

Grade
8

M-CAT Assessment Round Sample Question Paper

Return the answer sheet along with question paper to the invigilator at the end of the exam.



TOTAL MARKS
100



QUESTIONS
50



DURATION
60 mins



Instructions for Student:

- Read the question carefully before answering.
- Each question has 4 options (A, B, C & D).
- Choose one correct option as your answer, from the 4 options.
- Every question carries 2 marks.
- On the answer sheet blacken the correct option against the corresponding question number,

The Correct Method

Q.	Answer
1	(A) (B) ● (D)

The Wrong Methods

Q.	Answer
1	(A) ● ● (D)
1	(A) (B) ● (D)
1	(A) (B) ✓ (D)
1	(A) (B) ✗ (D)

- Use pencil to mark your answer.
- If you wish to change your answer, erase the previous mark completely.

- Page 2 of 8

9. Which of the following pairs shows direct proportionality?

- a. Number of persons and quantity of meal required to feed them
- b. Speed of a train and time taken to reach from starting point to destination
- c. Number of sectors drawn in a circle and measure of the angle between consecutive radii.
- d. Number of workers and number of days required to construct a bridge

10. How many non-perfect square numbers lie between the squares of the numbers n and $(n + 1)$?

- a. n^2
- b. $(n + 1)^2$
- c. $n - 1$
- d. $2n$

11. What is the resultant obtained when the additive inverse of $\frac{5}{6}$ is subtracted from the multiplicative inverse of $\frac{-5}{7} \times \frac{14}{15}$?

- a. $\frac{14}{15}$
- b. $-\frac{2}{3}$
- c. $\frac{-3}{2}$
- d. $\frac{3}{2}$

12. To reduce a linear equation whose expressions are fractions, we multiply both sides by the _____ of the _____.

- a. LCM, numerators
- b. HCF, numerators
- c. LCM, denominators
- d. HCF, denominators

13. What is the coefficient of x^2y^2 in the product of $(3x^2 + y^2)$ and $(2x^2 + 3y^2)$?

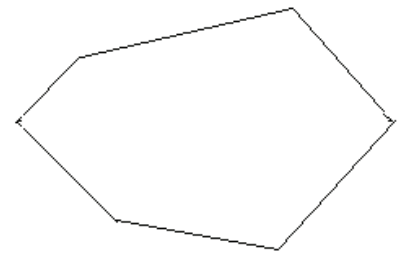
- a. 2
- b. 11
- c. 9
- d. 4

14. What will be the buying price of 16 kg of sugar at ₹ 20 per kg when a 9% sales tax is also charged?

- a. ₹ 378.9
- b. ₹ 350.5
- c. ₹ 348.8
- d. ₹ 398.0

15. In how many triangles and trapeziums the given polygon has to be divided to calculate the area?

- a. 4 triangles and 2 trapeziums
- b. 2 triangles and 4 trapeziums
- c. No such way to divide it completely into triangles and trapeziums only.
- d. None of these

**16. The angles of a quadrilateral are in the ratio 6 : 7 : 8 : 9. Which of the following can be concluded?**

- a. Exactly two angles are obtuse
- b. Two pairs of angles are supplementary
- c. Both a & b
- d. None of these

17. The number of prime factors in $(216)^{\frac{3}{5}} \times (2500)^{\frac{2}{5}} \times (300)^{\frac{1}{5}}$ is _____.

- a. 6
- b. 9
- c. 8
- d. None of these

18. If 8 machines can produce 240 units of an item in 6 hours, then how many machines are needed to produce the same number of units in 4 hours?
- 5.33 machines
 - 12 machines
 - 3 machines
 - 8 machines
19. In the five-digit number $1b6a3$, a is the greatest single-digit perfect cube, and twice of it exceeds b by 7. Then the sum of the number and a is _____.
- 18700
 - 11862
 - 19691
 - 25320
20. _____ an expression means writing it as a product of irreducible factors.
- Factorizing
 - Regrouping
 - Reducing
 - Estimating
21. Which of the following statements is INCORRECT?
- A pie chart is a chart of circular shape with slices or segments of different sizes.
 - A line graph is a graph that gives a graphical representation of the changes that have taken place over a given period of time.
 - A bar graph is a pictorial representation of grouped data into continuous number ranges.
 - A linear graph is the graphical representation of a straight line used to show a relationship between two variables.
22. If $\frac{\sqrt{0.0196} + \sqrt{0.0064}}{\sqrt{0.0196} - \sqrt{0.0064}} = x$, then the value of x is _____.
- 0.8
 - 3.66
 - 0.366
 - 8
23. If two cubes of sides 9 cm each are joined end to end then the surface area of the cuboid will be _____
- 1124 cm^2
 - 1134 cm^2
 - 820 cm^2
 - 810 cm^2
24. A basket contains three types of fruits weighing $\frac{58}{3}$ kg in total. If $\frac{73}{9}$ kg of these are apples, $\frac{19}{6}$ kg are oranges and the rest are pears then what is the weight of the pears in the basket?
- $\frac{259}{18}$ kg
 - $\frac{145}{18}$ kg
 - $\frac{18}{259}$ kg
 - $\frac{18}{145}$ kg
25. If HCF and LCM of two terms a and b are x and y respectively and $a + b = x + y$, then the value of $x^2 + y^2$ is:
- $a^2 - b^2$
 - $2a^2 + b^2$
 - $a^2 + b^2$
 - $a^2 + 2b^2$
26. In a stadium, the number of rows is equal to the number of chairs in each row. If the capacity of the stadium is 3249, then the number of chairs in each row is:
- 43
 - 47
 - 57
 - 53

27. The prices of a scooter and a cycle are in the ratio of 9 : 5. If the scooter costs ₹ 4,200 more than the cycle, then what is the price of the cycle?

- a. ₹ 5250 b. ₹ 5200
c. ₹ 5000 d. ₹ 4800

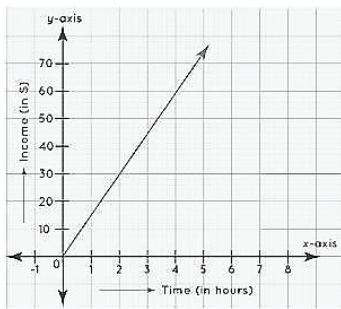
28. Simplify: $\frac{-3a^2b \times 15cab^2}{-10cab}$

- a. $\frac{3}{2}a^2b^2$ b. $\frac{9}{2}a^2b^2$ c. $\frac{3}{2}a^3b^3$ d. $\frac{9}{2}a^3b^3$

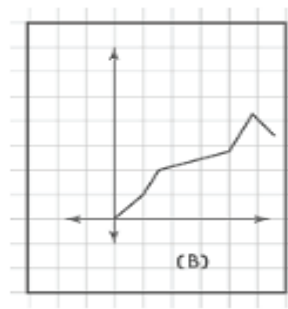
29. Shyam invested ₹ 2,00,000 in a fixed deposit at Ensure Bank for a period of 3 years. The bank offered him a compound interest of 10% per annum. Shyam wants to buy a pre-owned car for 2.5 lakhs after 3 years. Will he be able to do that and what is the amount that he would get after 3 years?

- Yes, ₹ 2,55,800
- Yes, ₹ 2,66,200
- No, ₹ 2,32,500
- No, ₹ 2,15,900

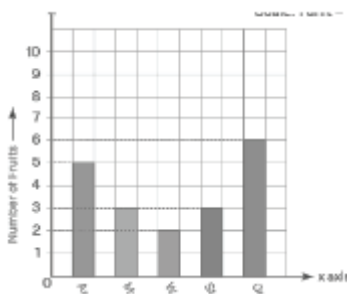
30. Which of the following images represents a line graph?



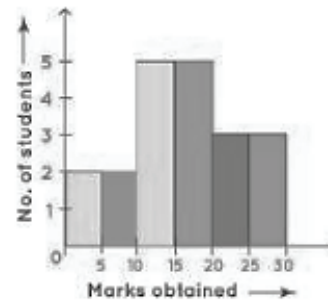
a.



b.



C.



d.

31. Two circular cylinders of equal volume have their heights in the ratio 4 : 9. Find the ratio of their radii.

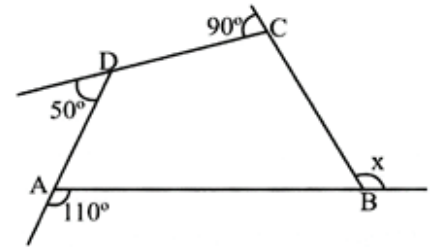
- a. 3 : 2 b. 2 : 3
c. 4 : 9 d. 9 : 4

32. If 10 is added to four times a certain number, then the result is 5 less than five times the number. What is the number?

- [illegible]

33. Find the angle measured x in the figure.

- a. 80°
- b. 90°
- c. 110°
- d. 160°



34. At a birthday party, on average, 5 bottles of Coke are served to every group of 6 children. How many friends were present at the party if 15 bottles of Coke were used?

- a. 18
- b. 24
- c. 30
- d. 12

35. Which of the following numbers is known as the Hardy-Ramanujan numbers? (The numbers which can also be expressed as a sum of two cubes in two different ways.)

- a. 1642
- b. 2049
- c. 1729
- d. None of these

36. Simplify: $\frac{3lm}{8n^2} \times \frac{32ln^3}{m^2} \div \frac{9ln^2}{m}$

- a. $\frac{4l}{3n}$
- b. $\frac{-4l}{3n}$
- c. $\frac{4n}{3l}$
- d. $\frac{-4n}{3l}$

37. Which term is the like term similar to $24a^2bc$?

- a. $3 \times 8 \times a \times b \times c \times a$
- b. $8 \times 3 \times a \times b \times c$
- c. $3 \times 8 \times a \times b \times c \times c$
- d. $3 \times 8 \times a \times b \times b \times c$

38. When $x = 2, 7, 11, \dots$, $y = 8, 28, 44, \dots$, then x and y are in _____.

- a. Direct proportion
- b. Inverse proportion
- c. Neither direct nor inverse proportion
- d. None of these

39. The ratio of lengths of two sides of a parallelogram is 3 : 5 and its perimeter is 48 cm. The sides of the parallelogram are _____.

- a. 9 cm, 16 cm
- b. 9 cm, 15 cm
- c. 8 cm, 15 cm
- d. 6 cm, 10 cm

40. A negative exponent is _____ of the base raised to the _____ of the power.

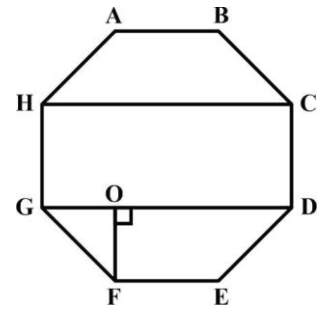
- a. product, positive
- b. reciprocal, negative opposite
- c. multiplicative inverse, positive opposite
- d. product, negative

41. The difference between S.I. and C.I. on a certain sum of money for 2 years at 15% p.a. is ₹ 144. Find the sum.

- a. ₹ 6000
- b. ₹ 6200
- c. ₹ 6300
- d. ₹ 6400

42. A decorative tile (ABCDEFGH) is in the shape of a regular octagon. The length of each side is 8 cm, the length of the diagonal GD is 20 cm and the length of the perpendicular OF drawn from vertex F to GD is 5 cm. Find the area of the tile.

- a. 250 sq. cm
- b. 300 sq. cm
- c. 350 sq. cm
- d. 400 sq. cm



43. If $a = 7$, then the value of $-\left(\frac{1-2a}{a-5}\right)$ is _____.

- a. $-\frac{13}{2}$
- b. $-\frac{15}{2}$
- c. $\frac{15}{2}$
- d. $\frac{13}{2}$

44. The length of a rectangular box is $(9x + 2y)$ and the area is $9x^2 + 20xy + 4y^2$. Find the breadth.

- a. $(x + 2y)$
- b. $(9x + 2y)$
- c. $(x + 9y)$
- d. $(2x + y)$

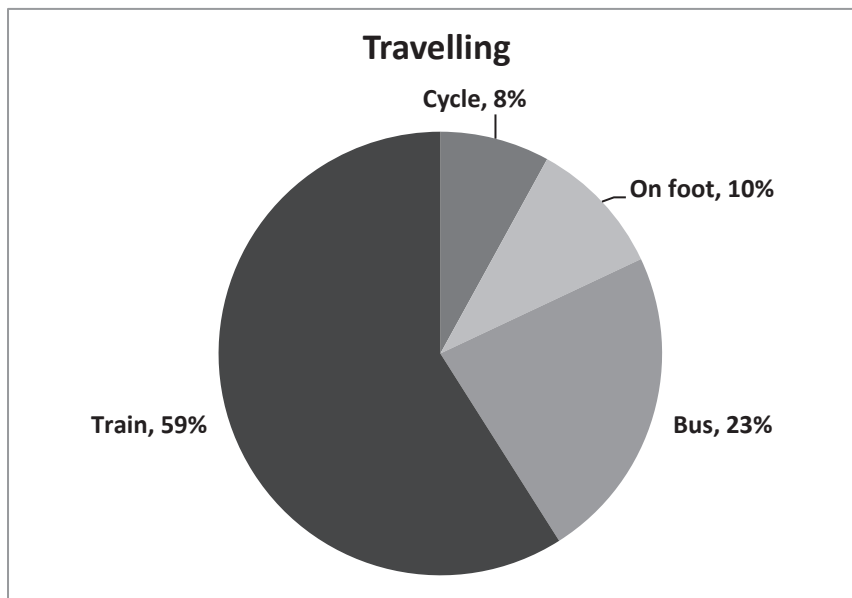
45. The opposite angles of a parallelogram are $(3x + 5)^\circ$ and $(61 - x)^\circ$. Find the measure of four angles.

- a. $47^\circ, 133^\circ, 47^\circ, 133^\circ$
- b. $80^\circ, 100^\circ, 80^\circ, 100^\circ$
- c. $77^\circ, 103^\circ, 77^\circ, 103^\circ$
- d. $94^\circ, 86^\circ, 94^\circ, 86^\circ$

46. Find the value of $\sqrt[3]{1331} + \sqrt[3]{729} - (\sqrt[2]{64} \times \sqrt[2]{36})$?

- a. 17
- b. -28
- c. 28
- d. 0

Answer questions 47–49 based on the pie chart given below.



1800 workers travel from home to factory. The pie chart shows the proportion of workers using various modes of travelling to work.

47. How many workers travel by cycle or bus?

- a. 414
- b. 144
- c. 224
- d. 558

48. What is the average of workers travelling by train, bus, and on foot?

- a. 738
- b. 552
- c. 450
- d. 550

49. What is the central angle for workers travelling on foot?

- a. 106°
- b. 41°
- c. 14°
- d. 36°

50. There are 12 green feathers, 7 red feathers, and 9 yellow feathers in a bag. What is the probability of getting a red feather?

- a. $\frac{1}{12}$
- b. $\frac{1}{28}$
- c. $\frac{1}{4}$
- d. $\frac{7}{16}$

