

2.3 Logic Puzzles

MATERIALS • graph paper • pencils

QUESTION How can reasoning be used to solve a logic puzzle?

EXPLORE Solve a logic puzzle

Using the clues below, you can determine an important mathematical contribution and interesting fact about each of five mathematicians.

Copy the chart onto your graph paper. Use the chart to keep track of the information given in Clues 1–7. Place an X in a box to indicate a definite “no.” Place an O in a box to indicate a definite “yes.”

Clue 1 Pythagoras had his contribution named after him. He was known to avoid eating beans.

Clue 2 Albert Einstein considered Emmy Noether to be one of the greatest mathematicians and used her work to show the theory of relativity.

Clue 3 Anaxagoras was the first to theorize that the moon’s light is actually the sun’s light being reflected.

Clue 4 Julio Rey Pastor wrote a book at age 17.

Clue 5 The mathematician who is fluent in Latin contributed to the study of differential calculus.

Clue 6 The mathematician who did work with n -dimensional geometry was not the piano player.

Clue 7 The person who first used perspective drawing to make scenery for plays was not Maria Agnesi or Julio Rey Pastor.

	n -dimensional geometry	Differential calculus	Math for theory of relativity	Perspective drawing	Pythagorean Theorem	Did not eat beans	Studied moonlight	Wrote a math book at 17	Fluent in Latin	Played piano
Maria Agnesi				X						
Anaxagoras				X						
Emmy Noether				X						
Julio Rey Pastor				X						
Pythagoras	X	X	X	X	O					
Did not eat beans										
Studied moonlight										
Wrote a math book at 17										
Fluent in Latin										
Played piano										

DRAW CONCLUSIONS Use your observations to complete these exercises

- Write Clue 4 as a conditional statement in if-then form. Then write the contrapositive of the statement. *Explain* why the contrapositive of this statement is a helpful clue.
- Explain* how you can use Clue 6 to figure out who played the piano.
- Explain* how you can use Clue 7 to figure out who worked with perspective drawing.

The Aubrey Sisters Logic Puzzle

Amy and the other four quintuplets, who are not in high school, have always been encouraged by their parents to pursue their own interest, with the result that the girls all play different musical instruments (one plays the harp), study different languages (one is learning Spanish), and collect different things (one collects stamps). From the following clues, can you determine each sister's interests?

- The sister who is learning Russian collects old buttons.
- The girl who plays flute is studying German.
- Anne collects coins.
- Andrea, who plays the violin, is not learning French.
- Last Sunday, Angela and the sister who collects rocks went shopping together, the one who plays the piano stayed home to practice, the one who studies French tutored a fellow student, and the one who plays the guitar rehearsed with an instrument group.
- The sister who collects butterflies plays the piano.
- Alice is studying Italian.

Name					
Instrument					
Language					
Collection					