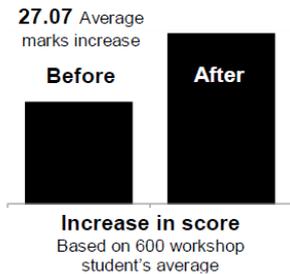


Logical • Quant Workbook



**Increase your score
by 25 marks**

Cetking workshops

Inside

- Introduction •
- Basics •
- Class Handouts •
- Questions •
- Homework •
- BrainGym •
- Games •
- Schedule •
- Strategy •

Homework before the Cetking workshops:

Dear Student,

Thanks for your interest in Cetking Workshops. In this workshop we will increase your score by 20 marks!

- Objective in Quant workshop is to solve every question using common sense logic without using any formulas.
- Do 20 questions on each of the following types of LR questions from any material you already have – any book (Cetking notes, Arun Sharma, RS Agrawal or other coaching institute material) on each of the following topics.
- Get yourself hang of each type of questions by practicing all of them at home.
- Practice daily 50 quant questions. If you already have joined any coaching then complete their material first before starting with any other book.
- Importance of Quant topics

Topic	Importance
Geometry	*****
Numbers	*****
Equations & Inequalities	*****
Functions & Graphs	****
Permutation Combination	****
Logarithms	****
Arithmetic	****

- If you are weak in Quant then start from basics do solved examples and then move to higher level questions.

We basically believe that you will learn the shortcuts only if you know the long cuts or normal method of doing things. We will send the class handouts before the class as homework to be solved by any method you know. In the workshops we will solve them with shortcuts. Even if you are unable to join the workshops please feel free to contact us for any guidance regarding exams.

Cheers
Rahul
Director CETking

1. Five years ago, Bina's age was three times that of Arti. Ten years ago, Bima's age was half that of Chitrao. If C represents Chitta's current age, which of the following represents Arti's current age?

A. $(C - 10)/3$	B. $C/6 + 5$	CET 2011
C. $3C - 5$	D. $5C/3 - 10$	

2. P's present age is 4 years more than Q's age after six years. The sum of the present ages of P and Q together is 70 years. What is the present age of Q?

A. 32 years	B. 30 years
C. 34 years	D. 40 years

3. A part of Rs.9600 is invested at a 5% annual return, while the remainder is invested at a 3% annual return. If the annual income from both portions is the same, what is the total income from the two investments? CET 2011

A. Rs.380	B. Rs.320
C. Rs.440	D. Rs.410#

4. Mohan spends twenty percent of his monthly income on food articles, thirty per cent of the remaining on transport and spends fifty percent of the remaining after spending on food and transport on other articles. If the difference between the amount spent by him on food and transport is Rs. 2400/-. How much did he spend on other articles?

A. Rs. 24,600/-	B. Rs. 18,600/-
C. Rs. 26,000/-	D. Data inadequate

5. If x, y and z are consecutive negative integers, and if $x > y > z$. which of the following must be a positive integer? CET 2011

A. $x - yz$	B. xyz
C. $x+y+z$	D. $(x - y) (y - z)$

- A. 18 seconds
- C. 15 seconds
- E. None of these

- B. 10.8 seconds
- D. Cannot be determined

12. A skating champion moves along the circumference of the circle of radius 28 m in 44 sec. How many seconds will it take her to move along the perimeter of a hexagon of side 48 m? CET 2011

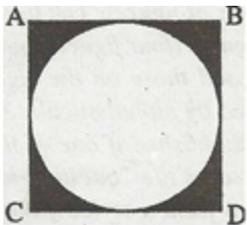
- A 90
- C. 68
- E. 48
- B. 84
- D. 72,

13. The circumference of the front wheel of a cart is 40 ft and that of the back wheel is 48 ft. long What is distance travelled by the cart; when the front wheel has done five more revolutions than the rear wheel? CET 2011

- A. 950 ft
- C. 1200 ft
- E. None of these
- B. 1450 ft
- D. 800 ft

14. If the radius of a circle is increased by 20%, then how m will its area be increased by? CET 2011

- A 124%
- C. 120%
- E. None of these
- B. 44%
- D. 40%



The Circle is inscribed in the Square ABCD with each side measuring 91 cms.

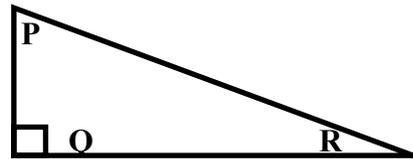
15. Which is the area of the shaded portion of the square?

- A. 2604.5 sq.cms
- C. 1774.5 sq.cms
- E. None of these
- B. 823.5 sq.cms
- D. 998.5 sq.cms

16. What is the area of the circle?
- A 6506.5 sq.cms
 - C. 13898.5 sq.cms
 - E. None of these
 - B. 26026 sq.cms
 - D. 8268.5 sq.cms

Directions: Study the following figure and answer the questions that follow.
 In the Triangle PQR, side PQ = 3 cms and side PR = 25 cms

17. What is the measure of side QR?
- A. 4 root of 308 cms
 - B. 4 root of 154 cms
 - C. 2 root of 308 cms
 - D. Cannot be determined
 - E. None of these



18. What is the area of the triangle PQR?
- A. 4 root of 308 sq.cms
 - B. 2 root of 154 sq.cms
 - C. 3 root of 154 sq.cms
 - D. Cannot be determined
 - E. None of these

19. If the perimeter of a semicircle is 66 cm., what will be the area of that semicircle?
- A. 308 sq.cm.
 - C. 616 sq.cm.
 - B. 154 sq.cm.
 - D. Data inadequate

E. None of these

20. The ratio between the length and the area of a rectangular field is 1:30 respectively. The perimeter of the field is 150 meters. What is the length of that rectangular field?

- | | |
|------------------|--------------------|
| A. 30 meters | B. 15 meters |
| C. 45 meters | D. Data inadequate |
| E. None of these | |

Let S be the set of all pairs (i, j) where $1 \leq i < j \leq n$, and $n \leq 4$. Any two distinct members of S are called “friends” if they have one constituent of the pairs in common and “enemies” otherwise. For example, if $n = 4$, then $S = \{(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)\}$. Here, $(1, 2)$ and $(1, 3)$ are friends, $(1,2)$ and $(2, 3)$ are also friends, but $(1,4)$ and $(2, 3)$ are enemies.

21. For general n , how many enemies will each member of S have?

- | | |
|--------------------------|-------------------------|
| (1) $n - 3$ | (2) $1/2(n^2 - 3n - 2)$ |
| (3) $2n - 7$ | (4) $1/2(n^2 - 5n - 6)$ |
| (5) $1/2(n^2 - 7n - 14)$ | |

22. For general n , consider any two members of S that are friends. How many other members of S will be common friends of both these members?

- | | |
|---------------------------|--------------|
| (1) $1/2(n^2 - 5n + 8)$ | (2) $2n - 6$ |
| (3) $1/2 n(n - 3)$ | (4) $n - 2$ |
| (5) $1/2 (n^2 - 7n + 16)$ | |

23. A shop stores x kg of rice. The first customer buys half this amount plus half a kg of rice. The second customer buys half the remaining amount plus half a kg of rice. Then the third customer also buys half the remaining amount plus half a kg of rice. Thereafter, no rice is left in the shop. Which of the following best describes the value of x ?

- | | |
|-------------------------|-------------------------|
| (1) $2 \leq x \leq 6$ | (2) $5 \leq x \leq 8$ |
| (3) $9 \leq x \leq 12$ | (4) $11 \leq x \leq 14$ |
| (5) $13 \leq x \leq 18$ | |

24. How many pairs of positive integers m, n satisfy $1/m + 4/n = 1/12$, where n is an odd integer less than 60? :

- (1) 6 (2) 4
 (3) 7 (4) 5 (5) 3

25. The number of solutions of the equation $2x + y = 40$ where both x and y are positive integers and $x \leq y$ is:

- (1) 7 (2) 13
 (3) 14 (4) 18 (5) 20

26. What are the values of x and y that satisfy both the equations?

$$2^{0.7x} \cdot 3^{-1.25y} = 8\sqrt{6}/27$$

$$4^{0.3x} \cdot 9^{0.2y} = 8 \cdot (81)^{1/5}$$

- (1) $x = 2, y = 5$ (2) $x = 2.5, y = 6$
 (3) $x = 3, y = 5$ (4) $x = 3, y = 4$
 (5) $x = 5, y = 2$

27. Let $x = \sqrt{4} + \sqrt{4} - \sqrt{4} + \sqrt{4} - \dots$ to infinity. Then x equals:

1. 3 2. $(\sqrt{13} - 1)/2$
 3. $(\sqrt{13} + 1)/2$ 4. $\sqrt{13}$

28. Extra: If p, q and r are the lengths of the sides of a triangle, then the range of the expression below is?

$$\frac{p^2 + q^2 + r^2}{(pq + rq + pr)}$$

- (1) (1,2) (2) [1,2)
 (3) (1,3) (4) (-1/2,3)

29. In a tournament, there are n teams T_1, T_2, \dots, T_n with $n > 5$. Each team consists of k players, $k > 3$. The following pairs of teams have one player in common:

$T_1 \& T_2, T_2 \& T_3, \dots, T_{n-1} \& T_n, \text{ and } T_n \& T_1.$

No other pair of teams has any player in common. How many players are participating in the tournament, considering all the n teams together?

- (1) $n(k - 1)$ (2) $k(n - 1)$
 (3) $n(k - 2)$ (4) $k(k - 2)$

(5) $(n - 1)(k - 1)$

30. What values of x satisfy $x^{2/3} + x^{1/3} - 2 \leq 0$?

- | | |
|------------------------|------------------------|
| (1) $-8 \leq x \leq 1$ | (2) $-1 \leq x \leq 8$ |
| (3) $1 < x < 8$ | (4) $1 \leq x \leq 8$ |
| (5) $-8 \leq x \leq 8$ | |

31. A real number x satisfying $(1 - 1/n) < x \leq (3 + 1/n)$, for every positive integer n , is best described by: *CAT 2004*

- | | |
|-------------------|----------------------|
| 1. $1 < x < 4$ | 2. $1 < x \leq 3$ |
| 3. $0 < x \leq 4$ | 4. $1 \leq x \leq 3$ |

32. If the roots of the equation $x^3 - ax^2 + bx - c = 0$ are three consecutive integers, then what is the smallest possible value of b ?

- | | |
|-------------------|----------|
| (1) $-1/\sqrt{3}$ | (2) -1 |
| (3) 0 | (4) 1 |
| (5) $1/\sqrt{3}$ | |

33. What is the number of distinct terms in the expansion of $(a + b + c)^{20}$?

- | | |
|---------|---------|
| (1) 231 | (2) 253 |
| (3) 242 | (4) 210 |

34. The number of common terms in the two sequences 17, 21, 25, ... , 417 and 16, 21, 26, ... , 466 is?

- | | |
|--------|--------|
| (1) 78 | (2) 19 |
| (3) 20 | (4) 77 |
| (5) 22 | |

35. Consider the set $S = \{2, 3, 4, \dots, 2n+1\}$, where n is a positive integer larger than 2007. Define X as the average of the odd integers in S and Y as the average of the even integers in S . What is the value of $X - Y$?

- | | |
|------------|----------------|
| (1) 0 | (2) 1 |
| (3) $1/2n$ | (4) $(n+1)/2n$ |
| (5) 2008 | |

- (1) $\pi/3 - \sqrt{3}/4$
- (2) $2\pi/3 + \sqrt{3}/2$
- (3) $4\pi/3 - \sqrt{3}/2$
- (4) $4\pi/3 + \sqrt{3}/2$
- (5) $2\pi/3 - \sqrt{3}/2$

A punching machine is used to punch a circular hole of diameter two units from a square sheet of aluminium of width 2 units, as shown below. The hole is punched such that the circular hole touches one corner P of the square sheet and the diameter of the hole originating at P is in line with a diagonal of the square. CAT 06

41. The proportion of the sheet area that remains after punching is:

- (1) $(\pi + 2)/8$
- (2) $(6 - \pi)/2$
- (3) $(4 - \pi)/4$
- (4) $(\pi - 2)/4$
- (5) $(14 - 3\pi)/6$

42. Find the area of the part of the circle (round punch) falling outside the square sheet.

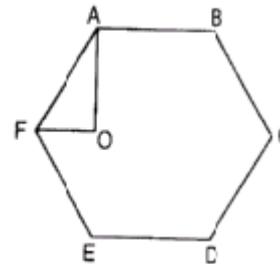
- (1) $\pi/4$
- (2) $(\pi - 1)/2$
- (3) $(\pi - 1)/4$
- (4) $(\pi - 2)/2$
- (5) $(\pi - 2)/4$

43. A semi-circle is drawn with AB as its diameter. From C, a point on AB, a line perpendicular to AB is drawn meeting the circumference of the semi-circle at D. Given that AC = 2 cm and CD = 6 cm, the area of the semi-circle (in sq. cm) will be: CAT 06

- (1) 32π
- (2) 50π
- (3) 40.5π
- (4) 81π
- (5) Undeterminable

44. Two identical circles intersect so that their centers, and the intersect, form a square of side 1 cm. The area in sq. cm of the the two circles is: '05

- 1. $\pi/4$
- 2. $\pi/2 - 1$
- 3. $\pi/5$
- 4. $\sqrt{2} - 1$



points at which they intersect form a square of side 1 cm. The area in sq. cm of the portion that is common to

45. In the figure below, ABCDEF is a regular hexagon and angle AOF = 90°. FO is parallel to ED. What is the ratio of the area of the triangle AOF to that of the hexagon ABCDEF?

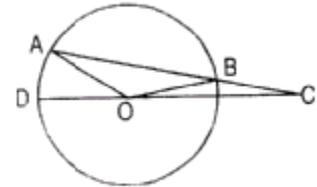
- a) 1/12
- b) 1/6
- c) 1/24
- d) 1/18

46. Two circles with centres P and Q cut each other at two distinct points A and B. The circles have the same radii and neither P nor Q falls within the intersection of the circles. What is the smallest range that includes all possible values of the angle AQP in degrees?

- (1) Between 0 and 90
- (2) Between 0 and 30
- (3) Between 0 and 60
- (4) Between 0 and 75
- (5) Between 0 and 45

47. In the figure given below, AB is the chord of a circle with centre O. AB is extended to C such that BC = OB. The straight line CO is produced to meet the circle at D. If LACD = y degrees and LAOD = x degrees such that $x = ky$, then the value of k is?

- a) 3
- b) 2
- c) 1
- d) 4



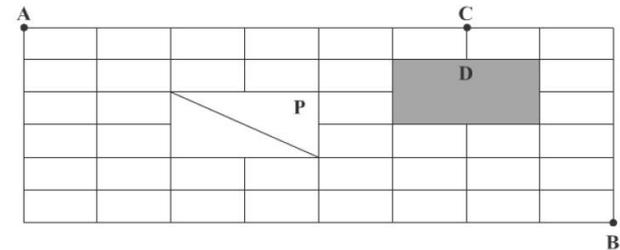
48. Rahim plans to drive from city A to station C, at the speed of 70 km per hour, to catch a train arriving there from B. He must reach C at least 15 minutes before the arrival of the train. The train leaves B, located 500 km south of A, at 8:00 am and travels at a speed of 50 km per hour. It is known that C is located between west and northwest of B, with BC at 60° to AB. Also, C is located between south and southeast of A with AC at 30° to Ab. The latest time by which Rahim must leave A and still catch the train is closest to?

- (1) 6:15 am
- (2) 6:30 am
- (3) 6:45 am
- (4) 7:00 am
- (5) 7:15 am

49. Consider obtuse-angled triangles with sides 8 cm, 15 cm and x cm. If x is an integer, then how many such triangles exist?

- (1) 5
- (2) 21
- (3) 10
- (4) 15
- (5) 14

The figure below shows the plan of a town. The streets are at right angles to each other. A rectangular park (P) is situated inside the town with a diagonal road running through it. There is also a prohibited region (D) in the town.



50. Neelam rides her bicycle from her house at A to her office at B, taking the shortest path. Then the number of possible shortest paths that she can choose is
- (1) 60 (2) 75
 (3) 45 (4) 90
 (5) 72

51. Neelam rides her bicycle from her house at A to her club at C, via B taking the shortest path. Then the number of possible shortest paths that she can choose is
- (1) 1170 (2) 630
 (3) 792 (4) 1200
 (5) 936

52. How many integers, greater than 999 but not greater than 4000, can be formed with the digits 0, 1, 2, 3 and 4, if repetition of digits is allowed?
- (1) 499 (2) 500
 (3) 375 (4) 376 (5) 501

53. Let $f(x)$ be a function satisfying $f(x) \cdot f(y) = f(xy)$ for all real x, y . If $f(2) = 4$, then what is the value of $f(1/2)$?
- (1) 0 (2) $1/4$
 (3) $1/2$ (4) 1
 (5) Cannot be determined

54. A function $f(x)$ satisfies $f(1) = 3600$, and $f(1) + f(2) + \dots + f(n) = n^2 f(n)$, for all positive integers $n > 1$. What is the value of $f(9)$?
- (1) 80 (2) 240
 (3) 200 (4) 100
 (5) 120

55. Let $f(x) = \max(2x + 1, 3 - 4x)$, where x is any real number. Then the minimum possible value of $f(x)$ is:

- (1) $1/3$
- (3) $2/3$
- (5) $5/3$

- (2) $1/2$
- (4) $4/3$

Solutions discussed on: <https://www.facebook.com/groups/targetJBIMS/>

Solutions discussed on: <https://www.facebook.com/groups/CATdreamteam/>

Who should join the workshop?

- Stuck with your scores in CAT & CMAT?
- Loosing motivation to clear CAT & CMAT?
- Working Professional and can't find time to study?
- In short, students who are serious about CAT and
- Students who want to Increase score by 25 marks?

What's covered in the Cetking workshops?

- Shortcuts for everything quant, verbal, DI and reasoning
- Special focus on Reasoning & GK for CMAT
- Mockengineering - Match winning strategies for mocks
- Interactive classroom coaching with homework
- Shortcuts implemented on actual questions of last years
- Get taught by toppers – all our faculty are rank holders

“Explaining shortcuts on actual questions was best part”

- Asha – IIM K, SP Jain

“Workshop provided me EXTRA edge over other students”

- Rohit, JBIMS

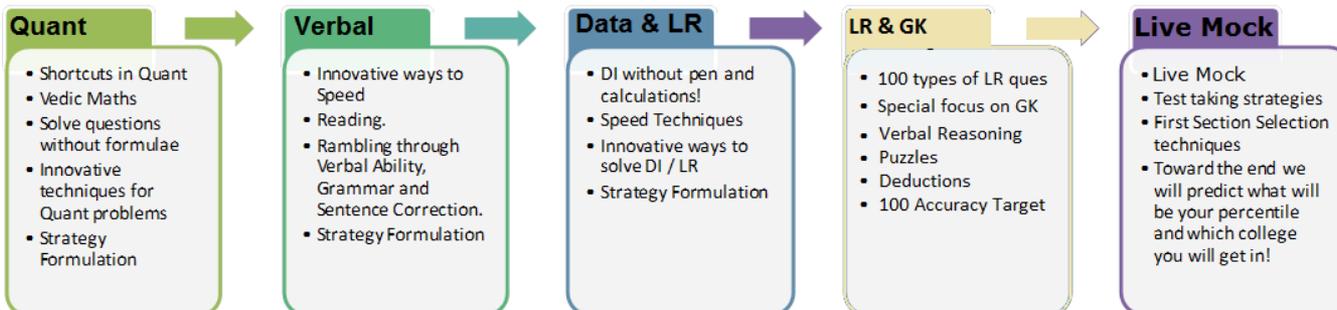
“Strategies, approach, motivation and shortcuts they have it all”

- Vinod - JBIMS, SIBM



Cetking Workshops

Workshops by toppers
Increase your score by 25 marks!!



Student Name	Increase in Score		
	Bef	Aft	Inc.
Abhay K	92	108	16
Rahul J	70	95	25
Bjoy S	82	100	18
Neha K	156	176	20
Tejas L	70	95	25
Richa S	148	170	22
Bhavik S	132	155	23
Ajay Ag	89	105	16
Bhakti S	92	110	18
Anirban	110	122	12
Pooja J	97	120	23
Sanju M	105	120	15
Deep P	60	85	25
Bharati	76	90	14
Taniya C	82	105	23
Sagar S	146	180	34

Average of 600 students