

RAM Maths Circle

January 11, 2026

Nagpur

LOGIC I

1 Introduction

Propositional logic (or sentential logic) is a fundamental branch of logic that analyzes statements (propositions) as indivisible units, examining how they combine and relate using logical connectives like AND, OR, NOT, and IF-THEN to form complex statements, focusing solely on their truth values (True or False) to build valid reasoning and arguments, essential for mathematics, computer science, and philosophy.

Problem 1

To brush up, draw the truth tables. Then we can take a question as a refresher:

On your travels, you come to an old man on the side of the road holding three cards from a standard deck face down. Trying to make conversation, you ask him what the three cards are.

He tells you:

- To the left of the queen, are one or two jacks.
- To the right of the jack, are one or two jacks.
- To the right of the club, are one or two diamonds.
- To the left of the diamond, are one or two diamonds.

Question: What are the three cards?

Problem 2

The Makombo Reserve rescues and rehabilitates giraffes that have been injured or abandoned in the wild. Using only the clues below, determine the height, age, and country of origin of each giraffe currently at the preserve.

Remember, as with all grid-based logic puzzles:

- No option in any category will be used more than once.
- If you get stuck or run into problems, try the “Clear Errors” button to remove any mistakes that might be present on the grid.
- You may also use the “Hint” button to see the next logical step in the puzzle.

Clues

1. The animal that is 10 feet tall is either the giraffe from Namibia or Angrit.
2. Of the animals from Namibia and Gareka, one is 10 feet tall and the other is 11 feet tall.
3. Morutana came from Zambia.
4. The animal that is 13 feet tall came from Chad.