

Submitted by: GENERATION CURES

TITLE: LOGIC

SUBJECT: Mathematics

GRADE: 6th

RECOMMENDED TIME: 30-45 minutes

GENERATION CURES CONTENT: Caduceus Puzzle 2-Patient Zero

LEARNING GOALS:

Students organize, represent and interpret numerical and categorical data; make decisions about how to approach problems; and use strategies, skills, and concepts in finding solutions.

RESOURCES/MATERIALS NEEDED:

- Computer / Internet / Projector
- Pen / Pencil / Paper
- CADUCEUS Puzzle 2-Patient Zero (www.kids.generationcures.org)
- Dictionary: Define
 - Logic- a field of mathematics in which deductive reasoning, analysis and critical thought are used to draw conclusions from statements and propositions.
 - Propositions- propositions in mathematical logic are statements or clues that can be used to reach a logical conclusion. They can be represented using shorthand as part of the process of drawing those conclusions.
 - Analysis- the first step of arranging data from a word problem or logic game. It is the process of sorting data according to word clues such as before | after, under | above, old | oldest, brown hair | blond hair, etc.
 - Deduction- the final stage of solving a word problem or logic game, in which a conclusion is drawn from the analysis of statements and propositions.
 - Proprietor- a person with an exclusive, right, ownership, or claim to a particular title, legal right, or property.
 - Caravan- a company of travelers forming a group; or a line of vehicles engaged on a long journey or voyage.
 - Dirigible- an airship kept aloft with one large balloon

BACKGROUND:

Having discovered the microbe that caused the plague, our hero now travels to Windholt to find Patient Zero—the first known victim of the plague. Students learn about five travelers. They must use clues to determine which traveler was the first to contract the plague in Windholt.

LESSON STEPS:

- **Game play options:** Students may play games either a) individually at a computer or b) by projecting the game on a screen or wall. A teacher may lead a discussion of the information in the game.
- **Review:** Ask students to jot down word clues that could help them solve the puzzle. These may be sequence words like before, after, first, second. When solving word problems like “Patient Zero,” students must analyze time, space, and the order of events.
- **Following play,** ask students to work in small groups to share some of the math strategies they used in order to solve the puzzle.
 - Did they draw pictures to represent the data?
 - Did they list the items and number them?
 - Did any students use a graph?
 - How many students used computation to solve the puzzle?
- **Select students to describe or show their answers to the above questions on the board.**
Discuss solutions with students:
 - Some data can be immediately placed into a category based upon the first set of propositions. (i.e. the person with the blond hair was the last person to be infected).
 - Other data can be arranged using different word clues or prepositions. In some cases, more than one proposition might be combined to draw a conclusion.
- **The way in which students represent or symbolize data is important to solving problems like “Patient Zero.”** In this activity, they are given information and told to analyze the data, arrange it, and deduce from the given data a logical conclusion. Explain that the problem in *Caduceus* is a real life problem that statisticians and mathematicians encounter every day. Emphasize that there could be more than one correct way to solve the puzzle.

EXTENSIONS:

- As the students continue to work through the Patient Zero puzzles, ask them to diagram the puzzles on paper using the same process as in class.