INFINITY THINK BEYOND.....

AN EDUCATIONAL INSTITUTE

X MIND CURVE Mid Term Maths Test Series 2025-26

Test 01

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S no	Syllabus Covered	Chapters(In Half Yearly)	Marking Scheme
1.	Chapter 1	Real Numbers	40

Note: Students/Teachers can refer to this Sample Paper for practice purpose. However, students may find or experience different exam pattern as syllabus or marking scheme may vary school to school.

MM:40 | **GENERAL INSTRUCTIONS** | **Time1.5Hrs**

READ CAREFULLY ALL INSTRUCTIONS

1. **This Question Paper has 5 Sections A, B, C, D and E.**
2. **Section A has 10 MCQs carrying 1 mark each**
3. **Section B has 3 questions carrying 02 marks each.**
4. **Section C has 2 questions carrying 03 marks each.**
5. **Section D has 5 questions carrying 05 marks each.**
6. **Section E has 2 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 1 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. **This paper consists of 19 questions.**
   a. **Write your answers neatly and legibly.**
   b. **Ensure you have not left any question unanswered**

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. The smallest number by which $\sqrt{27}$ should be multiplied so as to get a rational number , is

(a) $\sqrt{27}$ (b) $3\sqrt{3}$ (c) $\sqrt{3}$ (d) 3

2. If the HCF of 65 and 117 is expressible in the form 65m – 117 , then the value of m is

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

3. The largest number which divides 70 and 125 , leaving remainders 5 and 8 , respectively , is

(a) 13 (b) 65 (c) 875 (d) 1750

4. The HCF of two numbers is 27 and their LCM is 162 .If one of the number is 54 , find the other .

(a)27 (b) 15 (c) 81 (d) 3

5. Find the least positive integer divisible by 20 and 24 .

(a) 24 (b) 15 (c) 12 (d) 120

6. Find the least number which when divided by 12 , leaves a remainder of 7 , when divided by 15 , leaves a remainder of 10 and when divided by 16 , leaves a remainder of 11 .

(a) 115 (b) 235 (c) 247 (d) 475

7.Three numbers are in the ratio 1 : 2 : 3 and their HCF is 12 . Then the positive square root of largest number is

(a) 3 (b) 2 (c) 6 (d) 4

8. Let a and b be two positive integers such that a = p^3q^4 and b = p^2q^3 , where p and q are prime numbers. If HCF(a,b) = p^mq^n and LCM(a,b) = p^rq^s, then (m+n)(r+s)=

(a) 15 (b) 30 (c) 35 (d) 72

9. Assertion (A) :The HCF of two number is 12 and their product 1800,their LCM is 140

Reason (R): If a,b are two positive integers ,then H.C.F X L.C.M =a x b

(a)Both A and R true and R is the correct explanation of A

(b)Both A and R are true but R is NOT the correct explanation of A

(c)A is true but r is False

(d)A is false and R is True.

10.Assertion (A): 8^n ends with digit zero , where n is natural number .

Reason (A): Any number ends with zero , if its prime factors is of the form $2^m \times 5^n$, where m ,n are natural number

(a)Both A and R true and R is the correct explanation of A

(b)Both A and R are true but R is NOT the correct explanation of A

(c)A is true but r is False

(d)A is false and R is True.

SECTION – B
Questions 11 to 13 carry 2 mark each.

11(A). Find the smallest number which when divided by 28 and 32 leaves remainders 8 and 12 respectively.

Or

11(B).Find the greatest number of four digits which is exactly divisible by 15, 24 and 36.

12. The LCM of two number is 14 times their HCF. The sum of LCM and HCF is 600.If one number is 280, then find the other number.

13(A). Three measuring rods are 64 cm, 80 cm and 96 cm in length. Find the least length of cloth that can be measured an exact number of times, using any of the rods .

Or

13(B). Three bells ring at an interval of 4,7 and 14 minutes . All three bells rang at 6 am , when the three bells will ring together next?

SECTION – C
Questions 14 to 15 carry 3 mark each

14.Prove that $\frac{1}{\sqrt{2}+5}$ is irrational ,givem that $\sqrt{2}$ is irrational

15(A). Find the largest number which on dividing 1251 , 9377 and 15628 leaves remainders 1,2 and 3,2 respectively.

Or

15(B). If the sum of LCM and HCF of two numbers is 1260 and their Lcm is 900 more than their HCF then , find the product of two numbers.

SECTION – D
Questions 16 to 17 carry 4 mark each.

16. Flipkart is an Indian e-commerce company , headquartered in Bangalore , Karnataka and incorporated in Singapore as a private limited company . The company initially focussed on online book sales before expanding into other product categories such as consumer electronics fashion, home essentials groceries and lifestyle products.Flipkart sells 10 types of items which are packed into various sizes of cartons which are packed into various size of cartons which are given below

Carton type	Inner dimensions (l × b) cm^2
Small	6 × 8
medium	12 × 24
Large	24 × 36
Extra large	36 × 48
XXL	48 × 96

Flipkart places supporting thermocol sheets inside every package along the edges. The company thought of buying same sized sheets for all type of cartons

(i). What should be the maximum size of the sheet that fits into all type of cartons?
(ii). What should have been size of semi large (which is larger than medium carton but smaller than large carton) so that the maximum sized sheet remains same?

17.The table given shown the numbers of students in school choir. The choir teacher plans to arrange the students in equal rows. Only girls or boys will be in each row . Based on the above information, answer the following questions:

(i)What is the greatest number of students that could be in each row?
(ii)How any rows will be required for this arrangement .
(iii)(A).Find LCM of boys and girls and Verify the relationship between LCM and HCF.

OR

(iii)(B).If each girl sings for 45 minutes and each boy sings for 60 minutes during choir practice ,after how many minutes will both finish singling together for the first time.

School Choir

Students	Numbers
Girls	480
Boys	640

SECTION – E
Questions 18 to 19 carry 5 mark each.

18. Prove that $\sqrt{5}$ is irrational

19. Prove that $\sqrt{2}+\sqrt{3}$ is irrational ,given that $\sqrt{6}$ is irrational

----------**END**----------

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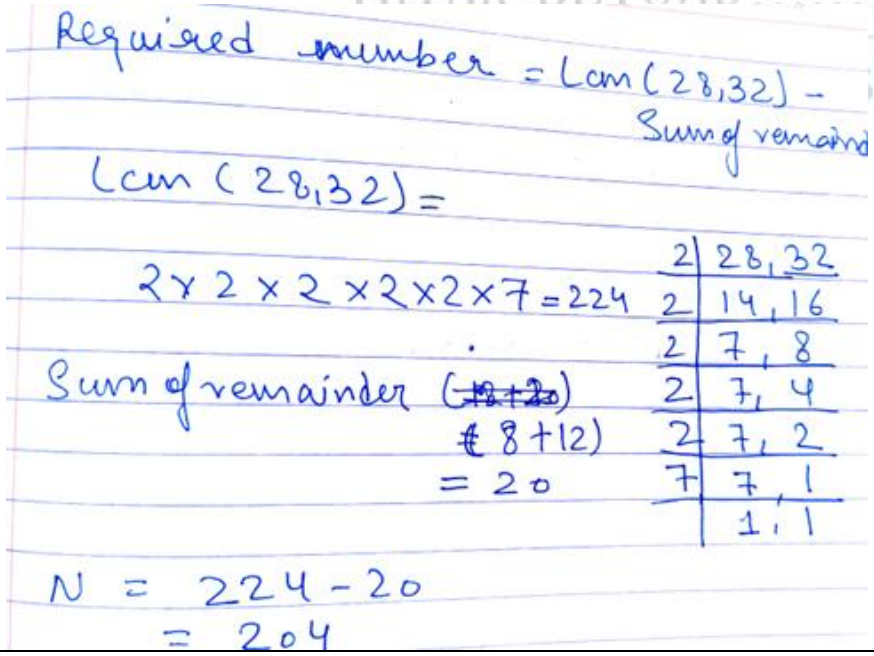
https://chat.whatsapp.com/HTcfeKqE4wN8075HOehy0t

ANSWER KEY

1	(B)$3\sqrt{3}$
2	(B)2
3	(A)13
4	(C)81
5	(D)120
6	(B)235
7	(C)6
8	(C)35
9	(D) A is false and R is True
10	(D) A is false and R is True
11	

OR

LCM (15, 24, 36) = 360

2 | 15, 24, 36
2 | 15, 12, 18
2 | 15, 6, 9
3 | 15, 3, 9
3 | 5, 1, 3
5 | 5, 1, 1
1, 1, 1

360 | 9999 (27
720↓
2799
2520
279

9999 − 99
9900

9999 − 279 = 9720 is the number. Ans.

12

Given; LCM = 14 HCF → I
LCM + HCF = 600 → II
Put (I) in (II)
14HCF + HCF = 600
15HCF = 600
HCF = 600/15

HCF = 40

LCM = 14HCF
= 14 × 40
LCM = 560

We know, HCF × LCM = a × b
560 × 40 = 280 × b
2 | 560 × 40 = b
280
⇒ b = 80

13

$64 = 2^6$

$80 = 2^4 \times 5$

$96 = 2^5 \times 3$

$LCM = 2^6 \times 3 \times 5 = 64 \times 3 \times 5$

$= 960$ cm.

The least length of cloth can be measured exactly using any of the rods is 960 cm.

OR

We will find LCM of 4, 7 and 14.

2	4, 7, 14
2	2, 7, 7
7	1, 7, 7
	1, 1, 1

LCM (4, 7, 14) = 28

∴ At 6:28 am, the three bells will ring together next.

14

Given: The number is $\frac{1}{\sqrt{2}+5}$

$$\frac{1}{\sqrt{2}+5} = \frac{1 \times \sqrt{2}-5}{\sqrt{2}+5 \times \sqrt{2}-5} = \frac{\sqrt{2}-5}{4-25} = \frac{\sqrt{2}-5}{-21}$$

$$= -\frac{(\sqrt{2}-5)}{21}$$

$$= \frac{5-\sqrt{2}}{21}$$

let us assume $\frac{5-\sqrt{2}}{21}$ is rational

$$\Rightarrow \frac{5-\sqrt{2}}{21} = \frac{a}{b} \quad [a \& b \text{ are co-prime}, b \neq 0]$$

$$5-\sqrt{2} = \frac{21a}{b}$$

$$-\sqrt{2} = \frac{21a}{b} - 5$$

$$-\sqrt{2} = \frac{21a-5b}{b}$$

$$\sqrt{2} = \frac{21a-5b}{-b} \quad \left[\frac{p}{q} \text{ form}, q \neq 0\right]$$

$p \& q \rightarrow$ co-prime

Here, Rational = Irrational which is not possible.

Hence, our assumption is wrong.

$\frac{1}{\sqrt{2}+5}$ is irrational.

15

$1251 - 1 = 1250$

$9377 - 2 = 9375$

$15628 - 3 = 15625$

$(1250, 9375, 15625) = 625$

largest no. = 625

OR

LCM + HCF = 1260 $\rightarrow$ I

LCM = HCF + 900 $\rightarrow$ II

Put II in I:

$HCF + 900 + HCF = 1260$

$2HCF + 900 = 1260$

$2(HCF + 450) = 1260 \Rightarrow HCF + 450 = 630$

$\boxed{HCF = 180}$

LCM = HCF + 900

⇒ LCM = 180 + 900

LCM = 1080

HCF × LCM = a × b

HCF × LCM = 1080 × 180

= 194400 Ans.

16

16 i) We will find HCF.

Small = 12 = $2 \times 3 \times 2^3 = \boxed{2^4 \times 3}$ cm²

Medium = $12 \times 24 = 2 \times 2 \times 3 \times 2 \times 2 \times 2 \times 3$

$= \boxed{2^5 \times 3^2}$ cm²

Large = $24 \times 36 = 2^3 \times 3 \times 2^2 \times 3^2$

$= \boxed{2^5 \times 3^3}$ cm²

Extra large = $36 \times 48 = 2^2 \times 3^2 \times 2^4 \times 3$

$= \boxed{2^6 \times 3^3}$ cm²

XXL = $48 \times 96 = 2^4 \times 3 \times 2^4 \times 3 \times 2$

$= 2^4 \times 3 \times 2^4 \times 3 \times 2$

$= \boxed{2^9 \times 3^2}$ cm²

HCF = $2^4 \times 3 = 48$ (We have found HCF of areas of all different types of cartons)

Maximum Size of ~~mor~~ ~~inum~~ sheet = 48 cm²

ii The Area of semi-large carton is b/w 288 cm² and 864 cm²

17

(i) Greatest no of students in each row = HCF (480, 640)

2	480, 640
2	240, 320
2	120, 160
2	60, 80
2	30, 40
5	15, 20
	3 4

= 32 × 5

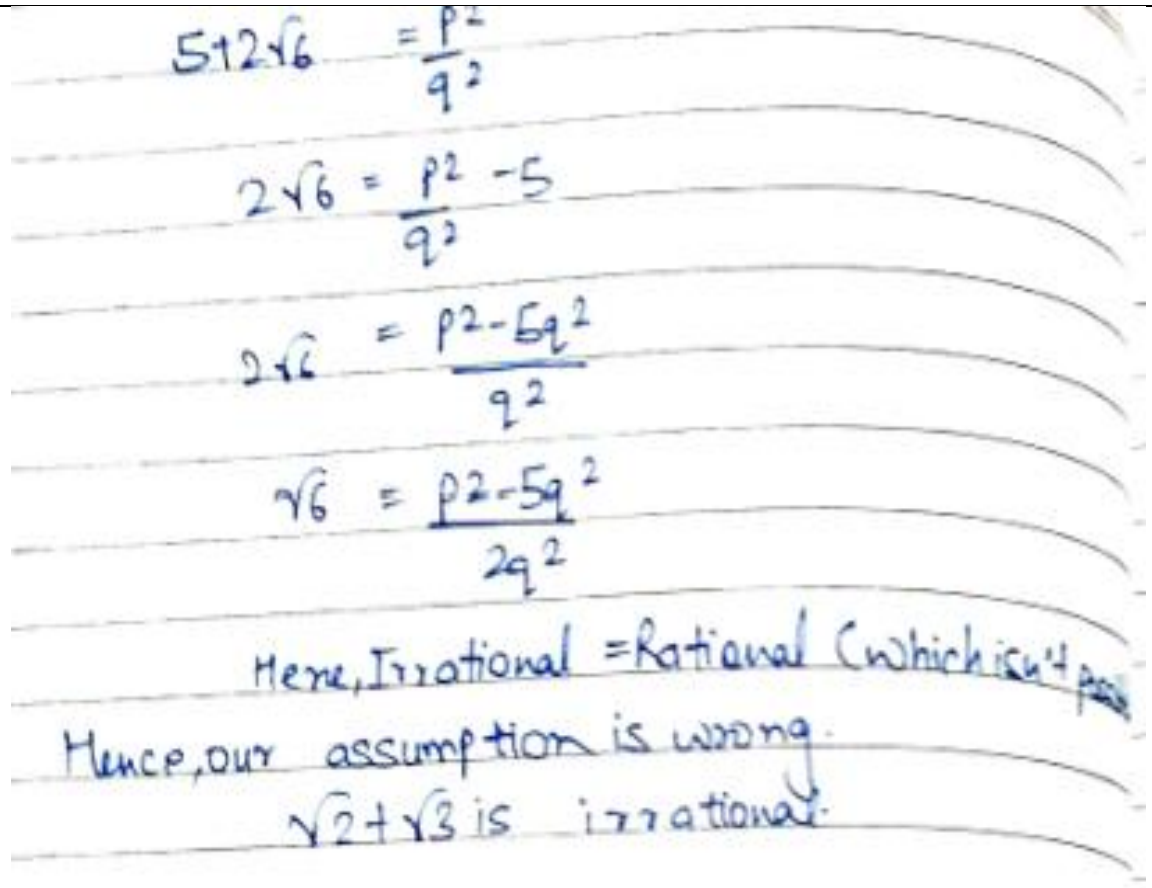
= 160.

(ii) Rows required for girls = $\frac{480}{160}$ = 3 rows

Rows required for boys = $\frac{640}{160}$ = 4 rows

Total number of rows = 4 + 3 = 7 rows

(iii)A	LCM (480, 640) ⇒ LCM = $2^7 \times 5 \times 3$ = 1920 LCMx HCF = 480X 640
(iii)B	We need to find LCM of 45 and 60 = 180(using prime factorisation)
18	Let us assume $\sqrt{5}$ is rational. ($\sqrt{5} = \frac{p}{q}$, $q \neq 0$ P&q are co-prime) $\sqrt{5} = \frac{p}{q}$ $\sqrt{5}q = p$ Squaring on both sides: $5q^2 = p^2 \rightarrow I$ $q^2 = \frac{p^2}{5} \rightarrow II$ As 5 divides p^2, 5 divides p also. $\Rightarrow \frac{p}{5} = k$ $p = 5k$ → Put in (I) $5q^2 = (5k)^2$ $5q^2 = 25k^2$ $q^2 = 5k^2$ $\frac{q^2}{k^2} = 5$ $\Rightarrow \frac{q^2}{5} = k^2$ As 5 divides q^2, 5 divides q also. As 5 divides both p and q, this contradicts our assumption that P&q are co-prime. Hence, our assumption is wrong. $\sqrt{5}$ is irrational.
19	Let us assume $\sqrt{2}+\sqrt{3}$ is rational ($\Rightarrow \sqrt{2}+\sqrt{3} = \frac{p}{q}$, $q \neq 0$ P&q are co-prim Squaring both sides $(\sqrt{2}+\sqrt{3})^2 \Rightarrow 2+3+2\sqrt{6} \Rightarrow 5+2\sqrt{6}$



End