

BK BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL

MID-TERM EXAMINATION 2023-24

(Sarala Birla Group of Schook) Class :VI Date : Admission No.:

MATHEMATICS Marking Key



Duration : 3 Hrs Max. Marks : **80** Roll No.:

General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E.

2. Section A has 20 MCQs carrying 1 mark each

3. Section B has 5 questions carrying 02 marks each.

4. Section C has 6 questions carrying 03 marks each.

5. Section D has 4 questions carrying 05 marks each.

6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-

parts of the values of 1, 1 and 2 marks each respectively.

7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been

provided in the 2marks questions of Section E

8. Draw neat figures wherever required.

SECTION A

Section A consists of 20 questions of 1 mark each.

1	The greatest 5-digit number	s				1
	(a) 99999		(b) 100000	(c) 98765	(d) 56789	
2	A flask has 5 litres of lemona	de. How many	glasses, each of 2	00mL capacity, c	an it fill?	1
	(a) 25		(b) 35	(c) 45	(d) 15	
3.	Smallest 8-digit number is					1
	(a) 10000001		(b) 99999999	(c) 10000000	(d) 999999998	
4.	Sunny is a famous cricket pla complete 10,000 runs. How r	yer. He has so f nany more run	ar scored 7,280 r s does he need?	runs in test match	nes. He wishes to	1
	(a) 2520		(b) 2500	(c) 2720	(d) 2000	
5.	The difference of smallest 3-d	igit number an	d its predecessor	is		1
	(a) 1	(b) 0	(c) 2	(d) 10	00	
6.	The natural numbers along wi	th zero is know	ın as			1
	(a) integers	(b) whole numbers	(c) super nat numbers	ural (d) r	none of these	
7.	Which whole number does no	ot have a prede	cessor ?			1
	(a) 1	(b) 0	(c) 2	(0	d) 100	

8.	The tally mark III shows	s frequency			1
	(a) 5	(b) 3	(c) 2	(d) none of these	
9.	Least number of line sea	gments required to make	e a polygon is		1
	(a) 1	(b) 2	(c) 3	(d) 4	
10.	How many lines can be	drawn through given two	o points?		1
	(a) Only one	(b) 2	(c) 4	(d) Countless	
11.	What are two numbers (a) co-prime numbers	called having only 1 as a (b) twin prime numbers	a common factor ? (c) composite numbers	(d) prime numbers.	1
12.	Which of these is the fa	actor of 50 ?			1
	(a) 10	(b) 3	(c) 7	(d) 6	
13.	What is the sixth multip	ple of 13?			1
	(a) 78	(b) 65	(c) 52	(d) 91	
14.	Which of them is a prin	ne number?			1
	(a) 13	(b) 14	(c) 28	(d) 25	
15.	The area of rectangle w	hose length is 15 cm and	d breadth is 6 m		1
	(a) 9000 cm²	(b) 90 cm²	(c) 9 cm ²	(d) 900 cm ²	
16.	One side of a regular pe	entagon is 5 cm. Its perin	neter is:		1
	(a) 10 cm	(b) 25 cm	(c) 15 cm	(d) 50 cm	
17.	The distance around a t	two dimensional shape is	5:		1
	(a) Area	(b) Perimeter	(c) Diagonal	(d) None of these	
18.	The perimeter of regula	ar hexagon is			1
	a. 4 x n	b. 5 x n	(c) 6 x n	(d) None of these	
19.	DIRECTION: In the quest statement of Reason (R Choose the correct opt Statement A (Assertion Statement R(Reason) : (a) Both assertion (A) a assertion (A) (b) Both assertion (A) a assertion (A) (c) Assertion (A) is true (d) Assertion (A) is false	stion number 19 and 20, R). ion): Perimeter of a rectang Rectangle is a regular po nd reason (R) are true ar nd reason (R) are true ar e but reason (R) is false . but reason (R) is true.	a statement of assertio de = 2(I+b). blygon d reason (R) is the corr d reason (R) is not the	n (A) is followed by a ect explanation of correct explanation of	

Statement A (Assertion): -Data represented in a table using pictures is known as pictograph..
Statement R (Reason) : Frequency is the number of times particular observation repeats itself.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)

(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)

- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

SECTION B

Section A consists of 5 questions of 2 mark each.

21 Let the length of the third side be x cm. Length of other two sides is 12 cm and 14 cm. Now, Perimeter of triangle = Sum of all sides = 36 cm. ⇒12+14+x=36 ⇒26+x=36 1 ⇒x=36–26 ⇒x=10cm Thus, the length of third side is 10 cm. 1 OR P = 2(L + B)1 =2 X 9 = 18m 1 22 2 Mark Tally mark Number of Students 1 2 2 3 3 3 4 NN II 7 5 NI 6

6	INI II	7
7	ſΝI	5
8		4
9	111	3

23. 24-1,24,2,12,3,8,4,6

15-1,15,3,5

1 1

Or

	3-3,6,9 5-5,10	9,12,15 .15,20,25	1 1
24.	Since So 71,	71,25,400 is a seven-digit number and 7,12,540 is a six-digit number. 25,400 is greater than 7,12,540	1
	Now	$\begin{array}{c} 7125400 \\ \hline (-) 712540 \\ \hline 64,12,860 \end{array}$	1

25. (a) Closure property of addition

If 'a' and 'b' and any two whole numbers then, then the closure property of addition of whole numbers states that 'a+b' is also a whole number For example: Consider two whole numbers 0 and 2, then we can say that their sum 0+2 = 2, is also a whole number (b) Commutative property of multiplication If a and b are any two whole numbers, then the commutative property of whole numbers under multiplication states that a×b = b×a For example, Consider two whole numbers 1 and 3, then we have 1×3 = 3 = 3×1

1

1

1

1

1

SECTION C

Section C consists of 6 questions of 3 marks each.

27. A number is divisible by 11 if the difference between the sum of the digits at odd places and the sum of the digits at even places is divisible by 11.

(a) Given number = 5445
Sum of the digits at odd places = 5 + 4 = 9 and sum of the digits at even places = 4 + 5 = 9
Difference = 9 - 9 = 0, which is divisible by 11.
Therefore, the number 5445 is divisible by 11.

(b) Given number = 10824
Sum of the digits at odd places = 4 + 8 + 1 = 13 and Sum of the digits at even places = 2 + 0 = 2
Difference = 13 - 2 = 11, which is divisible by 11.
Therefore, the number 10824 is divisible by 11.

(c) Given number = 7138965
Sum of the digits at odd places = 5 + 9 + 3 + 7 = 24 and Sum of the digits at even places = 6 + 8 + 1 = 15
Difference = 24 - 15 = 9, which is not divisible by 11.
Therefore, the number 7138965 is not divisible by 11

Or

We will be using the concepts of divisibility by 6 to solve this.

We know that a number is divisible by 6 if it is divisible by both 2 and 3.

(a) Given number = 297144
The number 297144 has an even digit at its one's place.
Therefore, it is divisible by 2.
The sum of all the digits of 297144 = 2 + 9 + 7 + 1 + 4 + 4 = 27, which is divisible by 3.
Therefore, the number 297144 is divisible by 6.

	(b) Given number The number 1258 Therefore, it is div The sum of all digi Therefore, the nur	= 1258 has an even digit i.e., 8 at its one's place. isible by 2. ts of 1258 = 1 + 2 + 5 + 8 = 16, which is not divisible by 3. nber 1258 is not divisible by 6.	1
	(c) Given number The digit at one's Therefore, it is not Therefore, the nur	= 4335 place of the number 4335 is not even. divisible by 2. nber 4335 is not divisible by 6.	1
28.	Solution		1
	(i) Open Curve		
		(iii) Polygon	1
	(ii) Closed curve		
			1

29. a) The point that lies in the interior of ∠DOE is the region between the two rays AE and OD. 1 Hence, point A lies in the interior of $\angle DOE$.

b) The point that lies in the exterior of ∠EOF is the region that is not between the two rays 1 OE and OF and can lie anywhere outside this region. Thus, point C lies in the exterior of ∠EOF.

c) The point that lies on \angle EOF is B as we see that point B is on the ray OE.



30

Solution

Length of the rectangular park = 175 m. Breadth of the rectangular park = 125 m. Perimeter of park = 2×(length + breadth). = 2×(175 + 125). = 2×300 = 600 m.

1

So, the required fencing for a rectangular park is 600 m. Since, the cost of fencing park per meter = ₹ 12.	1
Therefore, the cost of fencing the rectangular park of perimeter 600 m = $12 \times 600 = ₹7,200$.	
Or	
Cost of fencing the lawn = Rs 28000 Let I be the length of each side of the lawn. Then, the perimeter is 4I.	1
We know:	T
Cost=Rate × Perimeter	1
⇒28000=14 × 4I	-
⇒28000 = 56l	
Or,	
l = 500 .	1

31.

Fruits	Tally marks	Frequency
Orange	111	3
Guava	++++	6
	1	
Apple	+++++	8
	Ш	
Grapes	+++++	9
	1111	
Banana	1111	4

Grapes

SECTION D

Section D consists of 4 questions of 5 marks each.

32. (a) Given,

Length of rectangle =50 m Area of rectangle =300 m2 Since, area =length×width \Rightarrow 300=50×width 2

1

1

1

⇒ Width =30050	
Therefore, width =6 m.	1
(b)Length of land = 500 m.	
Breadth of land = 200 m.	1
Area of land = length×breadth = 500 m×200 m = 1,00,000 sq.m.	
∵ Cost of tilling 100 sq. m of land = ₹8.	
∴ Cost of tilling 1,00,000 sq. m of land = 8×1000 = ₹8000.	1

Or

Five 1 m square flower beds dug on a 5 m long and 4 m wide piece of land.	
Let us calculate the area of the flower square bed	
Area of flower square bed = side × side	
⇒ Area of flower square bed = 1 × 1 = 1 m sq	1
Thus, area of 5 square beds = 1 × 5 = 5 m sq	
Now, Area of the land = Length × Breadth	
\Rightarrow Area of the land = 5 × 4 = 20 m2	2
Now, the remaining part of the land = Area of land – Area of 5 square beds	
= 20 – 5	
= 15 m sq	
Therefore, the area of the remaining part of the land is 15 sq m.	2

33. Following pictograph shows the number of tractors in five villages

Viilages	Number of tractors
Village A	0000000000000
Village B	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Village C	00000000000000000000
Village D	000000
Village E	0000000000000

	Observe the pictograph and answer the following questions.	_
	(i) Which village has the minimum number of tractors? D	1
	(ii) Which village has the maximum number of tractors? C	1
	(iii) How many more tractors village C has as compared to village B. 3	-
	(iv) What is the total number of tractors in all the five villages?28	2
34.	(a)Smallest number exactly divisible by 6,8 and 12	
	=LCM of 6,8,12=24	1
	We have to find the smallest 3-digit multiple of 24.	
	It can be seen that 24×4=96 and 24×5=120.	
	Hence, the smallest 3-digit number which is exactly divisible by 6,8 and 12 is 120.	

(b) LCM = 2 × 2 × 2 × 3 × 5 = 120
We have to find the greatest 3-digit multiple of 120.
It can be seen that 120 ×8 = 960 and 120 × 9 = 1080.
Hence, the greatest 3-digit number exactly divisible by 8, 10, and 12 is 960.

Or

By taking LCM of the numbers	
48 = 2 x 2 x 2 x 2 x 3	
72 = 2 x 2 x 2 x 3 x 3	
108 = 2 x 2 x 3 x 3 x 3	2
LCM of 48, 72 and 108 = 2 x 2 x 2 x 2 x 3 x 3 x 3 = 432	
After 432 seconds, traffic lights change simultaneously	
As 60 seconds = 1 minute	
By dividing 432 by 60, we get 12 as the remainder and 7 as the quotient	2
432 seconds = 7 min 12 seconds	
Time = 7 :30 am + 7 minutes 12 seconds	
Therefore, the lights change simultaneously again at 7:37:12 am.	1

35. For finding minimum distance,

we have to find L.C.M of 63, 70, 77.

L.C.M. of 63, 70 and 77 = 7 x 9 x 10 x 11 = 6930 cm. Therefore, the minimum distance is 6930 cm.

As we can observe from the division method, LCM of 6, 8, and 12 is $2 \times 2 \times 2 \times 3 = 24$

Thus, all the multiples of 24 will also be divisible by 6, 8, and 12.

Now we will divide the smallest-3 digit number with the LCM obtained, and the remainder will be subtracted from the dividend, and 24 will be added to it to make it perfectly divisible.

So, the smallest three digit multiple of 24 will be,

100 = (100 - 4) + 24 = 96 + 24 = 120

Hence, the smallest 3-digit number which is exactly divisible by 6, 8, and 12, is 120.

SECTION E

Section E consists of 3 questions of 4 marks each.

2

1

1

36. A florist had 200 roses, 180 marigold and 320 orchids with him. He was asked to make garlands of flowers with only roses or only marigold or only orchids each containing the some number of flowers.

(a)Write down the prime factorization of 180 . 2 x 2 x 3 x 3 x 5	1
(b) Write down the L.C.M of 200 and 180 .	1
1800	

(c) What will be the largest number of flowers he can join together without leaving a 2 single flower

 $200 = 2 \times 2 \times 2 \times 5 \times 5$ $180 = 2 \times 2 \times 3 \times 3 \times 5$ $320 = 2 \times 5$ HCF = $2 \times 2 \times 5 = 20$ Hence largest number of flowers is 20.

37. A student of class VII made following quadrilateral



State:

(a) two pairs of opposite sides (AR CD) · (RC AD)	1
(a) two pairs of opposite sides (AB,CD), (BC,AD)	1
(b) two pairs of opposite angles ($\angle A$, $\angle C$); ($\angle B$, $\angle D$)	-
(c) two pairs of adjacent sides (AB,BC);(AD,AB)	2

38. A machine, on an average, manufactures 2,825 screws a day.

(a) How many screws did it produce in the month of January, 2006?	1
87575	
(b) How many screws did it produce in 1 week?	1
19775	
(c) How many screws will it produce in the month of February , 2024?	2

(a) If it costs Rs.5 to produce one screw , How much will be the cost of production in one 2 day?
 ₹ 14125
