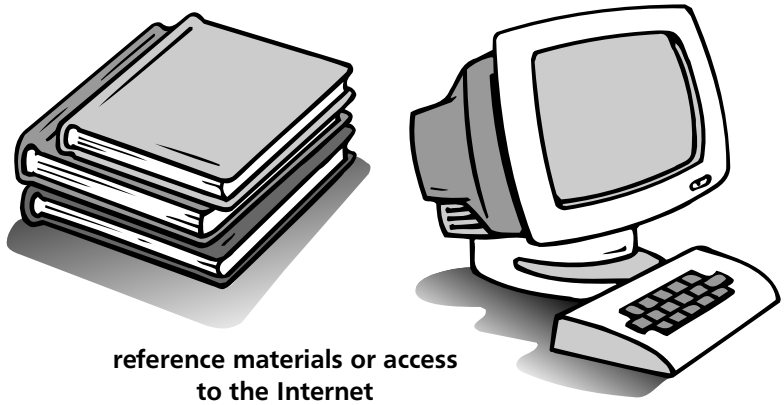
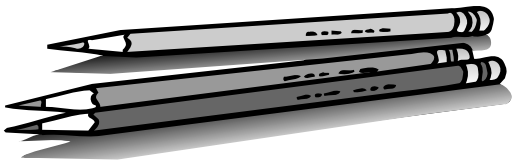
Chapter Science Investigation Name _____

Investigating Epidemics in Our Ecosystem

What You Need



reference materials or access to the Internet



coloring pencils

Find Out

Do this activity to see how quickly harmful agents of disease transfer from person to person in our ecosystem.

Process Skills

Interpreting Data
Using Numbers
Communicating

Time

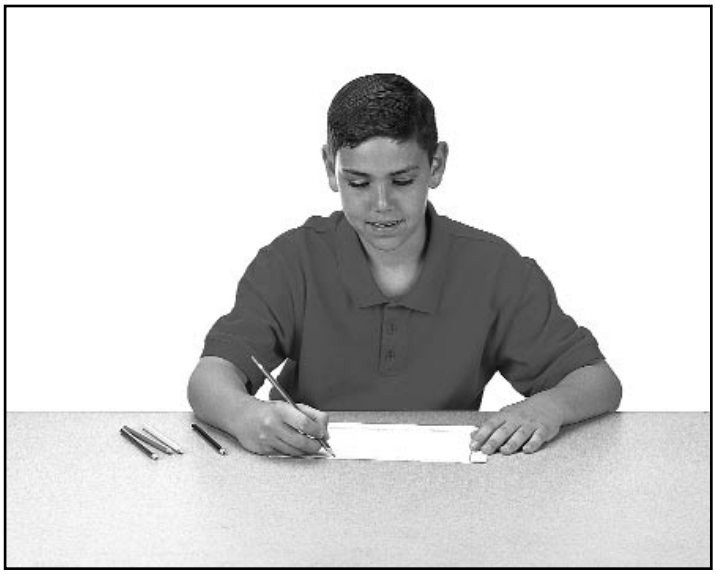
- 40 minutes the first day
- 20 minutes each day for two weeks

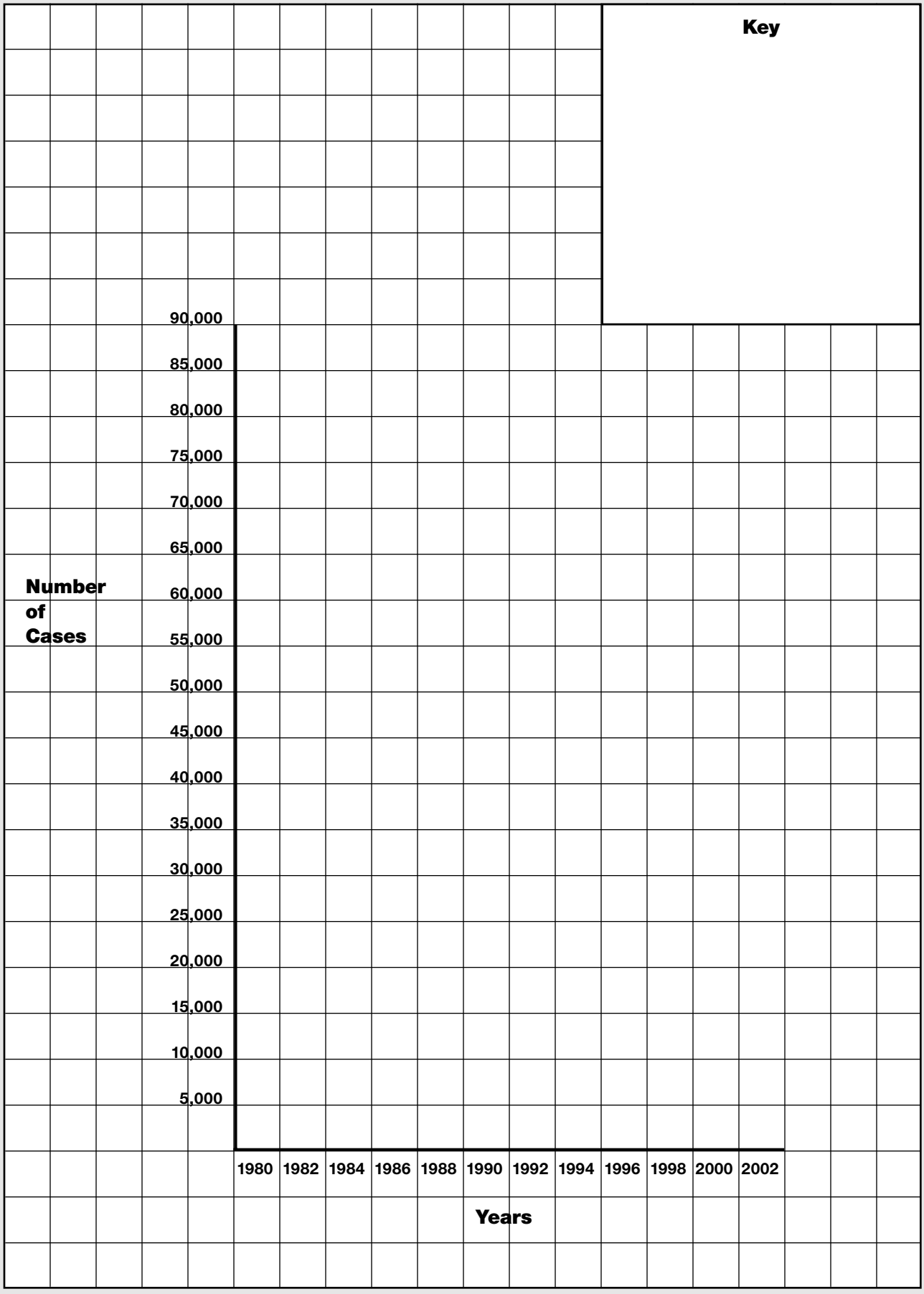
What to Do

1. Fill in the key on your chart as follows: AIDS—Acquired Immunodeficiency Syndrome—red; HIV—human immunodeficiency virus—blue; Ebola virus—green; Lyme disease—yellow; cholera—purple; typhoid—orange; and influenza—gray. Research these topics. Be sure to find out whether the agent of each disease is a bacterium or a virus.

2. Look up the number of reported cases from 1980 to the present for each of the topics. **Record** the data that you find.

3. **Graph** your findings using the corresponding color for each disease you investigated.





Conclusions

1. Using your graph, **predict** which agents of disease will continue to infect greater numbers of people if they are not controlled through medicine or contact prevention.

2. Which agents of disease appear to be controlled to some degree?

3. Throughout the entire period, which agents of disease spread the most?

New Questions

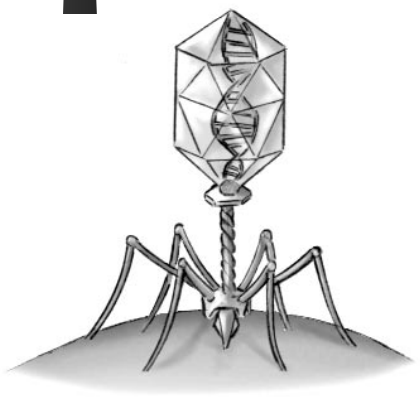
1. Identify areas of the world in which cases of cholera and typhoid continue to be reported.

2. What agents of disease cause cholera and typhoid?

Name _____

ACTIVITY

Virus Modeling



List and measure the parts you see in the T-4 virus.

Part	Length

List the materials you are going to use in your model.

Draw a design of your model.

Name _____

Conclusions

1. **Compare** your finished **model** with the photo and computer-generated model. **Describe** how your **model** is different from them, and how it is the same.

2. **Compare** your model with your classmates' models. Is there one that is more similar to the photo and computer-generated model than yours? How is yours better? **Describe** ways you could improve your model.

3. **List** ways your model is not like a real virus.

Asking New Questions

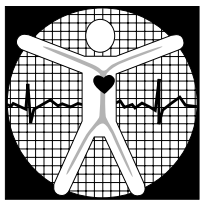
1. **Compare** your model of a virus to a typical animal cell. **List** the differences between them.

2. Do any structures on your virus model remind you of structures in cells? **Make inferences** about what you think the different parts of the virus do.

3. Do you think a virus could reproduce, digest or produce food, or move? Use what you know about viruses to develop a **hypothesis** about what a virus is. Don't worry about being wrong. Scientists make predictions based on the information they have at the moment, and then change their ideas as new information is discovered.

4. **Write** two or three problem statements or questions about viruses that you would like to be able to answer.

Name _____



ACTIVITY

Measuring Soil Seepage

Describe the two spots you chose. **Write** or **draw** what they look like.

Which soil seems harder?

How long did it take the water to soak into the ground in both spots?
Record the times in the chart.

Spot	How Long It Took for Water to Soak into Ground
Can 1 (spot where plants don't grow)	
Can 2 (spot where plants grow well)	

Use your information to **make a bar graph** of the two soaking times.

Name _____

Conclusions

1. At which location was water absorbed more quickly?

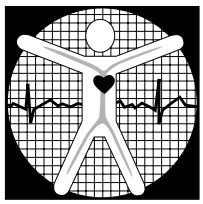
2. Remember the results from poking the soil at each spot with your pencil. Do you think there is a relationship between soil hardness and soaking rate?

Asking New Questions

1. Use your findings to **infer** which kind of soil would be a better choice for landfill soil.

2. Why would soil that allows greater water seepage not be good for a landfill?

Name _____



ACTIVITY

Finding Out About Diseases

What kind of information is in the *Morbidity and Mortality Weekly Report?*

Tell what system of **classification** is used to organize the report.

Record your **observations** and **calculations** in the **chart.**

Table I	Table II	Table III	Table IV

Name _____

Conclusions

1. Were the data only from each state of the United States? If not, what other places were included?

2. Where do the data come from?

Asking New Questions

1. What other information or reports would help public health officials prevent disease?

2. How would this report be useful to your doctor?