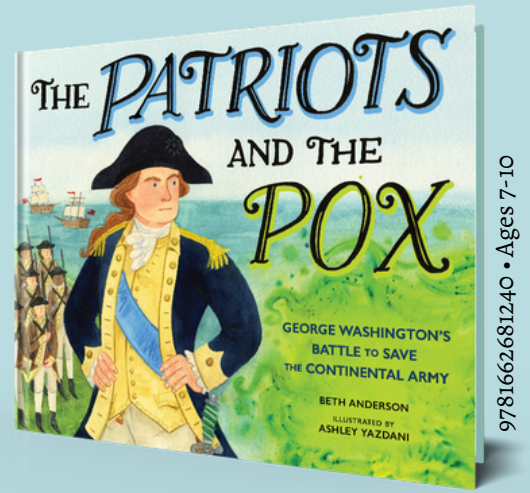


The Math of Cause and Effect with Smallpox

A real world math problem dealing with cause and effect helps readers understand the impact of smallpox on George Washington's Continental Army.



Use Addition and Subtraction

- One man infected with smallpox enlists in the army. He joins 99 other men, and they travel together to the main camp, stopping in towns along the way.
- Twenty of the men have natural immunity. The rest are infected.
- When the first infected soldier breaks out in a rash that bubbles up, ten terrified men flee.
- Twenty-eight of the remaining infected men do not survive.

How many of these 100 soldiers will fight in the Continental Army?

Advanced: Use Percentage

- One man infected with smallpox enlists in the army. He joins 99 other men, and they travel together to the main camp, stopping in towns along the way.
- 20% of the men have natural immunity. The rest are infected.
- When the first infected soldier breaks out in a rash that bubbles up, ten terrified men flee.
- 40% of the remaining infected men do not survive.

How many of these 100 soldiers will fight in the Continental Army?

[Answer: 62 soldiers. Don't forget the immune soldiers.]

Can you think of two more effects the infected soldiers cause in this scenario?

[Answer: (1) Infected soldiers spread smallpox in the towns they visited on their way to camp.

(2) The ten deserters brought smallpox home and also spread it to others along their path.]

How do you think troops bringing disease affected townspeople's attitudes toward soldiers?

[Answer: Many towns did not welcome and support troops.]



Discuss how the math and chain of cause and effect add to your understanding of the challenges George Washington faced with the Continental Army.

NOTE: The scenario and numbers remain the same if the original person with smallpox had self-inoculated and didn't quarantine. Despite mild disease, the contagion is full-strength, causing smallpox in others as it naturally occurs.