

# CAT 2020 Slot 2 – Quantitative Ability

Click [“How to Prepare for Quant?”](#)

Click [“Solutions for 2020 CAT Quant”](#)

Download the free pdf of [“CAT Syllabus”](#)

To Download ALL Original CAT Question Paper PDFs [Click here](#)



# CAT 2020 Slot 2 – Quantitative Ability

Number of Questions: 26

Duration: 40min

Section Marks:  $26 \times 3 = 78$  Marks



"Click" Question Number to view question

# Qn 1

Click to Signup as a trial user and get  
40 hrs of free CAT coaching

[online.2IIM.com](https://online.2IIM.com)

In a car race, car A beats car B by 45 km, car B beats car C by 50 km, and car A beats car C by 90 km. The distance (in km) over which the race has been conducted is

- A) 550
- B) 475
- C) 500
- D) 450

[Click to see the correct answer](#)

Answer

[Click to view video Solution  
for this question](#)

Video Solution

[Click to practice and learn more CAT level  
questions from 2IIM question bank](#)

2IIM

For more CAT Level questions Click → [Questions.2IIM.com](https://Questions.2IIM.com)

Original CAT 2020 Question Paper

# Qn 2

From the interior point of an equilateral triangle, perpendiculars are drawn on all three sides. The sum of the lengths of the perpendiculars is 's'. Then the area of the triangle is

- A)  $\frac{s^2}{2\sqrt{3}}$
- B)  $\frac{2s^2}{\sqrt{3}}$
- C)  $\frac{s^2}{\sqrt{3}}$
- D)  $\frac{\sqrt{3}s^2}{2}$

Answer

Video Solution

# Qn 3

online.2IIM.com

In a group of 10 students, the mean of the lowest 9 scores is 42 while the mean of the highest 9 scores is 47. For the entire group of 10 students, the maximum possible mean exceeds the minimum possible mean by

- A) 5
- B) 3
- C) 4
- D) 6

Answer

Video Solution

# Qn 4

Click to Signup as a trial user and get  
40 hrs of free CAT coaching

[online.2IIM.com](https://online.2IIM.com)

The number of pairs of integers  $(x, y)$  satisfying  $x \geq y \geq -20$  and  $2x + 5y = 99$  is  
(TITA)

Click to see the correct answer

Answer

Click to view video Solution  
for this question

Video Solution

Click to practice and learn more CAT level  
questions from 2IIM question bank

2IIM

For more CAT Level questions Click → [Questions.2IIM.com](https://Questions.2IIM.com)

Original CAT 2020 Question Paper

# Qn 5

The value of  $\log_a \frac{a}{b} + \log_b \frac{b}{a}$ , for  $1 < a \leq b$  cannot be equal to

- A) -0.5
- B) 1
- C) 0
- D) -1

online.2IIM.com

Answer

Video Solution

# Qn 6

Let the  $m$ -th and  $n$ -th terms of a Geometric progression be  $\frac{3}{4}$  and 12, respectively, when  $m < n$ . If the common ratio of the progression is an integer  $r$ , then the smallest possible value of  $r + n - m$

- A) -4
- B) -2
- C) 6
- D) 2

Answer

Video Solution



# Qn 7

online.2IIM.com

If  $x$  and  $y$  are positive real numbers satisfying  $x + y = 102$ , then the minimum possible value of  $2601 \left(1 + \frac{1}{x}\right) \left(1 + \frac{1}{y}\right)$  is

(TITA)

online.2IIM.com

Answer

Video Solution

# Qn 8

online.2IIM.com

For the same principal amount, the compound interest for two years at 5% per annum exceeds the simple interest for three years at 3% per annum by Rs 1125. Then the principal amount in rupees is  
(TITA)

Answer

Video Solution

Visit [online.2IIM.com](https://online.2IIM.com),

**SIGN UP** as a trial user, learn **40 Hours for free**

Visit - [Questions.2IIM.com](https://Questions.2IIM.com)

Check out more than 1000+ Quant Questions at  
CAT-Level for free (**without even signing-up**)

# Qn 9

online.2IIM.com

Let  $C$  be a circle of radius 5 meters having center at  $O$ . Let  $PQ$  be a chord of  $C$  that passes through points  $A$  and  $B$  where  $A$  is located 4 meters north of  $O$  and  $B$  is located 3 meters east of  $O$ . Then, the length of  $PQ$ , in meters, is nearest to

- A) 6.6
- B) 7.2
- C) 8.8
- D) 7.8

Answer

Video Solution

# Qn 10

online.2IIM.com

For real  $x$ , the maximum possible value of  $\frac{x}{\sqrt{1+x^4}}$  is

- A) 1
- B)  $\frac{1}{2}$
- C)  $\frac{1}{\sqrt{2}}$
- D)  $\frac{1}{\sqrt{3}}$

online.2IIM.com

Answer

Video Solution

# Qn 11

online.2IIM.com

Anil buys 12 toys and labels each with the same selling price. He sells 8 toys initially at 20% discount on the labeled price. Then he sells the remaining 4 toys at an additional 25% discount on the discounted price. Thus, he gets a total of Rs 2112, and makes a 10% profit. With no discounts, his percentage of profit would have been

- A) 60
- B) 50
- C) 55
- D) 54

Answer

Video Solution

# Qn 12

online.2IIM.com

If  $x$  and  $y$  are non-negative integers such that  $x + 9 = z$ ,  $y + 1 = z$  and  $x + y < z + 5$ , then the maximum possible value of  $2x + y$  equals  
(TITA)

online.2IIM.com

Answer

Video Solution

# Qn 13

Students in a college have to choose at least two subjects from chemistry, mathematics and physics. The number of students choosing all three subjects is 18, choosing mathematics as one of their subjects is 23 and choosing physics as one of their subjects is 25. The smallest possible number of students who could choose chemistry as one of their subjects is

- A) 22
- B) 19
- C) 20
- D) 21

Answer

Video Solution



# Qn 14

online.2IIM.com

Let  $f(x) = x^2 + ax + b$  and  $g(x) = f(x+1) - f(x-1)$ . If  $f(x) \geq 0$  for all real  $x$ , and  $g(20) = 72$ , then the smallest possible value of  $b$  is

- A) 16
- B) 1
- C) 4
- D) 0

online.2IIM.com

Answer

Video Solution

# Qn 15

online.2IIM.com

The distance from B to C is thrice that from A to B. Two trains travel from A to C via B. The speed of train 2 is double that of train 1 while traveling from A to B and their speeds are interchanged while traveling from B to C. The ratio of the time taken by train 1 to that taken by train 2 in travelling from A to C is

- A) 7:5
- B) 4:1
- C) 1:4
- D) 5:7

Answer

Video Solution

# Qn 16

The sum of perimeters of an equilateral triangle and a rectangle is 90 cm. The area,  $T$ , of the triangle and the area,  $R$ , of the rectangle, both in sq cm, satisfy the relationship  $R = T^2$ . If the sides of the rectangle are in the ratio 1 : 3, then the length, in cm, of the longer side of the rectangle, is

- A) 27
- B) 18
- C) 21
- D) 24

Answer

Video Solution

# Qn 17

online.2IIM.com

The number of integers that satisfy the equality  $(x^2 - 5x + 7)^{x+1} = 1$

- A) 5
- B) 4
- C) 3
- D) 2

online.2IIM.com

Answer

Video Solution

Visit [online.2IIM.com](https://online.2IIM.com),

**SIGN UP** as a trial user, learn **40 Hours for free**

Visit - [Questions.2IIM.com](https://Questions.2IIM.com)

Check out more than 1000+ CAT-Level Quant Questions for free (**without even signing-up**)

# Qn 18

online.2IIM.com

In how many ways can a pair of integers  $(x, a)$  be chosen such that  $x^2 - 2|x| + |a - 2| = 0$ ?

- A) 7
- B) 6
- C) 4
- D) 5

Answer

Video Solution

# Qn 19

Two circular tracks T1 and T2 of radii 100 m and 20 m, respectively touch at a point A. Starting from A at the same time, Ram and Rahim are walking on track T1 and track T2 at speeds 15 km/hr and 5 km/hr respectively. The number of full rounds that Ram will make before he meets Rahim again for the first time is

- A) 5
- B) 3
- C) 4
- D) 2

Answer

Video Solution

# Qn 20

A and B are two points on a straight line. Ram runs from A to B while Rahim runs from B to A. After crossing each other, Ram and Rahim reach their destinations in one minutes and four minutes, respectively. If they start at the same time, then the ratio of Ram's speed to Rahim's speed is

- A) 2
- B)  $2\sqrt{2}$
- C)  $\sqrt{2}$
- D)  $\frac{1}{2}$

Answer

Video Solution



# Qn 21

online.2IIM.com

Let  $C_1$  and  $C_2$  be concentric circles such that the diameter of  $C_1$  is 2cm longer than that of  $C_2$ . If a chord of  $C_1$  has length 6 cm and is a tangent to  $C_2$ , then the diameter, in cm of  $C_1$  is  
(TITA)

Answer

Video Solution

# Qn 22

online.2IIM.com

John takes twice as much time as Jack to finish a job. Jack and Jim together take one-third of the time to finish the job than John takes working alone. Moreover, in order to finish the job, John takes three days more than that taken by three of them working together. In how many days will Jim finish the job working alone?

Answer

Video Solution

# Qn 23

online.2IIM.com

In May, John bought the same amount of rice and the same amount of wheat as he had bought in April, but spent 150 more due to price increase of rice and wheat by 20% and 12%, respectively. If John had spent 450 on rice in April, then how much did he spend on wheat in May?

- A) 590
- B) 580
- C) 560
- D) 570

Answer

Video Solution

# Qn 24

online.2IIM.com

Aron bought some pencils and sharpeners. Spending the same amount of money as Aron, Aditya bought twice as many pencils and 10 less sharpeners. If the cost of one sharpener is 2 more than the cost of a pencil, then the minimum possible number of pencils bought by Aron and Aditya together is

- A) 33
- B) 27
- C) 30
- D) 36

Answer

Video Solution

# Qn 25

online.2IIM.com

A sum of money is split among Amal, Sunil and Mita so that the ratio of the shares of Amal and Sunil is 3:2, while the ratio of the shares of Sunil and Mita is 4:5. If the difference between the largest and the smallest of these three shares is Rs 400, then Sunil's share, in rupees, is (TITA)

Answer

Video Solution

# Qn 26

online.2IIM.com

How many 4-digit numbers, each greater than 1000 and each having all four digits distinct, are there with 7 coming before 3?(TITA)

online.2IIM.com

Answer

Video Solution

Visit [online.2IIM.com](https://online.2IIM.com),

**SIGN UP** as a trial user, learn **40 Hours for free**

Visit - [Questions.2IIM.com](https://Questions.2IIM.com)

Check out more than 1000+ CAT-Level Quant Questions for free (**without even signing-up**)

# Solution

- 1) D ← Click to go "Back to Answer page"
- 2) C
- 3) C
- 4) 17
- 5) B
- 6) B
- 7) 2704
- 8) 90000
- 9) C
- 10) C
- 11) B
- 12) 23
- 13) C
- 14) C
- 15) D
- 16) A
- 17) C
- 18) A
- 19) B
- 20) A
- 21) 10
- 22) 4
- 23) C
- 24) A
- 25) 800
- 26) 315



# Sol 1

Click to see "overall Solution page"

online.2IIM.com

In a car race, car A beats car B by 45 km, car B beats car C by 50 km, and car A beats car C by 90 km. The distance (in km) over which the race has been conducted is

- A) 550
- B) 475
- C) 500
- D) 450**

Click to go "Back to Question"

Back to Question

Video Solution

Difficulty Level – Medium

Topic – Races

# Sol 2

From the interior point of an equilateral triangle, perpendiculars are drawn on all three sides. The sum of the lengths of the perpendiculars is 's'. Then the area of the triangle is

- A)  $\frac{s^2}{2\sqrt{3}}$
- B)  $\frac{2s^2}{\sqrt{3}}$
- C)  $\frac{s^2}{\sqrt{3}}$
- D)  $\frac{\sqrt{3}s^2}{2}$

Difficulty Level – **Hard**

Topic – **Geometry**

Back to Question

Video Solution

# Sol 3

online.2IIM.com

In a group of 10 students, the mean of the lowest 9 scores is 42 while the mean of the highest 9 scores is 47. For the entire group of 10 students, the maximum possible mean exceeds the minimum possible mean by

- A) 5
- B) 3
- C) 4**
- D) 6

Difficulty Level – Medium

Topic – **Averages**

Back to Question

Video Solution

# Sol 4

online.2IIM.com

The number of pairs of integers  $(x,y)$  satisfying  $x \geq y \geq -20$  and  $2x + 5y = 99$  is  
(TITA)

Answer: **17**

Difficulty Level – Medium

Topic – **Inequalities**

Back to Question

Video Solution

# Sol 5

The value of  $\log_a \frac{a}{b} + \log_b \frac{b}{a}$ , for  $1 < a \leq b$  cannot be equal to

- A) -0.5
- B) 1**
- C) 0
- D) -1

Difficulty Level –  Hard

Topic – **Logarithms**

Back to Question

Video Solution

# Sol 6

Let the  $m$ -th and  $n$ -th terms of a Geometric progression be  $\frac{3}{4}$  and 12, respectively, when  $m < n$ . If the common ratio of the progression is an integer  $r$ , then the smallest possible value of  $r + n - m$

- A) -4
- B) -2**
- C) 6
- D) 2

Difficulty Level –  Hard

Topic – **Progressions**

# Sol 7

online.2IIM.com

If  $x$  and  $y$  are positive real numbers satisfying  $x + y = 102$ , then the minimum possible value of  $2601 \left(1 + \frac{1}{x}\right) \left(1 + \frac{1}{y}\right)$  is (TITA)

Answer: **2704**

Difficulty Level – **Hard**

Topic – **Linear equations**

Back to Question

Video Solution

# Sol 8

online.2IIM.com

For the same principal amount, the compound interest for two years at 5% per annum exceeds the simple interest for three years at 3% per annum by Rs 1125. Then the principal amount in rupees is (TITA)

Answer: **90000**

Difficulty Level – Easy

Topic – CI & SI

Back to Question

Video Solution



Visit [online.2IIM.com](https://online.2IIM.com),

**SIGN UP** as a trial user, learn **40 Hours for free**

Visit - [Questions.2IIM.com](https://Questions.2IIM.com)

Check out more than 1000+ CAT-Level Quant Questions for free (**without even signing-up**)

# Sol 9

Let  $C$  be a circle of radius 5 meters having center at  $O$ . Let  $PQ$  be a chord of  $C$  that passes through points  $A$  and  $B$  where  $A$  is located 4 meters north of  $O$  and  $B$  is located 3 meters east of  $O$ . Then, the length of  $PQ$ , in meters, is nearest to

- A) 6.6
- B) 7.2
- C) 8.8**
- D) 7.8

Difficulty Level – **Hard**

Topic – **Geometry.**

# Sol 10

online.2IIM.com

For real  $x$ , the maximum possible value of  $\frac{x}{\sqrt{1+x^4}}$  is

- A) 1
- B)  $\frac{1}{2}$
- C)  $\frac{1}{\sqrt{2}}$
- D)  $\frac{1}{\sqrt{3}}$

Difficulty Level – Medium

Topic – Inequalities

Back to Question

Video Solution

# Sol 11

online.2IIM.com

Anil buys 12 toys and labels each with the same selling price. He sells 8 toys initially at 20% discount on the labeled price. Then he sells the remaining 4 toys at an additional 25% discount on the discounted price. Thus, he gets a total of Rs 2112, and makes a 10% profit. With no discounts, his percentage of profit would have been

- A) 60
- B) 50**
- C) 55
- D) 54

Difficulty Level –  Easy

Topic – Profit and Loss

# Sol 12

online.2IIM.com

If  $x$  and  $y$  are non-negative integers such that  $x + 9 = z$ ,  $y + 1 = z$  and  $x + y < z + 5$ , then the maximum possible value of  $2x + y$  equals (TITA)

Answer: **23**

Difficulty Level – Easy

Topic – **Inequalities**

Back to Question

Video Solution

# Sol 13

Students in a college have to choose at least two subjects from chemistry, mathematics and physics. The number of students choosing all three subjects is 18, choosing mathematics as one of their subjects is 23 and choosing physics as one of their subjects is 25. The smallest possible number of students who could choose chemistry as one of their subjects is

- A) 22
- B) 19
- C) 20**
- D) 21

Difficulty Level – Easy

Topic – Set theory

# Sol 14

online.2IIM.com

Let  $f(x) = x^2 + ax + b$  and  $g(x) = f(x+1) - f(x-1)$ . If  $f(x) \geq 0$  for all real  $x$ , and  $g(20) = 72$ , then the smallest possible value of  $b$  is

- A) 16
- B) 1
- C) 4**
- D) 0

Difficulty Level – Medium

Topic – **Functions**

Back to Question

Video Solution

# Sol 15

online.2IIM.com

The distance from B to C is thrice that from A to B. Two trains travel from A to C via B. The speed of train 2 is double that of train 1 while traveling from A to B and their speeds are interchanged while traveling from B to C. The ratio of the time taken by train 1 to that taken by train 2 in travelling from A to C is

- A) 7:5
- B) 4:1
- C) 1:4
- D) 5:7**

Difficulty Level –  Easy

Topic – **Speed time & distance**

Back to Question

Video Solution



# Sol 16

online.2IIM.com

The sum of perimeters of an equilateral triangle and a rectangle is 90 cm. The area,  $T$ , of the triangle and the area,  $R$ , of the rectangle, both in sq cm, satisfy the relationship  $R = T^2$ . If the sides of the rectangle are in the ratio 1 : 3, then the length, in cm, of the longer side of the rectangle, is

- A) 27
- B) 18
- C) 21
- D) 24

Difficulty Level –  Medium

Topic – **Geometry**

Back to Question

Video Solution

# Sol 17

online.2IIM.com

The number of integers that satisfy the equality  $(x^2 - 5x + 7)^{x+1} = 1$

- A) 5
- B) 4
- C) 3**
- D) 2

Difficulty Level – Easy

Topic – Inequalities

Back to Question

Video Solution

Visit [online.2IIM.com](https://online.2IIM.com),

**SIGN UP** as a trial user, learn **40 Hours for free**

Visit - [Questions.2IIM.com](https://Questions.2IIM.com)

Check out more than 1000+ CAT-Level Quant Questions for free (**without even signing-up**)

# Sol 18

online.2IIM.com

In how many ways can a pair of integers  $(x, a)$  be chosen such that  $x^2 - 2|x| + |a - 2| = 0$ ?

- A) 7
- B) 6
- C) 4
- D) 5

Difficulty Level – **Hard**

Topic – **Inequalities**

Back to Question

Video Solution

# Sol 19

online.2IIM.com

Two circular tracks T1 and T2 of radii 100 m and 20 m, respectively touch at a point A. Starting from A at the same time, Ram and Rahim are walking on track T1 and track T2 at speeds 15 km/hr and 5 km/hr respectively. The number of full rounds that Ram will make before he meets Rahim again for the first time is

- A) 5
- B) 3**
- C) 4
- D) 2

Difficulty Level – Medium

Topic – Races

Back to Question

Video Solution

# Sol 20

online.2IIM.com

A and B are two points on a straight line. Ram runs from A to B while Rahim runs from B to A. After crossing each other, Ram and Rahim reach their destinations in one minute and four minutes, respectively. If they start at the same time, then the ratio of Ram's speed to Rahim's speed is

- A) 2
- B)  $2\sqrt{2}$
- C)  $\sqrt{2}$
- D)  $\frac{1}{2}$

Difficulty Level –  Easy

Topic – Time, speed & distance

Back to Question

Video Solution

# Sol 21

online.2IIM.com

Let  $C_1$  and  $C_2$  be concentric circles such that the diameter of  $C_1$  is 2cm longer than that of  $C_2$ . If a chord of  $C_1$  has length 6 cm and is a tangent to  $C_2$ , then the diameter, in cm of  $C_1$  is  
(TITA)

Answer: **10**

Difficulty Level – Easy

Topic – **Geometry**

Back to Question

Video Solution

# Sol 22

online.2IIM.com

John takes twice as much time as Jack to finish a job. Jack and Jim together take one-thirds of the time to finish the job than John takes working alone. Moreover, in order to finish the job, John takes three days more than that taken by three of them working together. In how many days will Jim finish the job working alone?

Answer: **4**

Difficulty Level – **Medium**

Topic – **Time and work**

Back to Question

Video Solution



# Sol 23

online.2IIM.com

In May, John bought the same amount of rice and the same amount of wheat as he had bought in April, but spent 150 more due to price increase of rice and wheat by 20% and 12%, respectively. If John had spent 450 on rice in April, then how much did he spend on wheat in May?

- A) 590
- B) 580
- C) 560**
- D) 570

Difficulty Level – Easy

Topic – Percentages

Back to Question

Video Solution

# Sol 24

online.2IIM.com

Aron bought some pencils and sharpeners. Spending the same amount of money as Aron, Aditya bought twice as many pencils and 10 less sharpeners. If the cost of one sharpener is 2 more than the cost of a pencil, then the minimum possible number of pencils bought by Aron and Aditya together is

- A) 33
- B) 27
- C) 30
- D) 36

Difficulty Level – **Hard**

Topic – **Linear equations**

Back to Question

Video Solution

# Sol 25

online.2IIM.com

A sum of money is split among Amal, Sunil and Mita so that the ratio of the shares of Amal and Sunil is 3:2, while the ratio of the shares of Sunil and Mita is 4:5. If the difference between the largest and the smallest of these three shares is Rs 400, then Sunil's share, in rupees, is (TITA)

Answer: **800**

Difficulty Level –  Easy

Topic – **Ratios and proportions**

Back to Question

Video Solution

# Sol 26

online.2IIM.com

How many 4-digit numbers, each greater than 1000 and each having all four digits distinct, are there with 7 coming before 3?(TITA)

Answer: **315**

Difficulty Level –  Hard

Topic – **Permutations & combinations**

Back to Question

Video Solution

Visit [online.2IIM.com](https://online.2IIM.com),

**SIGN UP** as a trial user, learn **40 Hours for free**

Visit - [Questions.2IIM.com](https://Questions.2IIM.com)

Check out more than 1000+ Quant Questions at  
CAT-Level for free (**without even signing-up**)