

# MATHEMATICAL REASONING

#### 1. RECREATIONAL ELEMENTS I

Problems with dominoes. Problems with dice.

#### 2. RECREATIONAL ELEMENTS II

Problems about debts. Problems about mislabeled objects.

#### 3. RECREATIONAL ELEMENTS III

Problems about weighings and balances.

#### 4. RECREATIONAL ELEMENTS IV

Problems about liquid transfers. Problems about relocations.

#### 5. RECREATIONAL ELEMENTS V

Problems about sports situations. Problems about divisions and cuts.

#### 6. FAMILY RELATIONSHIPS

Identifying kinship. Minimum number of people.

#### 7. CERTAINTIES

Problems with urns, locks, playing cards.

### 8. INFORMATION ORDERING

Linear ordering. Circular ordering. Categorical ordering.

#### 9. LOGICAL INFERENCE I

Truth table problems. Problems with logical connectors. Application of propositional logic laws.

### 10. LOGICAL INFERENCE II

Contextualized problems with logical connectors. Class logic.

#### 11. CLASS LOGIC

Class logic problems.

### 12. TRUTHS AND LIES

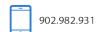
Problems with contradictory statements. Problems using assumption method.

#### 13. NUMERICAL ARRANGEMENTS I

Arrangements with constant sum condition. Arrangements with other conditions.

### 14. NUMERICAL ARRANGEMENTS II

Magic squares of order 2. Magic squares of order 4 and 5.











#### 15. CALENDARS

Problems about day variations. Problems about month variations. Problems about year variations.

### 16. INDUCTIVE REASONING (NUMERICAL AND VERBAL

Application in numerical arrangements. Application in graphic arrangements. Application in letter arrangements.

#### 17. DEDUCTIVE REASONING

Terminal digits. Reconstruction of operations.

### 18. EQUATION FORMULATION I

Generic problems translating admission exam-type statements.

#### 19. EQUATION FORMULATION II

Diophantine equations with 2 or more variables (addition, subtraction and product).

#### 20. EQUATION FORMULATION III

Age-related problems.

### 21. EQUATION FORMULATION IV

Movement-related problems.

#### 22. TIMEKEEPING I

Problems about bell tolls. Problems about elapsed and remaining time.

### 23. TIMEKEEPING II

Problems about clock advances and delays. Problems about clock hands.

### 24. FIGURE COUNTING

Counting by simple inspection. Counting by combinatorial method. Counting by induction.

### 25. SHAPE, MOVEMENT AND LOCATION PROBLEMS

Cardinal points. Routes and trajectories in directed paths. Routes and trajectories in undirected paths.

### **26. FIGURE TRACING**

Application of Euler's postulates. Calculation of minimum paths.

#### 27. MAXIMUMS AND MINIMUMS

Application in algebraic situations. Application in arithmetic situations (AM and GM). Application in geometric situations.











### 28. FREQUENCY OF EVENTS AND INTERPRETATION OF GRAPHS/TABLES

Problems about cuts and stakes. Problems about pills and shots. Interpretation of graphs and tables.

#### 29. FIGURE ROTATION AND WHEELS, PULLEYS AND GEARS

Rotation and translation of figures. Wheels and pulleys. Gear problems.

#### 30. MATHEMATICAL OPERATIONS I

Mathematical operations with explicit definition. Mathematical operations with implicit definition.

#### 31. MATHEMATICAL OPERATIONS II

Mathematical operations defined in double-entry tables. Mathematical laws in operations.

#### 32. PSYCHOTECHNICAL I

Numerical sequences. Literal and alphanumeric sequences. Numerical distributions.

#### 33. PSYCHOTECHNICAL II

Figure series. Figure analogies. Discordant figures.

#### 34. ABSTRACT REASONING I

Composition of solids from their developments.

### 35. ABSTRACT REASONING II

Main views of a solid.

### **36. DATA SUFFICIENCY**

Problems with unique and infinite solutions, problems with different solutions, data changes, problems with necessary and sufficient data.

#### 37. FRACTIONS I

Generic problems translating admission exam-type statements.

#### 38. FRACTIONS II

Successive profits and losses. Reduction to unit.

#### 39. PERCENTAGES I

Generic problems translating admission exam-type statements. Percentage variation.

### **40. PERCENTAGES II**

Mixture problems. Commercial applications.











# **41. SEQUENCES**

Arithmetic progression. Geometric progression. Quadratic sequence.

### 42. SERIES I

Arithmetic series. Geometric series. Notable sums.

### 43. SERIES II

Infinite geometric series. Special series.

# **44. GEOMETRIC SITUATIONS**

Perimeter problems. Area problems.





