UDAAN

2025

Real Numbers

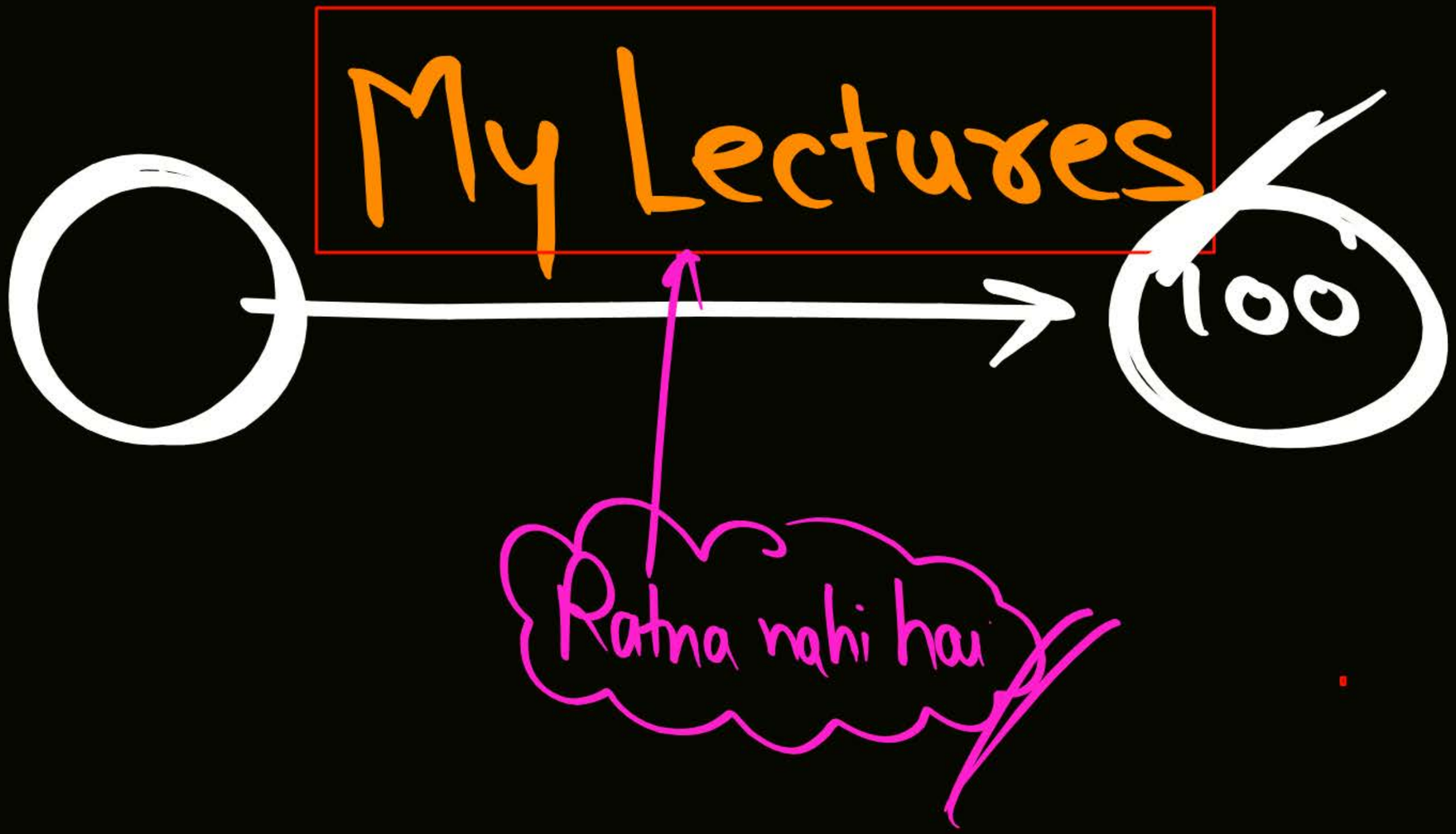
Mathematics | Lecture - 03

By – Ritik Sir

Topics

to be covered

1. word problems on HCF and LCM
2. Rational and irrational numbers


My Lectures
100
Ratna nahi hai


WORK HARD
DREAM BIG
NEVER GIVE UP !!

Topic : HCF and LCM

#Q. Find HCF of the numbers given below:

k, 2k, 3k, 4k and 5k where k is a positive number.

$k = k \times 2^0 \times 3^0 \times 5^0 \times 4^0$ $\quad 4k = 4 \times k \times 5^0 \times 2^0 \times 3^0$

$2k = 2 \times k \times 3^0 \times 5^0 \times 4^0$

$3k = 3 \times k \times 2^0 \times 5^0 \times 4^0$

$5k = 5 \times k \times 2^0 \times 3^0 \times 4^0$

$HCF = 2^0 \times 3^0 \times 5^0 \times 4^1$

$= k$

Topic : General Question

#Q. If n is a natural number, then $2(5^n + 6^n)$ always ends with

[CBSE Board Term – I, 2021]

A 1

B 4

C 3

D 2

$n = \{1, 2, 3, 4, \ldots, \infty\}$

$n=1 \quad 2(5^1+6^1) = 22$

$n=2 \quad 2(5^2+6^2) = 2(25+36)$

$= 122$

$5^n = \ldots 5$

$6^n = \ldots 6$

$2(5+6) = 2 \times \ldots 1 = \ldots 2$

Prime and Co-prime Numbers

only 2 factors

2 numbers

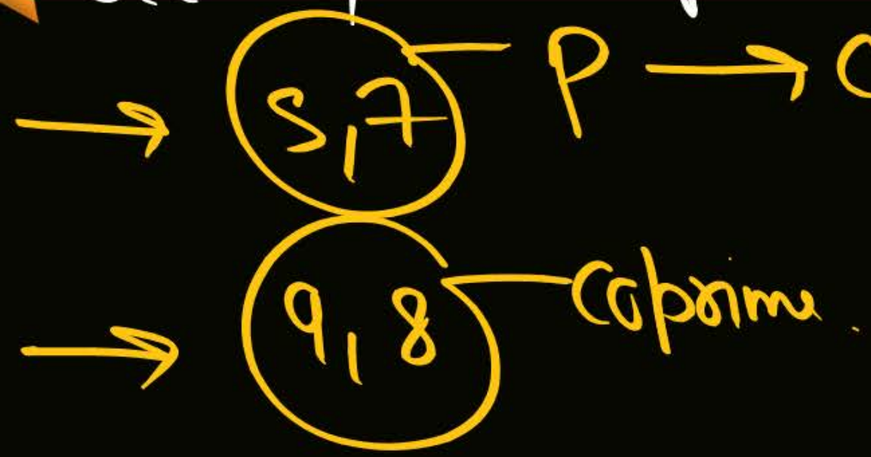
Coprime

HCF = 1

1 kuy alava koi or common factor nahi hoga.

2 Prime nos hamesha Coprime hote hain.

Lekin, Coprime nos zaruri nahi hai ki prime ho.



Topic : Coprime Numbers

#Q. Which of the following is a pair of co-primes ?

A (14, 35)

B (18, 25)

C (31, 93)

D (32, 62)

Topic : HCF and LCM

#Q. If a and b are two coprime numbers, then a^3 and b^3 are

[CBSE Board Term – I, 2021]

A Coprime

B Not coprime

C Even

D Odd

Topic : HCF and LCM

#Q. The product of two numbers is 1600 and their HCF is 5. The LCM of the numbers is:

A 8000

B 1600

C 320

D 1605

$$HCF(a,b) \times LCM(a,b) = a \times b$$

$$5 \times LCM = 1600$$

$$LCM = \frac{1600}{5}$$

$$= 320$$

8

→ Factors = 1, 2, 4, 8
(Chota)

→ Multiples = 8, 16, 24, 32, 40 - - - - - - - -
(Bada)

Points to be noted!!

- ✓ Read the questions carefully, very carefully.
- ✓ Abh ye judge kro ki aapka answer given data sey bada ya chota aayega.
- ✓ HCF of students students hi aayega.

chota = Factor(F) → HCF

Bada = Multiple(M) → LCM

Topic : HCF and LCM

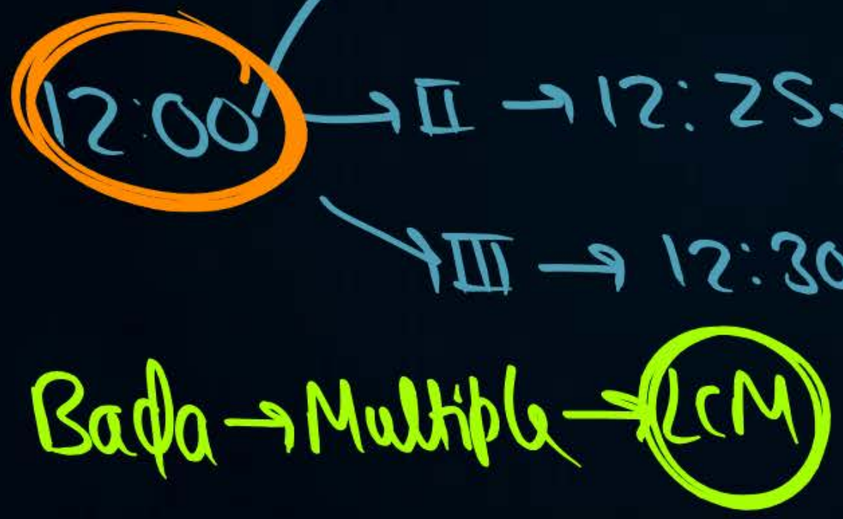
#Q. Three alarm clocks ring their alarms at regular intervals of 20 min, 25 min and 30 min respectively. If they first beep together at 12 noon, at what time will they beep again for the first time? [CBSE Board Term – I, 2021]

A 4 : 00 pm

B 4 : 30 pm

C 5 : 00 pm

D 5 : 30 pm



Bada → Multiple → LCM

LCM = 300 minutes

2	20, 25, 30
5	10, 25, 15
2	2, 5, 3
5	1, 5, 3
3	1, 1, 3
	1, 1, 1

$1 hr = 60 min$

$\frac{1}{60} hr = 1 min$

$5 \times \frac{300}{60} hr = 300 min$

$5 hr = 300 min$

12:00, 5:00 pm

Topic : HCF and LCM

#Q. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they all change simultaneously at 8 a.m. then at what time will they again change simultaneously.

Bada → M → LCM

Topic : HCF and LCM

#imp

12:00

#Q. Four bells ring at an interval of 4, 7, 12 and 14 seconds respectively. If the four bells begin to ring at 12 O'clock when will this next ring together and how often will they do so in the next 14 minutes.

Bada-M → LCM

2	4, 7, 12, 14
2	2, 7, 6, 7
3	1, 7, 3, 7
7	1, 7, 1, 7
	1, 1, 1, 1

LCM = 84 seconds.

$= \frac{840}{84}$

= 10 times

1 min = 60 seconds.

14 min = 840 sec.

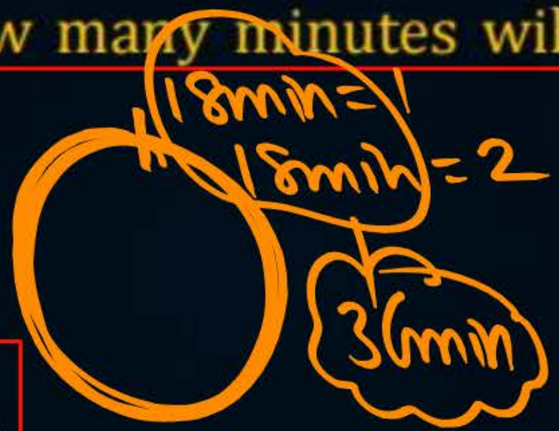
Patience

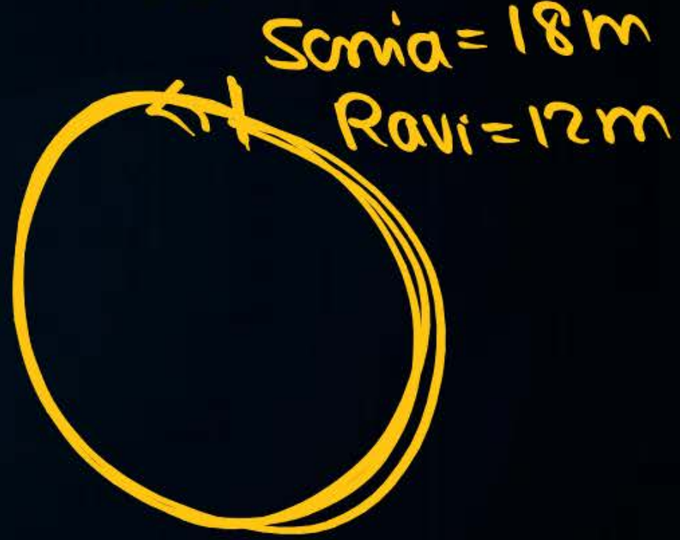
Topic : HCF and LCM

#Q. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point?

Bada → M → LCM

LCM(18,12) = 36 minutes





Topic : HCF and LCM

#imp

#Q. In a seminar, the number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively. Find the minimum number of rooms required if in each room the same number of participants are to be seated and all of them being in the same subject.

H = 60 P'

E = 84 P'

M = 108 P'

Chota → Factor → HCF

2	60
2	30
3	15
5	5
	1

2	84
2	42
7	21
3	3
	1

2	108
2	54
3	27
3	9
3	3
	1

$60 = 2^2 \times 3^1 \times 5^1 \times 7^0$

$84 = 2^2 \times 3^1 \times 7^1 \times 5^0$

$108 = 2^2 \times 3^3 \times 5^0 \times 7^0$

$HCF = 2^2 \times 3^1 \times 5^0 \times 7^0$

$= 12P$

H = 60p → $\frac{60}{12}$ = 5 Rooms

E = 84p → $\frac{84}{12}$ = 7 Rooms

M = 108p → $\frac{108}{12}$ = 9 Rooms

Total Rooms = 21 Rooms

Topic : HCF and LCM

H.W

#Q. Three sets of Science, History and Drawing books have to be stacked in such a way that all the books are stored topic wise and the height of each stack is the same. The number of Science books is 192, the number of History books is 480 and the number of Drawing books is 672. Assuming that the books are of the same thickness, determine the number of stacks of Science, History and Drawing books.

Topic : HCF and LCM

#Q. A fruit vendor has 990 apples and 945 oranges. He packs them into baskets. Each basket contains only one of the two fruits but in equal number. Find the number of fruits to be put in each basket in order to have minimum number of baskets.

[Board Term – I, 2016]

Chota → HCF → 45 Fruits

990 A → $\frac{990}{45} = 22$ baskets

Topic : HCF and LCM

NYOTS

#Q. The length, breadth and height of a room are 8 m 50 cm, 6 m 25 cm and 4 m 75 cm respectively. Find the length of the longest rod that can measure the dimension of the room exactly.

[Board Term – I, 2026]

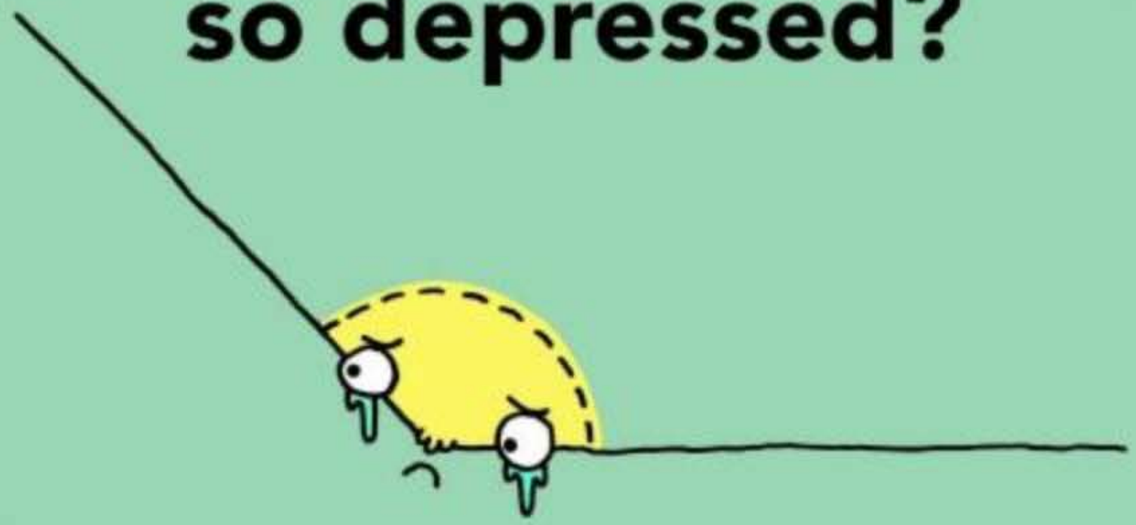
$l = 8m\,50cm = 850cm$

$b = 6m\,25cm = 625cm$

$h = 4m\,75cm = 475cm$

chota → HCF

Why are obtuse angles so depressed?



Because they're never *right*.

Topic : HCF and LCM

#Q. Three farmers have 490 kg, 588 kg and 882 kg of wheat respectively. Find the maximum capacity of a bag so that the wheat can be packed in exact number of bags.

H.W

(A) 98 kg

(B) 290 kg

(C) 200 kg

(D) 350 kg

Topic : HCF and LCM

#Q. There are 312, 260 and 156 students in class X, XI and XII respectively. Buses are to he hired to take these students to a picnic. Find the maximum numbers of students who can sit in a bus if each bus takes equal number of students.

(A) 52

(B) 56

(C) 48

(D) 63

Topic : HCF and LCM

Last Question

SVO

#Q. a and b are two positive integers such that the least prime factor of a is 3 and the least prime factor of b is 5. Then, the least prime factor of (a + b) is

A 2

B 3

C 5

D 8

a → least prime factor = 3

b → " = 5

a = odd
b = odd

a + b → least prime factor =

odd + odd = even

2, 3, 5, 7, 11 . . . . . .

THANK YOU