Please check the examination details below before entering your candidate information

Candidate Name	Class	Section

BLOOM Mathematics Olympiad (BMO)

Question Paper 2023-24

Class 6

Total Questions: **50 + 5** (Tie-Breaking Section)

Total Time Allotted : 60 minutes	**Total Marks** 60

Instructions

1. There are **50 Multiple Choice Questions** in this booklet having 4 options out of which **ONLY ONE** is correct.
2. There are two sections in the Question Paper; Section 1 having 40 Questions carrying 1 Mark each & Section 2 having 10 Higher Difficulty Order Questions carrying 2 Marks each.
3. All questions are compulsory. There is **NO negative** marking for incorrect answers.
4. Total time allotted to complete the paper is 60 minutes.
5. Please fill in your details in the space provided on this page before attempting the paper.

OMR Sheet Instructions

1. Before starting the paper, fill in all the details in the OMR Sheet.
2. Additional 10 minutes will be provided to fill up the OMR sheet, before the start of the exam.
3. Use HB Pencil to darken the circle of the correct Option in OMR sheet. The correct way to darken the circle in OMR sheet is shown below.

   ● ○ ○ ○
4. Use black or blue ball point pen/HB pencil to fill the information in the OMR sheet. Partially filled OMR sheet will not be checked.
5. Return the OMR sheet to the invigilator after the exam.

CODE#1

M6

BLOOM CAP
Founded by | arihant

Bloom Mathematics Olympiad Class 6

Section 1 (1 Mark)

1. The difference of the largest 6-digit number and the smallest 5-digit number formed by the digits 7, 0, 5 and 3, where 0 repeated twice, is

(a) 9,99,642 (b) 9,24,699
(c) 9,69,942 (d) 9,96,942

2. Annual incomes of *A* and *B* are in the ratio 4 : 5, respectively. If the income of *A* increases by 25% and that of *B* increases by 20%, then what is the new ratio of their incomes respectively?

(a) 5 : 8 (b) 4 : 7 (c) 5 : 6 (d) 6 : 5

3. The sum of the place values of digits 3 and 7 in the number 8357241 is

(a) 370000 (b) 7030000
(c) 73000 (d) 307000

4. The number of whole numbers between 34 and 55 is

(a) 21 (b) 18 (c) 20 (d) 19

5. Which of the following option is not true?

(a) $(7+8)+9=7+(8+9)$
(b) $(7\times 8)\times 9=7\times(8\times 9)$
(c) $7+8\times 9=(7+8)\times(7+9)$
(d) $7\times(8+9)=(7\times 8)+(7\times 9)$

6. The sum $\left[6\frac{1}{4}+6\frac{1}{4}+6\frac{1}{4}+6\frac{1}{4}\right]$ is same as

(a) $(6\times 4)+1$ (b) 6×4
(c) $(6\times 1)+4$ (d) $(6\times 4)\times\frac{1}{2}$

7. The HCF and LCM of two numbers are 6 and 120, respectively. If one of the number is 24, then the other number is

(a) 45 (b) 30 (c) 40 (d) 60

8. $\frac{1}{10}$ of a rod is coloured red, $\frac{1}{20}$ orange, $\frac{1}{30}$ yellow $\frac{1}{40}$ green, $\frac{1}{50}$ blue, $\frac{1}{60}$ black and the rest violet. If the length of the violet portion is 12.08 m, then what is the length of the rod?

(a) 16 m (b) 18 m (c) 20 m (d) 30 m

9. The sum of two numbers is 25 and their product is 144, then the numbers are

(a) 9 and 16 (b) 8 and 9
(c) 11 and 22 (d) 10 and 12

10. The smallest 4-digit number which is divisible by 18, 24 and 32, is

(a) 1122 (b) 5211
(c) 1152 (d) 1012

11. Anupa covers a distance of 8 km in trekking by walking and 34 km by car to reach the destination. The fraction of her journey covered by walking is

(a) $\frac{21}{4}$ (b) $\frac{3}{7}$ (c) $\frac{1}{4}$ (d) $\frac{4}{21}$

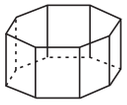
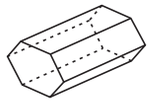
12. Which of the following statement is false?

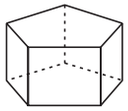
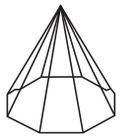
(a) Two diameters of a circle will necessarily intersect.
(b) The centre of a circle is always in its interior.
(c) Every diameter of a circle is also a chord.
(d) Every chord of a circle is also a diameter.

13. The maximum and minimum number of points of intersection of four lines in a plane are

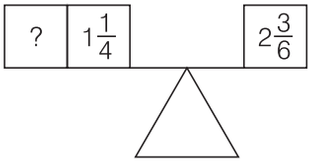
(a) Five and one (b) Six and zero
(c) Six and one (d) Five and zero

14. Which of the following represents pentagonal prism?

(a)  (b) 

(c)  (d) 

15. To balance the scale, then the missing fraction is



(a) $\frac{3}{4}$ (b) $\frac{30}{24}$
(c) $\frac{7}{8}$ (d) $\frac{15}{24}$

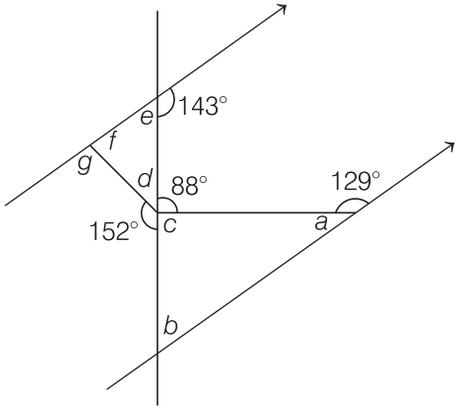
16. Evaluate
$-2+44-(-21)+(-1)-(-72)+(-4)$.

(a) -130 (b) 124
(c) 130 (d) -124

17. The sum of the two middle most integers that lie between integers -7 and 5, is

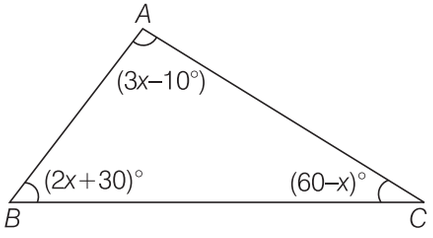
(a) -2 (b) 3
(c) -3 (d) 4

18. In the given figure, if the sum of $\angle a$, $\angle b$, $\angle c$, $\angle d$, $\angle e$ and $\angle f$ is divided by 5, then the value we get is equal to



(a) 85° (b) 185°
(c) 75° (d) 60°

19. A figure is given with certain angles, then the values of x and $\angle B$ respectively are



(a) 80° and 25° (b) 30° and 80°
(c) 80° and 30° (d) 25° and 80°

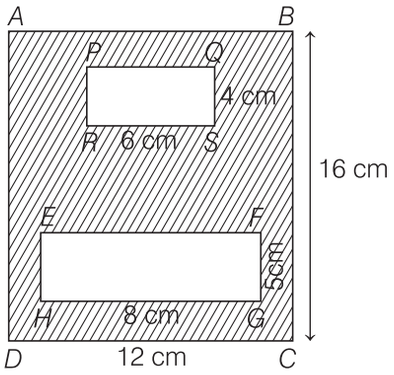
20. If $21\frac{x}{6}+15\frac{2}{3}=43\frac{1}{2}$, then the value of x is

(a) 39 (b) 41
(c) 43 (d) 37

21. Simplify
$6.025-(-0.120)+(-1.120)+4.25-(-1.25)$.

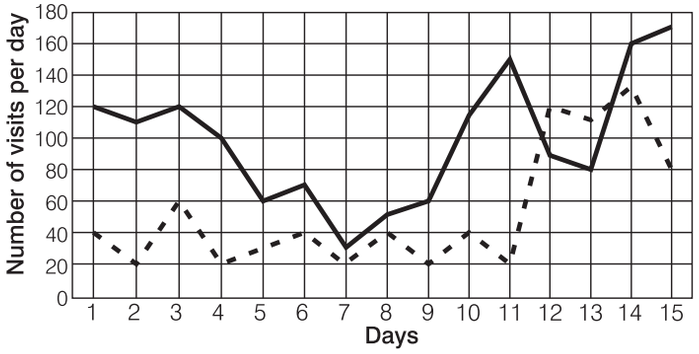
(a) 11.250 (b) 10.525
(c) 9.525 (d) 8.525

22. The area of the shaded portion is



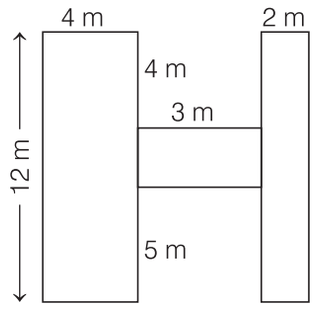
(a) 192 cm^2
(b) 108 cm^2
(c) 128 cm^2
(d) 118 cm^2

23. The given graph shows visits to two music sites on web. What is the difference in the number of visits on music choice and pop parade on 9th day?



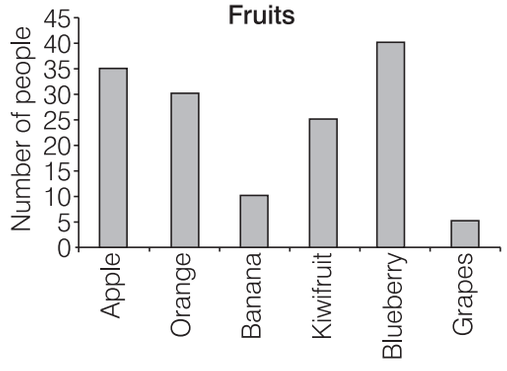
(a) 40 (b) 10
(c) 80 (d) 30

24. The perimeter of the given figure is



(a) 60 m (b) 56 m (c) 57 m (d) 54 m

25. The given graph shows the fruits preference of people. If the ratio of preference of banana to kiwi fruit is K and apple to orange is λ, then the value of $K : \lambda$ is



(a) 2 : 5 (b) 7 : 6
(c) 35 : 12 (d) 12 : 35

26. A point A on the mountain is 6.35 m above sea level and another point B and C are 8.25 m and 10.35 m below sea level, respectively. What is distance between A to B and B to C points, respectively.

(a) 1.90 m and 2.10 m (b) 14.6 m and 18.6 m
(c) 14.6 m and 2.10 m (d) 1.90 m and 18.6 m

27. If $500 : X :: 120 : 90$, then value of X is

(a) 375 (b) 750
(c) $\frac{2000}{3}$ (d) 1500

28. The given table shows the temperature of a city for 7 consecutive hours.

Hour(s)	1	2	3	4	5	6	7
Temperature (°C)	– 4	15	– 2	23	12	0	– 6

Calculate the difference between the highest and the lowest temperature of the city over the first 5 h period.

(a) 29°C (b) 25°C (c) 27°C (d) 23°C

29. How many bricks whose length and breadth are 9 cm and 4 cm respectively, will be needed to fit in a rectangular region that measures 90 cm $\times$ 120 cm?

(a) 200 (b) 300 (c) 350 (d) 250

30. What should be the area of a rectangular park of length 12 m and perimeter 44 m?

(a) 100 m^2 (b) 200 m^2 (c) 120 m^2 (d) 144 m^2

31. Virat scored 17 marks more than Rohit in a test. If Virat's score is represented by x, then 5 marks less than Rohit's score will be

(a) $x + 17$ (b) $x - 17$
(c) $x + 22$ (d) $x - 22$

32. A rectangular piece of field measures 1.2 km by 0.5 km. Each side is to be fenced with 4 rows of wires. What is the length of the wire needed?

(a) 13.6 km (b) 3.4 km (c) 7.8 km (d) 12.6 km

33. In an examination, Amit's score was 92. Abhay obtained 15 marks less than Amit. Durgesh scored 4 marks more than Abhay. What is the difference between Amit and Durgesh's score?

(a) 19 marks (b) 13 marks
(c) 11 marks (d) 17 marks

34. If the ratio of two numbers is 4 : 5 and after adding 2 to first number (numerator) and 4 to second number (denominator) the ratio becomes 2 : 3, then the both numbers respectively, are

(a) 10 and 8 (b) 5 and 4
(c) 8 and 10 (d) 4 and 5

35. A mother is twice as old as his son. 20 yr back, she was twelve times as old as his son. What are their present ages?

(a) 24 yr, 12 yr (b) 44 yr, 22 yr
(c) 48 yr, 24 yr (d) None of these

36. Vishal had a certain amount of money with him. He gave $\frac{1}{5}$ of it to his brother, $\frac{2}{7}$ to his friend and $\frac{1}{10}$ to his mother. If he is left with ₹ 290, then what was the amount be had in the beginning?

(a) ₹ 670 (b) ₹ 610
(c) ₹ 700 (d) ₹ 570

37. Which table values is correct for the given algebraic equation?

$x = (y \times 9 + 6) \div 2$

(a)

x	y
5	1
10	2
15	3

(b)

x	y
9	2
18	4
27	6

(c)

x	y
0	3
1	15
4	30

(d)

x	y
3	0
12	2
21	4

38. There are six poles on the side of a 1 km 200 m long straight road such that there is a pole at the starting and end point of the road. If the poles are equally spaced, then what is the distance between each consecutive pole?

(a) 240 m (b) 200 m
(c) 230 m (d) 210 m

39. A father is three times as old as her son. After 15 yr, he will be twice as old as her son. What is the present age of father?

(a) 30 yr (b) 45 yr
(c) 50 yr (d) 60 yr

40. An amount of money is to be distributed among Ravi, Anurag and Rahul in the ratio 3 : 1 : 5. The difference between Anurag's share and Rahul's share ₹ 3600. What is the total of Ravi's share and Anurag's share?

(a) ₹ 5400 (b) ₹ 1800
(c) ₹ 2700 (d) ₹ 3600

Section 2 (2 Marks)

Direction (Q. Nos. 41 to 43)

People need a token to board a train. The cost of token depends upon the distance travelled in different zones. Different zones represents different train networks. The table below shows the cost of token for travelling in different zones of a metro.

Zone	**Sub-zone**	**Fare**	**Distance** (in km)	**Time Limit** (in min)
Zone 1	1	₹ 10	Less than 2	65
	2	₹ 20	2-5	
	3	₹ 30	5-12	
Zone 2	4	₹ 40	12-21	100
Zone 3	5	₹ 50	21-32	180
	6	₹ 60	more than 32	

The table below shows the number of passengers travelling on a particular day in different zones.

Zone	**Sub-zone**	**Number of passenger travelled**
Zone 1	1	90000
	2	160000
	3	110000
Zone 2	4	250000
Zone 3	5	150000
	6	100000

41. How much revenue was generated on that day in zone 1?

(a) 900000 (b) 4100000
(c) 6500000 (d) 7400000

42. Which zone generated the highest revenue on that day?

(a) Zone 1 (b) Zone 2
(c) Zone 3 (d) All of these

43. How many passengers travelled in zone 2 and zone 3?

(a) 410000 (b) 500000
(c) 350000 (d) 400000

44. Manisha bought a textile sheet of length $3\frac{2}{5}$ m and one more sheet of length $2\frac{7}{10}$ m. Then, the total cost of sheet she bought, if cost of 1 m of sheet is equal to ₹ 300, is

(a) ₹ 1830 (b) ₹ 1380
(c) ₹ 1833 (d) ₹ 1700

45. Match the item of Column I in Column II with their respectively value.

	Column I		Column II
A.	1 crore is equal to	1.	301
B.	300 is predecessor of	2.	10 millions
C.	Smallest 4-digit number using 5, 3, 4 and 2	3.	unity
D.	$2\frac{2}{4}+1=\frac{7}{2}$	4.	2345

Choose the correct option

	A	B	C	D
(a)	2	3	1	4
(b)	2	1	4	3
(c)	4	3	2	1
(d)	3	1	4	2

46. In ΔABC, if $3\angle A = 4\angle B = 5\angle C$, then $\frac{1}{2}(\angle A + \angle B + \angle C)$ is equal to

(a) 99.9° (b) 79.9°
(c) 89.9° (d) 69.9°

47. True/False

A. $34984 = 3\times1000 + 49\times100 + 8\times10 + 4\times1$

B. Successor of 1-digit number is always a 1-digit number.

C. 999999 is the largest whole number.

D. Two angles have exactly one common arm.

	A	B	C	D
(a)	T	F	T	F
(b)	F	F	F	T
(c)	F	F	T	T
(d)	T	T	F	T

48. A rectangle is divided into certain number of equal parts. If 24 of the parts so formed represent the fraction $\frac{1}{5}$, then the number of parts in which the rectangle have been divided, are

(a) 110 (b) 120
(c) 115 (d) 100

49. **Assertion** (A) y less than the product of -4 and x is $4x + y$.

Reason (R) Quotient of p by 3 multiplied by q is $\frac{pq}{3}$.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are false.
(c) Assertion (A) is true and Reason (R) is false.
(d) Assertion (A) is false and Reason (R) is true.

50. Amit and Vishal play a two-person game in which the winner gains 2 points and the loser losses 1 point. If Amit won exactly 3 games and Vishal had a final score of 5 points, how many games did they play?

(a) 6 (b) 7
(c) 8 (d) 9

Tie-Breaking Section

Instructions

1. This section consists of 5 questions.
2. The score achieved in this section will not be included in the total marks.
3. If overall marks of two or more students are same, winner will be decided based on the score in this section.
4. Participation in this section is optional, and students may choose to attempt it or not.

1. The value of $\left(\frac{A+B}{C}\right) \times D$

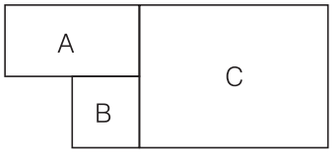
(i) 100 lakhs = B millions
(ii) C crores = 100 millions
(iii) 100 thousands = A lakhs
(iv) 10 crores = D millions

(a) 10 (b) 100 (c) 110 (d) 1

2. A man has 320 watches. He sells x watches everyday, an algebraic expression to show the number of watches he would be left with after y weeks is

(a) $320y + 7xy$ (b) $320x + 7y$
(c) $320 + xy$ (d) $320 - 7xy$

3. The area of square A is 36 cm^2. The perimeter of square B is 20 cm, then the cost of painting square C at the rate of ₹ 5 per cm^2, is

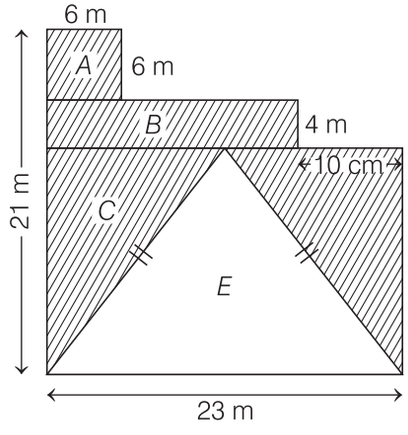


(a) ₹ 242 (b) ₹ 121
(c) ₹ 605 (d) ₹ 505

4. If the ratio of the speed of two cars is 5 : 6. If the both cars cover total distance 180 km in two parts, in first part cars accelerate and in second part cars move with uniform speed and second car travels 144 km in 3 hours, then the speed of first car in second part of the journey is

(a) 50 km/h (b) 40 km/h
(c) 48 km/h (d) 8 km/h

5. The area of the shaded region is



(a) 214.5 m^2 (b) 162.5 m^2
(c) 126.5 m^2 (d) 178.5 m^2