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Sixth Edition

Logical Reasoning and Data Interpretation for CAT

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Nishit K. Sinha

Pearson

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Logical Reasoning and Data Interpretation for CAT

Sixth Edition

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To

Papa and Ma

Kumar Kalyan Prasad Sinha and Sanjila Sinha

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Contents

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Preface to the Sixth Edition

Logical Reasoning and Data Interpretation for CAT was envisaged to provide a complete preparation resource for every management aspirant, irrespective of training levels and preparation styles. Since its first edition, the book has remained the preferred choice of students due to the superior quality of its content, the user-friendly pedagogy, and the proven methodologies and approaches.

In our continued endeavor to raise the standard further and to ensure an upgraded and improved experience, we present the sixth edition.

Highlights

- An exclusive section containing 100 LRDI questions
- Solutions to all questions
- Explanations and answers to CAT 2017 LRDI paper (based on memory)
- Previous years questions for XAT and IIFT
- Embedded console with test papers on the Pearson website

I am sure this book will continue being the first choice among test takers.

Nishit K. Sinha

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Preface

Among the many resources in the market for CAT and other B school entrance examinations, there are none that place adequate emphasis for concept building in LRDI. This book fills this gap by bringing together concept building, application methodology, as well as question practice. Special care has been taken in this book to ensure that even a person who does not have a formal experience of LR or DI will find him/herself in a comfortable position with a little bit of effort. Besides, this book puts as proportionate an emphasis on LR and DI as put by the CAT in the recent years.

This unique book is useful for all kinds of students—those who are good at solving LR and/or DI questions as well as those who are not so. There are plenty of worked-out examples to enable the students to understand the techniques before moving on to the practice problems. Apart from this, once the practice questions at all the three levels—Foundation, Moderate and Advanced—have been tried, this book puts forth a mechanism to help the student in evaluating him/herself in a controlled, simulated environment in the form of Benchmarking Tests. And finally some more tests are there to evaluate oneself in the format of review tests.

The table below will give a fair idea of the proficiencies and approaches for different students for LRDI.

Student's Type/ response	Novices	Apprentices	Practitioners	Experts
Interpretation	Do not understand the basic concepts	Do not understand all the concepts underlying the problems. So, unable to attempt all the questions.	Understand all the concepts and attempt most of the main problems.	Can solve the problems correctly.
Approach	Do not know the methods to solve the problems	Unable to pick the correct method; mostly rely on luck to get the right answer.	Know and pick the correct method; have a sound strategy and solve the problems with skill, not luck.	Can use more than one strategy to solve the problem for a good number of questions.
Accuracy level	Unable to get correct answers most of the time	Mostly get the correct answer, with few errors.	Correct answers with hardly any mistakes. Use appropriate units.	Excellent level of accuracy as well as speed.

This book is designed to take care of students at all these four levels by giving them a customized preparation through the questions at different difficulty levels. This focus on providing customized content is at the heart of our drive to help every user be prepared for the LRDI in CAT.

STRUCTURE OF THE BOOK

This book is divided into four parts:

- **Part 1** facilitates framework and concept building in Logical Reasoning.
- **Part 2** guides the student in concepts building and development of the skills to apply these in Data Interpretation.

- **Part 3** consists of test papers with varying levels of difficulty and
- **Part 4** contains six previous years' CAT papers with solutions.

Each part has three different levels of problems: Foundation, Moderate and Advanced. These levels are hierarchical and sequential. Students are expected to progress through them in the same order. Movement from one level to another is largely a function of sufficient experience with the specific content. A student is unlikely to perform well at a particular level without the experience of the preceding level. Time spent at one level will help the student in imbibing and assimilating the methods and approach to solve problems, which in turn will make it easier for the student to tackle problems at the next, higher stage. In other words, hard work put at one level will allow an intuitive functioning later. If one level is not mastered before moving on to the next, though good students would appear to perform well at that higher level and may get the right answers, it would be without any sound reasoning for most of the times.

Benchmarking tests are also given at the end with comparative scores and then finally review tests to track your progress.

Although I have tried to be meticulous in preparing this text, some errors may have crept in. I invite each one of you to be a co-author of this book for the subsequent editions by making contribution in enhancing the value of this book with your suggestions and by bringing to our notice the errors, if any, so that they can be corrected in future.

I can be reached at *nsinha.alexander@gmail.com*

Nishit K. Sinha

About the Author

Nishit K. Sinha, an IIM Lucknow alumnus, has been training students for the CAT and other B-school entrance examinations for more than a decade. During this period, he has successfully trained more than 10,000 students of varying backgrounds to clear various MBA entrance examinations. To best analyze the pattern of all the major B-school entrance tests, as well as to remain up to date himself on the examination pattern, he appears for important examinations, such as the CAT and XAT every year.

He is Founder–Partner at his test prep organization dueNorth Academics LLP, based at Dehradun.

Acknowledgements

This book bears the imprint of many people—my colleagues, my students and my teachers who have had a significant impact on my thought process and have generously extended help whenever I needed.

With immense pride and humility, I acknowledge that the *decade long journey of this book* (1st edition came out almost a decade back) has been made possible because of the constructive feedback of the users' of this book, ideas generated through brainstorming with my friends in the coaching industry, Pearson's market intelligence reports and my own understanding of the entrance exams.

My special thanks to my brothers Ravi Shankar Prasad, Sharat Chandra Mayank, Amit Kumar and Vinit Kumar.

I would like to thank Sharel Simon and Vipin Kumar for giving the book the final shape. Thanks to Vikas Sharma and H. Nagaraja for ensuring that I get the timely and accurate feedback of the users.

Thanks is going to be a small word for my wife, who took care of family and home, giving me enough time to complete this project. Love to my young son who has started helping me with the errands. Sudhir, my man-Friday, who took care of small necessities, your contribution is noteworthy.

I may have forgotten some names here. I wish to express my gratitude towards all who have contributed in the making of this book.

Nishit Sinha

CAT Demystified

CAT stands for Common Admission Test. It is a test conducted by IIMs for admission into several programs offered by them. Besides IIMs, there are a good number of colleges which accept CAT score in their 1st round of selection process. As of now, there are 20 IIMs offering PGP at following locations: Ahmedabad, Bangalore, Calcutta, Lucknow, Indore, Kozhikode, Shillong, Ranchi, Rohtak, Raipur, Udaipur, Tiruchirappalli, Kashipur, Nagpur, Visakhapatnam, Jammu, Sambalpur, Sirmaur, Bodhgaya, Amritsar.

HISTORY OF CAT

In its history of almost four decades, CAT has changed its colours many a times in terms of number of questions, sections asked and orientation of the questions. Here we will discuss the examination pattern of the CAT from 2000 onwards.

	Number of sections	Total number of questions	Total Marks	
CAT 2000	3	165	N.A.	120 minutes
CAT 2001	3	165	N.A.	120 minutes
CAT 2002	3	150	N.A.	120 minutes
CAT 2003	3	150	N.A.	120 minutes
CAT 2004	3	123	150	120 minutes
CAT 2005	3	90	150	120 minutes
CAT 2006	3	75	300	150 minutes
CAT 2007	3	75	300	150 minutes
CAT 2008	3	90	360	150 minutes
CAT 2009	3	60	450 (scaled score)	135 minutes
CAT 2010	3	60	450 (scaled score)	135 minutes
CAT 2011	2	60	450 (scaled score)	140 minutes
CAT 2012	2	60	450 (scaled score)	140 minutes
CAT 2013	2	60	450 (scaled score)	140 minutes
CAT 2014	2	100	300	170 minutes
CAT 2015	3	100	300	180 minutes
CAT 2016	3	100	300	180 minutes
CAT 2017	3	100	300	180 minutes

Chart 1: Time Allotted Per Question

CAT 2011 had two sections: (a) Quantitative Ability & Data Interpretation (b) Verbal Ability & Logical Reasoning with 30 questions in each section. CAT 2011 also had sectional time limit of 70 minutes for each section.

Before CAT 2004, CAT did not mention that how many marks one question stands for? Marks carried per questions was announced for the first time in CAT 2004.

Quite obvious from the above table that time allotted to per question has risen sharply from CAT 2000 to CAT 2014 taking a small dip further. One possible conclusion drawn from here is that CAT is focussing more upon accuracy than speed, and secondly it expects students to gain a certain level of competence across all the areas in a particular section. With number of questions going down and time going up, students didn't have much of the choices of questions to choose from. Further, introduction of sectional timers has forced students to attempt questions in that particular section only.

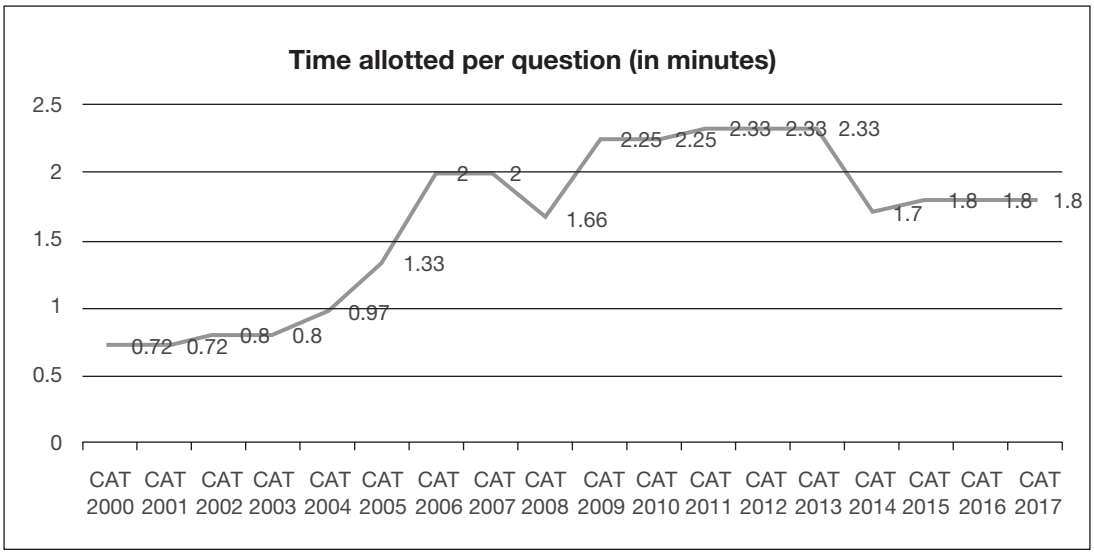


Chart 2: Sectional Breakups and Getting IIM Call

One thing that has remained constant during this period of CAT 2000 - CAT 2010 is the number of sections and the way these sections have been grouped – Quantitative Aptitude (QA), Logical Reasoning and Data Interpretation (LR / DI), and English Usage / Reading Comprehension (EU / RC).

Though CAT 2011 changed it all:

Year	QA	LR DI	EU RC	Total no. of questions
CAT 2000	55	55	55	165
CAT 2001	50	50	50	150
CAT 2002	50	50	50	150
CAT 2003	50	50	50	150
CAT 2004	35	38	50	123

CAT 2005	30	30	30	90
CAT 2006	25	25	25	75
CAT 2007	25	25	25	75
CAT 2008	25	25	40	90
CAT 2009	20	20	20	60
CAT 2010	20	20	20	60
CAT 2011	30 (QA + DI)		30 (Verbal + LR)	60
CAT 2012	30		30	60
CAT 2013	30		30	60
CAT 2014	50		50	100
CAT 2015	34	32	34	100
CAT 2016	34	32	34	100
CAT 2017	34	32	34	100

2-sections pattern continued till CAT 2014. From CAT 2015, total number of sections were three. CAT 2015 brought some questions in non-MCQ format –fill in the blanks questions, where an aspirant is required to type the answer. These questions had no negative marking.

Chart 3: Marks required to get atleast one IIM Call

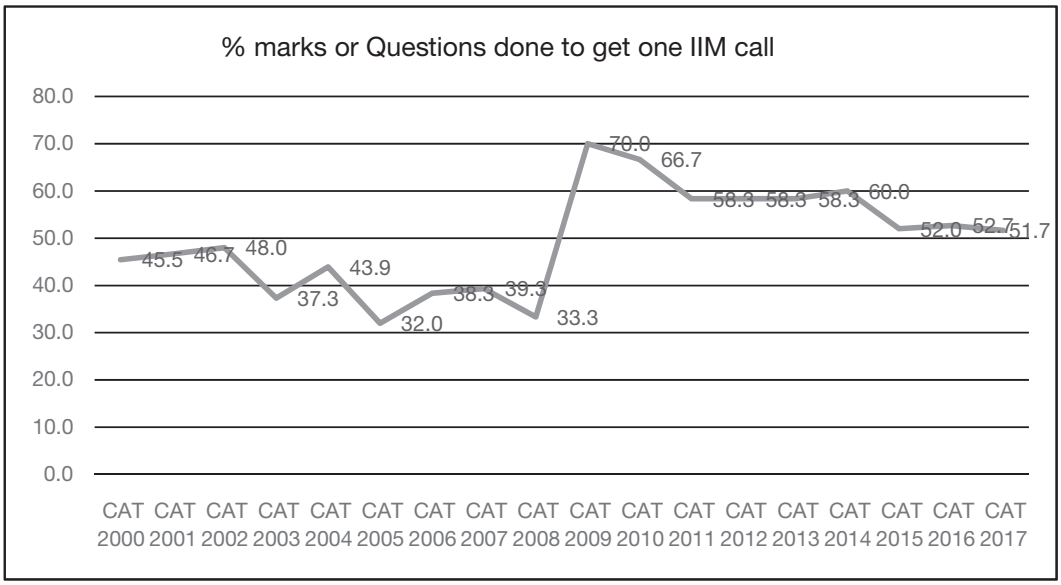
Past CAT trends show that a student is required to get around 70% of the marks to get atleast one IIM call (with clearing the sectional cut-off). Following table and bar chart gives us some clarity regarding the same:

Year	Total marks or questions	Marks /Qs required to get atleast one IIM call
CAT 2000	165	75
CAT 2001	150	70
CAT 2002	150	72
CAT 2003	150	56
CAT 2004	123	54
CAT 2005	150	48
CAT 2006	300	115
CAT 2007	300	118
CAT 2008	360	120

CAT 2009	60	42
CAT 2010	60	40
CAT 2011	60	35
CAT 2012	60	35
CAT 2013	60	35
CAT 2014	300	180
CAT 2015	300	156
CAT 2016	300	158
CAT 2017	300	155

Chart 4: Percentage obtained for IIM Call

Following line chart gives questions solved or marks required as a percentage of total marks or total questions (as applicable):



Note: Above calculation is based upon the data collected from the students who got IIM calls in that particular year.

So, to get atleast one IIM call in CAT 2008, a student was required to get 33.33% Marks out of total with clearing the cut-off across the sections. Though in the online format of CAT (since 2009), percentage questions to be done to get atleast one IIM call has gone up. Post 2011, % marks required to get atleast one IIM call has hovered in between 50%–60%.

Chart 5: No. of Questions and Time Per Question

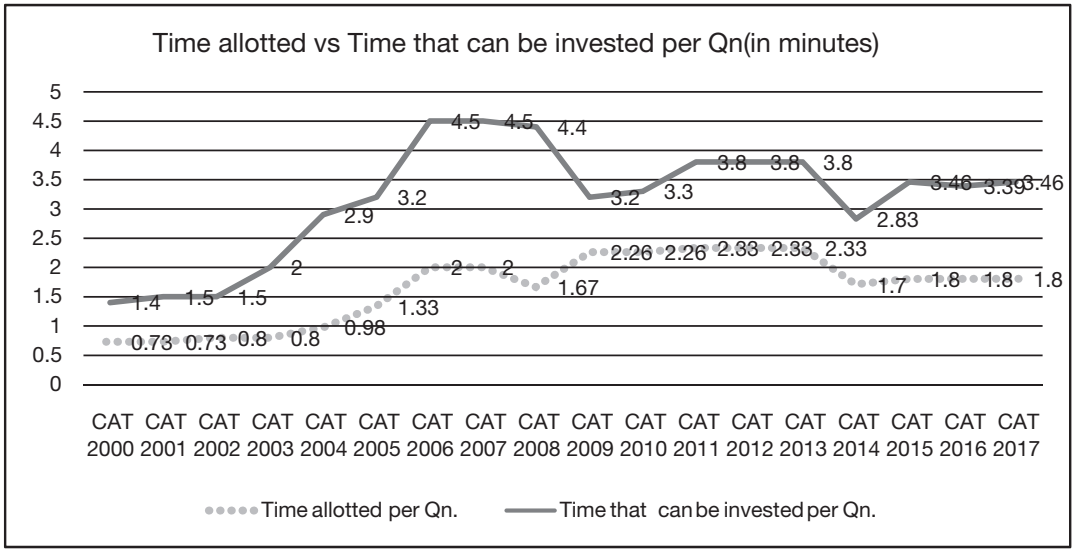
If we convert the requirement of marks to be obtained from the above line chart into questions to be done, we get the following table:

Year	No. of questions to be solved	Time allotted	Time invested per qn.
CAT 2000	85	120 minutes	1.4
CAT 2001	80	120 minutes	1.5
CAT 2002	81	120 minutes	1.5
CAT 2003	60	120 minutes	2.0
CAT 2004	42	120 minutes	2.9
CAT 2005	38	120 minutes	3.2
CAT 2006	33	150 minutes	4.5
CAT 2007	33	150 minutes	4.5
CAT 2008	34	150 minutes	4.4
CAT 2009	42	135 minutes	3.2
CAT 2010	40	135 minutes	3.3
CAT 2011	35	135 minutes	3.8
CAT 2012	35	135 minutes	3.8
CAT 2013	35	135 minutes	3.8
CAT 2014	60	170 minutes	2.83
CAT 2015	52	180 minutes	3.46
CAT 2016	53	180 minutes	3.39
CAT 2017	52	180 minutes	3.46

Chart 6: Time Allotted vs Time that can be Invested Per Question

For CAT 2000 to CAT 2008, at 90% accuracy with $1/4^{th}$ negative marking, these are the approximate number of questions to be done. For CAT 2009 to CAT 2011, net of these many questions to be done.

To summarize this whole discussion till now, we will compare chart 2 with chart 6 and present them in a unified line chart given below.



This line brings to us an important information—For CAT 2006, CAT 2007 or CAT 2008, Even if a student has taken approximately 4.5 minutes to solve a question correctly, s/he has got enough marks to get atleast one IIM call (provided s/he clears the sectional cut-off too). For the last three CAT papers (2015 – 2017), even if a student has taken 3.4 minutes to solve a question correctly, s/he would get sufficient marks to get atleast one IIM Call.

It also points out towards other side of story that a student can get calls from IIM by solving nearly half of the total questions, skipping entire half of the questions.

How to Use This Book

There are few important guidelines mentioned below that we must keep in our mind while going through any book, be it a text book or a reference book or a book on LR/DI or QA of CAT:

1. Passive reader Vs Active learner

A passive reader is a person who goes through any content in real time frame without putting any efforts to induce the learning, assuming that there will be a tomorrow when he would come back to the same content and learn the things given. We know that either tomorrow never comes or it comes so late that everything is almost over.

An active learner is a person who keeps a piece of paper and a pencil/pen with him so that he can integrate the various activities like reading–learning–practicing at the same time. At the end of the process, this person realizes that she/he has a better understanding than the passive reader.

2. Mechanical process Vs Logical process

Mechanical process is the assembly line production system—put the input into the controlled system and we will receive the output. But unfortunately in CAT, now a days, neither the input (the fundas to be used) nor the output (process to arrive at the end) is given.

The logical process of solving the question not only involves the mechanical process of solving the question as the 1st step of learning, but also uses visualization of the problem scenario as the 2nd step of mental development. In this process, we slowly move towards a stage where a good number of problems can be done through mental mapping only, without using pen or paper.

In the past also, CAT used to be logical, but in the recent years, the need of being strong in visualization has become more.

Now, I treat the above written points as a choice—whether you want to be in the 1st category (Passive reader + Mechanical Process) or in the 2nd category (Active Learner + Logical Process). The choice made here will have a very serious implication on our capacity building and ability to use the same in cracking CAT.

HOW TO GO AHEAD WITH THIS BOOK?

When you start going through this book, I would request you to have above-mentioned points in your mind.

Let us see this in steps:

Step 1

Go through learning objectives and as you go through each and every word of the learning objectives, you should have the end result of getting into the IIMs in your mind. This will also help you in understanding all that is to be achieved in the chapter.

Step 2

I have given absolute freedom to the individuals to start with either Part 1 or Part 2 of the book, but definitely not the rest of the parts.

Start with the concept first and before proceeding towards the next concept, solve all the worked out examples related to that concept and move ahead only when you have internalized the same. Sometime, this might appear to be

drudgery, but see that you do it. Also, make sure you don't succumb to temptations like finishing the topic as fast as possible.

Step 3

Once you have got the confidence over whatever you have done previously, do the foundation exercise. It is a precursor to the actual CAT problems. Solve it without any time-constraint. This level tests mostly your comprehension of the concept and a bit of application. Most of the questions in this exercise will check only your understanding of the concept, and not the application of it. Ideally you should not give more than 2 minutes to any question in foundation exercise. If you get less than 75% questions correct, revise the concepts for which you got the answers wrong. One more suggestion—try to solve one exercise in one sitting, whatever time it takes. If you get the answers right, its good and if you don't get the answers correct, attempt the same questions once again in next sitting (preferably the next day).

Solving these will

- help to gain thorough understanding of the concepts
- provide interaction with the problems that are being asked at basic level
- Lead to confidence building

Step 4

Welcome to the moderate exercise. Questions at this level matches with CAT level and sometimes, above that level as well. This level tests your ability to apply a particular concept and also combination of concepts in single problem. If you are not able to solve a particular question, do not go for the solution until you have attempted the question at least thrice.

Solving these will—

- hone the Ability to identify easy and difficult questions
- develop Mental imaging and visualization of the problems
- Help in creating a neural-network inside the mind to think about the different processes to solve the problems
- Establish a logical connection between concepts and their application.

Step 5

Don't go for advanced level right now. Relax and don't solve any question of LR/DI for one day. Then the next day, take the benchmarking test. Your performance in this test will help you to assess yourself. Ideally, you should aim for anything above 85 percentile.

Step 6

Once the whole book is covered with all the moderate exercises and bench marking tests, go for the revision of the topics. From here on, you can jump on to the advanced level of questions. Most of the questions which you will get here are above CAT level. The idea is to prepare you at a level which is above CAT. If you excel at this level, CAT will be a cakewalk for you. Go for Practice Questions based upon recent CAT pattern now. Attempt the questions, try to solve, if you cannot solve, try once again. Give a second chance and solve them. Now if you cannot solve the problems, go for hints and solutions.

Step 7

Go to the Part 3 - Benchmarking test and target anything above 98 percentile. If you get it consistently in all the tests you are prepared for CAT. And if not, repeat the process from Step 4.

If in any one of these tests, you get less than 85 percentile, repeat the process from Step 3.

All the best for life!

Nishit K. Sinha
Mail me at—nsinha.alexander@gmail.com

PART 1 LOGICAL REASONING

SECTION 1 UNDERSTANDING LOGICAL REASONING

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Chapter 1

INTRODUCTION TO LOGICAL REASONING

LEARNING Objectives

In this chapter, you will learn:

- ❏ Logic as tool for inference
- ❏ The strength of logical argument
- ❏ Logic and decision making
- ❏ Applying logic

Human life is full of situations where one is called to make a decision. This also includes making significant choices about what to believe and what not to. Although everyone prefers to believe what is true, we often disagree with each other about a particular issue due to the subjective nature of our judgements. We often find individuals or groups locked in conflict because our reactions to situations are guided by our impulses. Humankind has developed a mechanism through which we are able to move beyond our individualistic and idiosyncratic notions and establish indisputable facts. This mechanism is called Logical Reasoning and Logic has come to play a very important role in ascertaining what is more credible or whose reasoning is sounder.

It is imperative to understand that Logic is not mainly concerned about finding the 'Truth.' Logic's prime interest lies in finding that, which can be established as a fact using several strands of reasoning supported by sophisticated arguments. It may seem like a big coincidence that the event or situation that is correct will have more substantial proofs or arguments in its favour, rather than the even or situation that is not so

For example, if we are discussing about the direction from which the sun rises, we will always have more proofs or stronger arguments in favour of east rather than west. However, if somehow we get more proofs or stronger reasoning in favour of south, then it is more logical to say that the sun rises from south than to say that it rises from east.

An important application of the logic is in the area of law and the judicial system—an area where proceedings are heavily dependent on logical processes—of any civilized society. The following example tells a lot about the logic and its constituents:

While pronouncing his verdict in one of the most senstational murder cases in India, the judge said, "Though I know that this is the man who committed the crime, I acquit him, giving him the benefit of doubt."

What is the judge saying?

Even though he knows that the defendant is indeed the culprit, the fact has not been proven, that is, it cannot be logically deduced on the basis of arguments and evidence; consequently the accused has to be acquitted.

Despite the above example some authoritativeness can indeed be attached to the way of logical reasoning. No matter how sceptical we are about the points from where we begin to reason, if we follow the rules of logic we will reach an acceptable conclusion. It is almost always possible to distinguish between correct from incorrect reasoning independent of our agreements or disagreements regarding substantive matters. Logic is the discipline that studies the distinction—both by

determining the conditions under which the truth of certain beliefs leads naturally to the truth of some other belief, and by drawing attention to the ways in which we may be led to believe something without the respect for its truth. This provides no guarantee that we will always arrive at the truth, because the beliefs or assumptions with which we begin are sometimes erroneous. But following the principles of correct reasoning does ensure that no additional mistake creeps in during the course of our progress.

Hence, Logic can be seen as a tool using which we find out the strength of reasoning or the various arguments put forward in favour of or against something. This is reflected in the origin of the word 'logic'. It takes its roots from the Greek work *logos* which means reason or principle. Taking a broad view, we can see several dimensions, or usages of the term logic. Some of these are given below:

1. A system of reasoning: Aristotle's logic.
2. A mode of reasoning: By that logic, we should sell the company tomorrow.
3. The formal, guiding principles of a discipline, school, or science.
4. The relationship between elements and between an element and the whole in a set of objects, individuals, principles, or events: There's a certain logic to the motion of rush-hour traffic.
5. In the field of Computer Science the term, logic, may mean any of the following:
   a. The non-arithmetic operations performed by a computer, such as sorting, comparing, and matching, that involve yes-no decisions.
   b. Computer circuitry.
   c. Graphic representation of computer circuitry.

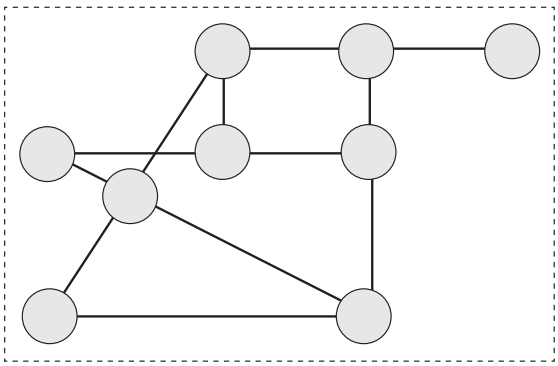
Terms related to Logic:

1. Consistency—An attribute of a logical system that is so constituted that none of the propositions deducible from the axioms contradict one another.
2. Completeness—This is an attribute of a logical system that is so constituted that a contradiction arises if any proposition is introduced that cannot be derived from the system.
3. Corollary—An inference that follows directly from the proof of the another proposition.
4. Non sequitur—A conclusion that does not follow from the premises.
5. Subject—The first term of a proposition
6. Predicate—What is predicted about the subject of a proposition.
7. Proof—A formal series of statements given showing that if something is a fact, then something else necessarily follows from it.
8. Paradox—A self contradiction (As in the statement—'I always lie' is a paradox.)
9. Postulate—A declaration of something self evident.
10. Proposition—A statement that affirms or denies something and is either true or false.
11. Negation—A proposition that is true if and only if another proposition is false.
12. Axiom—A proposition that is always true and does not require proofs or disproofs to be true.
13. Tautology—A statement that is always necessarily true (As in the statement—'He is honest or he is not honest.)
14. Contradiction—Opposite of consistency.
15. Logical relation—A relation between propositions.
16. Inductive Reasoning—Proceedings from particular facts to a general conclusion.
17. Deductive reasoning—Proceedings from general facts to a particular conclusion.

REASONING QUESTIONS AND PUZZLES

Puzzle 1

Put the digits from 1 to 9 into the given circles so that the sum of the numbers in each straight line is the same.



Puzzle 2

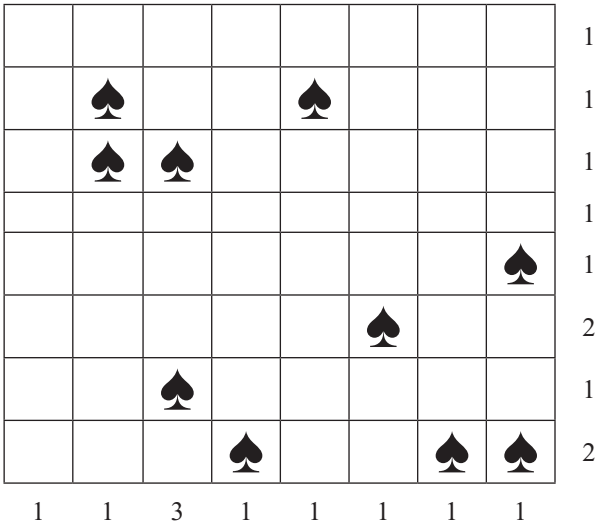
Our local town hall has a clock which strikes on the hour and also strikes just once on the half hour. While I was awake the other night, I heard the clock strike once, but I could not tell what time it was. Half an hour later it struck once again, but I still could not tell what time it was. Finally, half an hour later it struck once again and I knew what the time was. What time was it?

Puzzle 3

You are running in a marathon and you overtake the person in second place, what position are you now in?

Puzzle 4

Tree-Tent is a logical game (similar to minesweeper) in which the aim is to identify all tents in the grid. Each tree is exactly connected to only one tent. A tent can be found in a horizontally or vertically adjacent square of a tree. The tents are never placed adjacent to each other, neither vertical, horizontal, nor diagonal. The numbers outside the grid give the total number of tents in the corresponding row or column. A tree might be next to two tents, but is only connected to one, and vice versa. Find all the tents.



Puzzle 5

Find the highest total—you can only move up or right—using the mathematical signs coming on the way.

+	4	–	2	+	2
2	+	2	–	2	+
–	1	+	2	–	4
2	–	1	+	1	–
+	1	–	2	+	3
3	+	3	–	4	+

Puzzle 6

In the above question, if we can move up and left only, then what is the maximum sum that we can get?

Puzzle 7

Abhishek said that he was born on 29 February 1900. What birthday will he celebrate in the year 2000?

Puzzle 8

During a recent police investigation, IG Khan was interrogating five criminals—A, B, C, D and E—to try and identify who is the culprit. Below is a summary of their statements:

A: it wasn't E
   it was B
B: it wasn't C
   it wasn't E
C: it was E
   it wasn't A
D: it was C
   it was B
E: it was D
   it wasn't A

It was well known that each suspect told exactly one lie. Can you determine who the criminal is?

Puzzle 9

At the local school, I was chatting to my sister's friends and noticed a number of things. Jessica has mousey coloured hair and the girl with black hair was wearing a green dress. Lucy is not blonde and Lauren does not have brown hair, Chloe was wearing a blue dress. The blonde girl was not wearing red and Lauren was not wearing green. I can't remember which girl was wearing a yellow dress. Can you determine the colours of the girl's dresses and their hair?

Puzzle 10

Draw a continuous line that travels in order from 1 to 6. You can only move horizontally and vertically, the line must not cross itself and every square is visited.

			3		
4				1	
	6		5		
2					

Puzzle 11

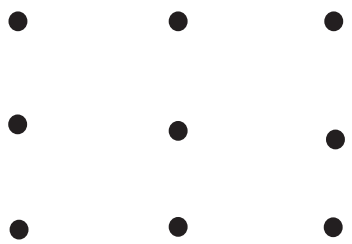
A bank customer had ₹100 in his account. He then made 6 withdrawals, totalling ₹100. He kept a record of these withdrawals, and the balance remaining in the account, as follows:

Withdrawls (₹)	Balance left (₹)
50	50
25	25
10	15
8	7
5	2
2	0
100	99

When he added up the columns as above, he assumed that he must owe ₹1 to the bank. Was he right?

Puzzle 12

Can you draw exactly 4 straight lines that pass through ALL 9 spots, without removing your pen from the paper?



Puzzle 13

In a football syndicate, the winnings amounted to ₹7657. There were more than 30 people in the syndicate but less than 100. Each won exactly the same number of rupees and no paise were involved. How much did each win?

Puzzle 14 to 16

Here is a snippet of curious multiple-choice entrance exam.

14. The answer to question 15 is
(a) B (b) C
(c) A

15. The first question with (B) as the correct answer is
(a) Q3 (b) Q1
(c) Q2

16. The only option not used so far is
(a) A (b) B
(c) C

Puzzle 17

If yesterday was Saturday's tomorrow and tomorrow was Wednesday's yesterday, what day would it be today?

Puzzle 18 to 20

Directions for questions 18 to 20: ***Read the passage given below and solve the questions based on it.***

In a shooting competition, a person is allowed to shoot at four targets successively, followed by the next shooter. When all the shooters have finished one such round, the process is repeated. If a target is hit, the shooter gets 2 points and if he misses the target, the other shooters are awarded one point each. The first shooter to get 60 points wins the shooting competition. In a contest among three persons—Akhil, Bharat and Chand, their score at the end is as follows:

Akhil = 60, Bharat = 53 and Chand = 43.

Out of a total of 78 shots being fired, only 43 hit the target.

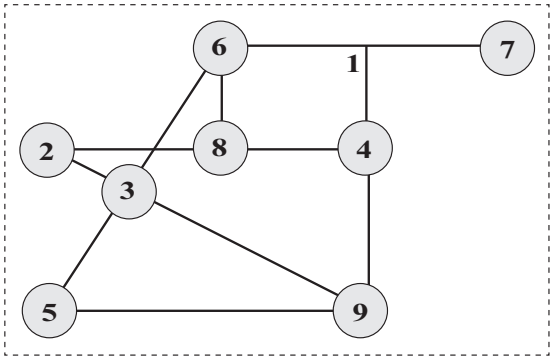
18. Who was the first to shoot?
(a) Akhil
(b) Bharat
(c) Chand
(d) Cannot be determined

19. Who was the second to shoot?
(a) Akhil
(b) Bharat
(c) Chand
(d) Cannot be determined

20. Who was the third to shoot?
(a) Akhil
(b) Bharat
(c) Chand
(d) Cannot be determined

Hints and Explanations

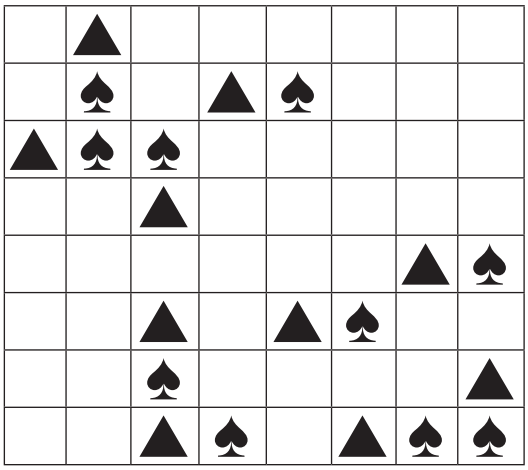
1.



2. 1.30 in the morning. The initial single strike was at 12.30.

3. If you think that you are now in first place, then think again! If you overtake the person in second place, you are now in second place yourself.

4.



5. 10

+	4	–	2	+	2
2	+	2	–	2	+
–	1	+	2	–	4
2	–	1	+	1	–
+	1	–	2	+	3
3	+	3	–	4	+

6. 14

+	4	–	2	+	2
2	+	2	–	2	+
–	1	+	2	–	4
2	–	1	+	1	–
+	1	–	2	+	3
3	+	3	–	4	+

7. Abhishek was lying, 1900 was not a leap year.

8. C committed the terrible crime. The way to solve this puzzle is to look at each clue. We know that exactly one of each person's statements is true. Looking at A statements, let's check to see 'it was B is true? If 'it was B is true, then we know the other statement is false, hence it was E. This is a contradiction. Hence, we now know it wasn't B, nor E (as 'it wasn't E must be the true statement). Looking at C statement, we can similarly determine that it wasn't A either. E statement gives us that it wasn't D, which leaves only C as the culprit.

9.

Name	Dress colour	Hair colour
Jessica	Red	Mousey
Lauren	Yellow	Blonde
Lucy	Green	Black
Chloe	Blue	Brown

10.