

AMI Packet

#10

8th Grade



Don't forget to do journals, vocabulary,
and read for AR Points!

Name: _____ Class: _____

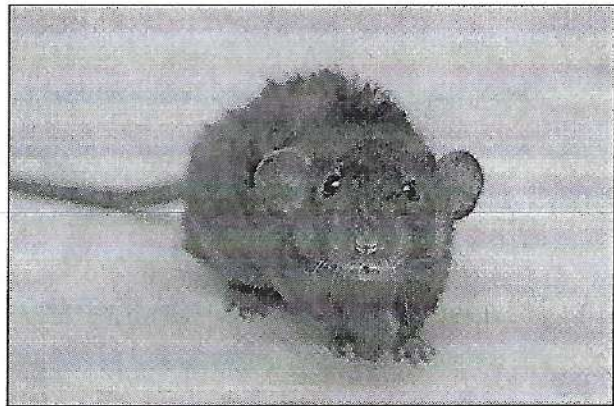
Don't Blame the Rats for Spreading the Black Death

People — not rodents — may have spread the most famous plague in history

By Bethany Brookshire
2018

The Black Death was a devastating plague that spread through Europe from 1346 to 1353. For a long time, rats were believed to be responsible for spreading this deadly plague. New research shows that this may not be the case. As you read, take notes on the different ways that people could be infected by the Black Death.

- [1] The Black Death was one of the worst disease outbreaks in human history. This bacterial disease swept across Europe from 1346 to 1353, killing millions. For hundreds of years afterward, this plague returned. Each time, it risked wiping out families and towns. Many people thought rats were to blame. After all, their fleas can harbor the plague microbes.¹ But a new study suggests researchers have given those rats too much blame. Human fleas, not rat fleas, may be most to blame for the Black Death.



"Lil' dwarf boy from Camarattery" by La Tarte au Citron is licensed under CC BY-ND 2.0

Black Death was an especially extreme outbreak of bubonic plague.

Bacteria known as *Yersinia pestis* cause this disease. When these bacteria are not infecting people, they hang out in rodents, such as rats, prairie dogs and ground squirrels. Many rodents can become infected, explains Katharine Dean. She studies ecology — or how organisms relate to one another — at the University of Oslo in Norway.

The plague's species "persists mostly because the rodents don't get sick," she explains. These animals can then form a reservoir² for the plague. They serve as hosts³ in which these germs can survive.

- [5] Later, when fleas bite those rodents, they slurp up the germs. These fleas then spread those bacteria when they bite the next critter on their menu. Often, that next entrée is another rodent. But sometimes, it's a person. "Plague is not picky," notes Dean. "It's amazing that it can live with so many hosts and in different places."

1. Microbes, also known as microorganisms, are living things too small to see with the naked eye.

2. a source for something

3. a plant or animal on or in which another living thing can live, surviving by obtaining nutrients from the host

People can become infected with the plague in three different ways. They can be bitten by a rat flea that's carrying plague. They can be bitten by a human flea carrying the plague. Or they can catch it from another person. (Plague can spread from person to person through an infected individual's cough or vomit.) Scientists have been trying to figure out, though, which route was most responsible for the Black Death.

Flea vs. flea

The plague may not be a picky disease, but fleas can be picky eaters. Different species of these parasites are adapted to coexist with different animal hosts. People have their own flea: *Pulex irritans*. It's an ectoparasite, meaning that it lives outside its host. People often have to deal with another ectoparasite, as well, a species of louse.⁴

The black rats that lived in Europe during the Middle Ages⁵ have their own species of flea. It's called *Xenopsylla cheopis*. (Another flea species targets the brown rat, which now dominates in Europe.) All these fleas and the louse can carry plague.

Rat fleas prefer to bite rats. But they won't turn down a human meal if it's closer. Ever since scientists proved that rat fleas could transmit plague, they assumed those fleas were behind the Black Death. Rat fleas bit people, and people got the plague.

- [10] Except that there has been growing evidence that black rats don't spread plague fast enough to account for how many people died in the Black Death. For one, the fleas found on European black rats don't like to bite people much.

If scientists needed another explanation, Dean and her colleagues had a candidate: human parasites.

Ancient manuscripts and modern computers

Dean's team went digging for death records. "We were at the library a lot," she says. The researchers looked through old books for records of how many people died of plague per day or per week. The records often were quite old and hard to read. "A lot of the records are in Spanish or Italian or Norwegian or Swedish," Dean notes. "We were so lucky. Our group has so many people that speak so many different languages."

The team calculated plague death rates from the 1300s to the 1800s for nine cities in Europe and Russia. They graphed the death rates⁶ in each city over time. Then the scientists created computer models of the three ways plague can spread — person to person (via human fleas and lice), rat to person (via rat fleas), or person to person (via coughing). Each model predicted what the deaths from each method of spread would look like. Person to person spread might trigger a very quick spike in deaths that fell off quickly. Rat flea-based plague might lead to fewer deaths but those deaths might occur over a long time. Death rates from human flea-based plague would fall somewhere in between.

4. a parasitic insect that lives on the skin of mammals and birds

5. the period of European history from about 1100 to 1453

6. the ratio of deaths to the population of a certain area during a specific time period

Dean and her colleagues compared their model results to the patterns of real deaths. The model that assumed the disease was spread by human fleas and lice was the winner. It most closely matched the patterns in death rates seen from human transmissions. The scientists published their findings January 16 in the *Proceedings of the National Academy of Sciences*.

[15] This study doesn't exonerate⁷ rats. Plague is still around, hiding out in rodents. It probably spread from rats to human fleas and lice. From there, it sometimes prompted human outbreaks. Bubonic plague still emerges. In 1994, for example, rats and their fleas spread plague through India, killing almost 700 people.

Rats still spread a lot of plague, Dean explains. "Just probably not the Black Death. I feel more like a champion for the human ectoparasites," she says. "They did a good job."

Not a total surprise

Scientists have suspected that rat fleas might not have played a big role in the Black Death, says Michael Antolin. He is a biologist at Colorado State University in Fort Collins. "It's nice to see a model that shows [it could happen]."

Studying illnesses of the past is important for the future, Antolin notes. Those long-ago outbreaks can teach a lot about how modern diseases might spread and kill. "What we're looking for are the conditions that allow epidemics or pandemics to occur,"⁸ he says. "What can we learn? Can we predict the next big outbreak?"

Even if rats played a role in the Black Death, they wouldn't have been the biggest factor, Antolin explains. Instead, environmental conditions that allowed rats, fleas, and lice to spend so much time around people would have played a larger role.

[20] Until modern times, he notes, people were gross. They didn't wash often and there were no modern sewers. Not only that, rats and mice could thrive in the straw that many people used in their buildings for roofing and a floor covering. Hard roofs and clean floors mean fewer places for ratty roommates — and the diseases they might pass on to human fleas and lice.

What stops plague isn't medicine or killing rats, Antolin says. "Sanitation⁹ is what fixes plague."

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7. to show that someone is not guilty of something
8. An epidemic is an outbreak of a disease that spreads quickly and affects many people at the same time. A pandemic is an outbreak of a disease that occurs over a whole country or the world.
9. the process of making or keeping things clean and free from dangers to health

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which statement best expresses the central idea of the text?
- A. While humans were responsible for spreading plague in the past, it is largely rats that are responsible for plague outbreaks today.
 - B. The Black Death could have easily been prevented if humans had made a greater effort to keep black rats and their fleas out of their homes.
 - C. It is likely that human fleas and unclean living conditions were the most responsible for the spread of the Black Death, rather than flea-carrying rats.
 - D. The Black Death was spread quickly by humans because they didn't understand that the disease was transmitted through rats.
2. PART B: Which TWO details from the text best support the answer to Part A?
- A. "Or they can catch it from another person. Plague can spread from person to person through an infected individual's cough or vomit." (Paragraph 6)
 - B. "Dean's team went digging for death records. 'We were at the library a lot,' she says. The researchers looked through old books for records of how many people died of plague per day or per week." (Paragraph 12)
 - C. "The model that assumed the disease was spread by human fleas and lice was the winner. It most closely matched the patterns in death rates seen from human transmissions." (Paragraph 14)
 - D. "In 1994, for example, rats and their fleas spread plague through India, killing almost 700 people." (Paragraph 15)
 - E. "environmental conditions that allowed rats, fleas, and lice to spend so much time around people would have played a larger role." (Paragraph 19)
 - F. "Not only that, rats and mice could thrive in the straw that many people used in their buildings for roofing and a floor covering." (Paragraph 20)
3. What is the author's main purpose in the text?
- A. to prove that rats are completely free of blame for spreading plagues
 - B. to propose and provide evidence that humans largely contributed to the spread of the Black Death
 - C. to show people what they can do to prevent another outbreak of disease from occurring
 - D. to warn people about the potential dangers of being in close contact with infected animals
4. Which statement best describes the relationship between humans' cleanliness and preventing the spread of disease?
- A. Cleaner living conditions result in stronger human immune systems.
 - B. People who do not practice good hygiene build up immunities to diseases and are less likely to be infected.
 - C. Human cleanliness does not prevent the spread of diseases, but the development of vaccines does.
 - D. Cleaner living conditions can prevent humans from coming in contact with infected animals and insects carrying disease.

5. How does the author's discussion of different death rates help readers understand the spread of the Black Death? Use evidence from the text in your response.

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

1. The text explores a past outbreak of the bubonic plague known as the Black Death. How can better understanding disease outbreaks from the past help us in the future? What are other significant events in history that humans study can help them navigate the future?

2. The text suggests that living conditions and a lack of hygiene among humans is partly to blame for the Black Death. What can you do to protect yourself from contracting dangerous diseases? How does this compare to what you already do to protect yourself from common germs?

All Marks of Punctuation A

EXERCISE A Add underlining, end marks, commas, semicolons, and colons where they are needed in the following sentences.

Example 1. Mr. Sizemore, my photography teacher, showed us some works by Dorothea Lange.

1. Lange a famous photographer decided while still a teenager to pursue photography
2. As a teenager in Manhattan Lange explored the city with the eyes of a photographer she promised herself she would one day take pictures for a living
3. What an ambitious admirable teenager she was
4. Lange did in fact become a professional photographer she took portraits of wealthy residents of San Francisco
5. When the Great Depression struck the country she began photographing migrant workers for the California State Emergency Relief Administration
6. Her goal was this to show the inhuman housing conditions in which these people lived
7. In a similar job for the Farm Security Administration she photographed farmers sharecroppers and other poverty-stricken groups
8. Referring to photography Lange once said "You go in over your head, not just up to your neck"
9. Do you feel this passionately about anything
10. Go to the library bookstore or Internet look at some of Lange's work in Dorothea Lange Photographs of a Lifetime

EXERCISE B Add apostrophes, quotation marks, hyphens, parentheses, brackets, and dashes where they are needed in the following sentences.

Example 1. I'm going to the party—I think I mentioned it—with a friend.

11. Duncan had been looking forward to the party the one at the ice rink for days.
12. When Chris he's Duncan's best friend had invited Duncan, hed said, "Id love to come.
13. Ill meet you there the party location."
14. Chriss great uncle and two of his aunts they are all quite friendly had helped plan the party.
15. Everyone all of the seventh grade class would enjoy three hours worth of skating, eating, and having fun.

All Marks of Punctuation B

EXERCISE A Add underlining, quotation marks, commas, and parentheses where they are needed in the following sentences. Circle any letters that should be capitalized or made lowercase.

Example 1. Here is a photograph of the space shuttle Columbia, Erin.

1. There are too many very's in your paper, A Day in the Life of the President.
2. Casablanca check listings for show times is highly acclaimed by critics.
3. We have new students from Topeka Kansas and Portland Oregon.
4. When you pick up Ruthie from school Jane said would you also get some sandwiches?
5. Have you ever tasted cantaloupe? asked Horace. It tastes delicious. I like it.
6. The stories in this book I'm almost finished reading it have been quite entertaining.
7. Malcolm said, when you're at the museum, look at Broken Bridge & Dreams by Salvador Dali.
8. I sat in one of the swings in the park and I watched my younger brother play.
9. John Hancock 1737–1793 was the first signer of the Declaration Of Independence.
10. Hanging from the strongest limb of the tree a swing made from an old tractor tire swayed in the breeze.

EXERCISE B Add apostrophes, hyphens, brackets, and dashes where they are needed in the following sentences. Then, add the necessary end mark for each sentence.

Example 1. A job—you know, work—is one of the best ways to become self-sufficient.

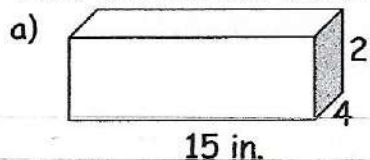
11. The childrens dance class is performing for their parents entertainment
12. Last week this is so funny twenty five clowns skated down Main Street
13. My cousin said, "Ill call and tell you about it summer camp after I get there"
14. I didnt know you're full of surprises that you knew how to dance the salsa
15. Everyones vote counts equally in the Students Choice Award
16. The award in case you dont know shows appreciation for a teachers outstanding work
17. Are these zs or 2s? I cant tell
18. His mother-in-laws decision is final she will not sell her house this year
19. The final exam will be all encompassing that means comprehensive and will have seventy five questions on it
20. Someones car alarm is going off, and it couldnt be louder

Show your work! Show your work! Show your work!

Name _____

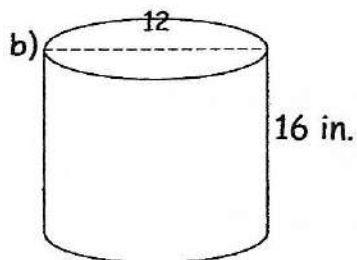
Day 10

1) Find the surface area and volume of each of the figures.



Surface Area =

Volume =



Surface Area =

Volume =

2) Solve for x if $y = -3$:

a) $y = x + 17$

b) $y = 4x - 43$

c) $y = -3x - 19$

d) $y = -2x - 46$

3) Solve for y if $x = 12$:

a) $y = 3x + 14$

b) $y = 2x - 12$

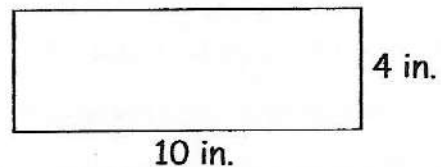
c) $y = -2x - 91$

d) $y = -7x - 24$

4) Find the area and perimeter of the following figures.

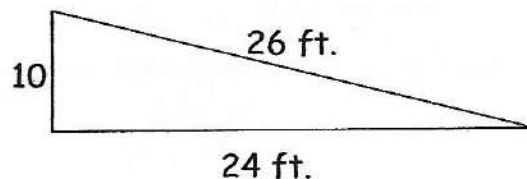
a) $A =$

$P =$



b) $A =$

$P =$



Show your work! Show your work! Show your work!

Name: _____ Class: _____

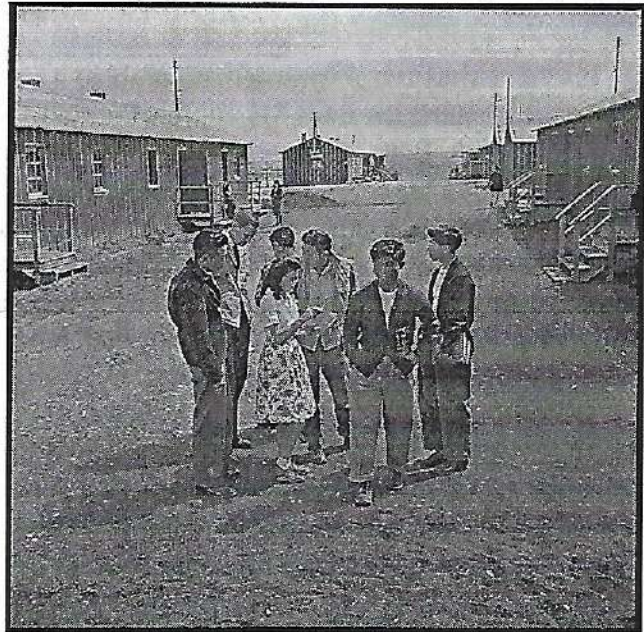
Japanese Relocation during World War II

By National Archives
2016

Following the attack on Pearl Harbor, President Roosevelt ordered the relocation and internment of Japanese Americans in the United States. This order resulted in devastating financial and emotional damage to Japanese Americans that persisted for generations. As you read, take notes on the different reasons why the United States authorized the internment of Japanese Americans.

- [1] President Franklin Delano Roosevelt declared that the day of the Japanese attack on Pearl Harbor, December 7, 1941, would live in infamy. The attack launched the United States fully into the two theaters¹ of the world war. Prior to Pearl Harbor, the United States had been involved in the European war only by supplying England and other antifascist countries² of Europe with necessary war materials.

The attack on Pearl Harbor also launched a rash of fear about national security, especially on the West Coast. In February 1942, just two months after Pearl Harbor, President Roosevelt, as commander-in-chief, issued Executive Order 9066, which had the effect of relocating all persons of Japanese ancestry, both citizens and aliens, inland, outside of the Pacific military zone. The objectives of the order were to prevent espionage³ and to protect persons of Japanese descent from harm at the hands of Americans who had strong anti-Japanese attitudes.



"High School Campus at Heart Mountain, Wyoming" by The National Archives is in the public domain.

In Washington and Oregon, the eastern boundary of the military zone was an imaginary line along the rim of the Cascade Mountains; this line continued down the spine of California from north to south. From that line to the Pacific coast, the military restricted zones in those three states were defined.

Roosevelt's order affected 117,000 people of Japanese descent, two-thirds of whom were native-born citizens of the United States. The Issei were the first generation of Japanese in this country; the Nisei were the second generation, numbering 70,000 American citizens at the time of internment. Within weeks, all persons of Japanese ancestry — whether citizens or enemy aliens, young or old, rich or poor — were ordered to assembly centers⁴ near their homes. Soon they were sent to permanent relocation centers⁵ outside the restricted military zones.

1. In warfare, a "theater" is an area in which important military events occur or are progressing.
2. Antifascist countries were countries that opposed radical authoritarian rule, such as the fascist rule in Germany and Italy.
3. Espionage is the practice of spying or using spies.
4. "Assembly centers" were location that Japanese Americans would live until they were moved to a permanent relocation center.

- [5] For example, persons of Japanese ancestry in western Washington State were removed to the assembly center at the Puyallup Fairgrounds near Tacoma. From Puyallup to Pomona, internees found that a cowshed at a fairgrounds or a horse stall at a racetrack was home for several months before they were transported to a permanent location. Relocation centers were situated many miles inland, often in remote and desolate locales. Sites included Tule Lake, California; Minidoka, Idaho; Manzanar, California; Topaz, Utah; Jerome, Arkansas; Heart Mountain, Wyoming; Poston, Arizona; Granada, Colorado; and Rohwer, Arkansas.

As four or five families with their sparse collections of clothing and possessions squeezed into shared barracks⁶ made of tar paper, life took on some familiar routines of socializing and school. However, eating in common facilities and having limited opportunities for work interrupted other social and cultural patterns. Persons who became troublesome were sent to a special camp at Tule Lake, California, where dissidents were housed.

In 1943 and 1944 the government assembled a combat unit of Japanese Americans for the European theater. It became the 442d Regimental Combat Team and gained fame as the most highly decorated of World War II. Their military record reflected their patriotism.

As the war drew to a close, the relocation centers were slowly evacuated. While some persons of Japanese ancestry returned to their home towns, others sought new surroundings. For example, the Japanese American community of Tacoma, Washington, had been sent to three different centers; only 30 percent returned to Tacoma after the war. Japanese Americans from Fresno had gone to Manzanar; 80 percent returned to their hometown.

The internment of persons of Japanese ancestry during World War II sparked constitutional and political debate. In the 1940s, two men and one woman — Hirabayashi, Korematsu, and Endo — challenged the constitutionality of the relocation and curfew orders.⁷ While the men received negative judgments from the court, in the 1944 case *Ex Parte Mitsuye Endo*, the Supreme Court ruled that, “Mitsuye Endo is entitled to an unconditional release by the War Relocation Authority.” Some people refer to the relocation centers as concentration camps; others view internment as an unfortunate episode, but a military necessity. During the Reagan-Bush years Congress passed Public Law 100-383 in 1988 which acknowledged the injustice of the internment, apologized for it, and provided a \$20,000 cash payment to each person who was interned.

- [10] One of the most stunning ironies in this episode of American civil liberties was articulated by an internee who, when told that the Japanese were put in those camps for their own protection, countered, “If we were put there for our protection, why were the guns at the guard towers pointed inward, instead of outward?”

“Japanese Relocation during World War II” by National Archives (2016) is in the public domain.

5. internment camps
6. Barracks are buildings, or a group of buildings, used to house soldiers.
7. In March 1942, the movements of Japanese Americans were further restricted when a night-time curfew was implemented.

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ACT Aspire Practice: Science

Some say that Hot Springs have healing qualities; particularly due to the element Sulfur. Scientists believe that the high sulfur contents are able to treat skin irritations and infections due to the presence of collagen.

Four visitors are deciding which springs to visit. Their preferences for what they would like to see in a spring are detailed in the chart below.

Table 1

Visitor	Temperature	Sulfur Content
Visitor 1	High	High
Visitor 2	Low	High
Visitor 3	High	Low
Visitor 4	Low	Low

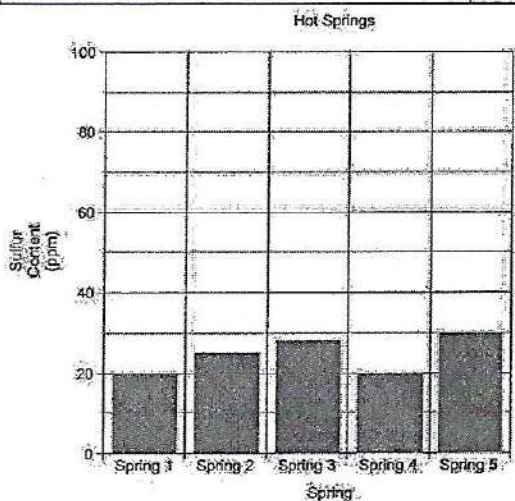


Figure 1

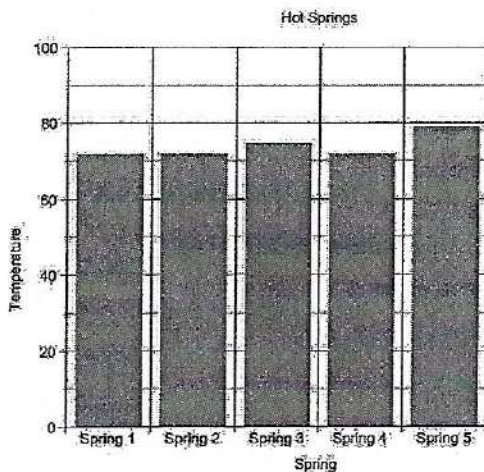


Figure 2

- Which Spring would Visitor 1 be most likely to visit? Give evidence and reasoning to support your answer.

- What is the Sulfur Content (ppm) of Spring 4? _____
- Which Spring would Visitor 4 be most likely to visit? _____
- Based on Figure 2, what is the Temperature of Spring 5? _____
- Which Springs have the same Sulfur Content? _____
- Which Visitor prefers a low temperature but a high sulfur content? _____
- Based on the passage, why might Visitors 1 and 2 be interested in visiting a spring with a high sulfur content?