

LESSON

Problem Solving**2-3****Using Deductive Reasoning to Verify Conjectures**

Use the information in the table and the given statement to draw a valid conclusion for each. If a valid conclusion cannot be made, explain why not.

Volcanic Eruptions
I. A category 2 eruption produces a plume of ash 1–5 kilometers high.
II. An explosive volcano produces a volume of ash between 1 million and 10 million cubic meters.
III. If a volume of ash 10,000–1,000,000 cubic meters is produced, the eruption is classified as a category 1 eruption.
IV. If the eruption is severe, then it produces a plume of ash between 3 and 5 kilometers high.

1. **Given:** When Mt. Kilauea in Hawaii erupted, it produced a volume of ash between 10,000 and 1 million cubic meters.

2. **Given:** The eruption of a volcano in Unzen, Japan, was not explosive.

3. **Given:** The eruption of a volcano in Stromboli, Italy, was a category 2 eruption.

Choose the best answer.

4. A sports store has running shoes 25% off original prices. Andrea sees a pair of running shoes that she likes for \$65.00. Which is a valid conclusion?
- A** The sale price of the shoes is \$40.00.
B The sale price of the shoes is \$48.75.
C Andrea will buy the shoes.
D Andrea will not buy the shoes.
5. If Zack makes $1\frac{1}{2}$ quarts of lemonade, then he uses 6 lemons. If Zack makes $1\frac{1}{2}$ quarts of lemonade, then he makes 4 servings. Zack uses 5 lemons. Which is a valid conclusion?
- F** Zack makes 3 servings. **H** Zack makes 1 quart.
G Zack makes 2 servings. **J** Zack does not make $1\frac{1}{2}$ quarts.