Topics

to be covered

① **Questions on HCF and LCM**

Q HCF/LCM → 404, 96 ?

$$\begin{array}{c|c} 2 & 404 \\ \hline 2 & 202 \\ 101 & 101 \\ & 1 \end{array}$$

$$\begin{array}{c|c} 2 & 96 \\ \hline 2 & 48 \\ 2 & 24 \\ 2 & 12 \\ 2 & 6 \\ 3 & 3 \\ & 1 \end{array}$$

$404 = 2^2 \times 101^1 \times 3^0$

$96 = 2^5 \times 3^1 \times 101^0$

$HCF = 2^2 \times 3^0 \times 101^0 = 4 \times 1 \times 1 = \boxed{4}$

$LCM = 2^5 \times 3^1 \times 101^1 = \boxed{9696}$

☆ HCF is always a Factor of LCM

For (two) no's.

a, b — Positive integers $\{1, 2, 3, 4, \ldots \infty\}$

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

#Q. If LCM $(32, a) = 64$ and HCF $(32, a) = 4$, then a is equal to

(A) 16

(B) 8

(C) 20

(D) 10

$$\text{HCF} \times \text{LCM} = \text{product of two nos.}$$

$$4 \times 64 = 32 \times a$$

$$\frac{4 \times 64}{32} = a$$

$$8 = a$$

#Q. The exponent of 5 in the prime factorization of 3750 is

[CBSE Board Term – I, 2021]

A) 3

B) 4

C) 5

D) 6

$$
\begin{array}{c|c}
5 & 3750 \\
\hline
5 & 750 \\
5 & 150 \\
5 & 30 \\
2 & 6 \\
3 & 3 \\
 & 1
\end{array}
$$

$$3750 = 5^4 \times 2^1 \times 3^1$$

#Q. If $x = 2^5 \times 7$, $y = 2^2 \times 3^2 \times 5$ and $z = 3^n \times 5^2$ and $\text{LCM}(x, y, z) = 2^5 \times 3^4 \times 7, \times S^2$ then $n =$

(A) 2

(B) 3

(C) 4

(D) 5

$$x = 2^5 \times 7^1 \times 3^0 \times 5^0$$
$$y = 2^2 \times 3^2 \times 5^1 \times 7^0$$
$$z = 3^n \times 5^2 \times 2^0 \times 7^0$$

$$LCM = 2^5 \times 3^4 \times 7^1 \times 5^2$$

$$LCM = 2^5 \times 3^4 \times 7^1$$

#Q. If n is an even prime number, then $2(7^n + 8^n)$ ends with

(A) 1

(B) 4

(C) 2

(D) 6

$n =$ even prime no.

$n = 2$

$= 2(7^2 + 8^2)$

$= 2(49 + 64)$

$= 2 \times 113$

$= 226$

even no. $= 2, 4, 6, 8$ ....

odd no. $= 1, 3, 5, 7$ ....

even

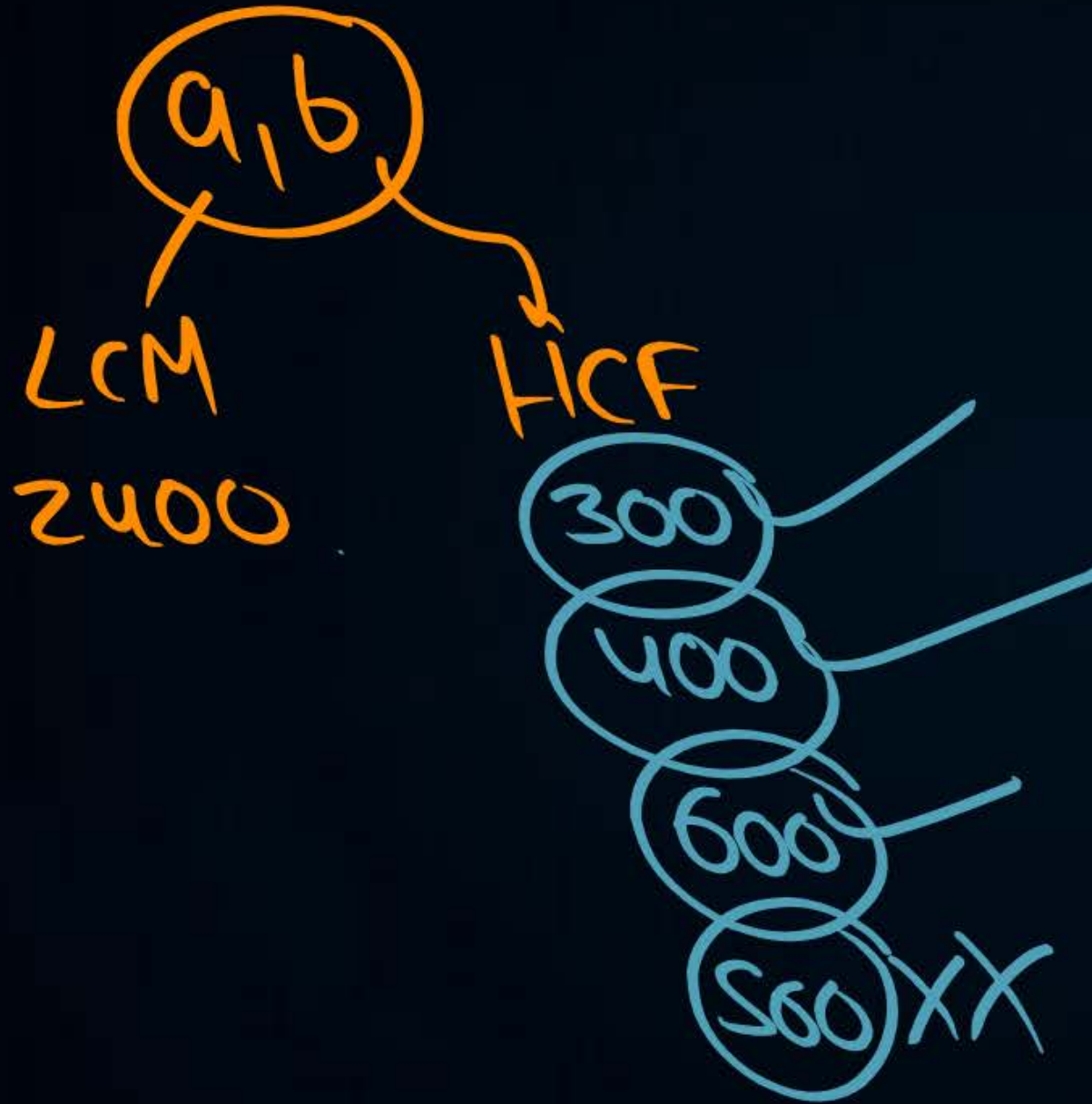Prime no. $= 2, 3, 5, 7, 11,$
$13, 17$ ....

only two factor

#Q. The LCM of two numbers is 2400. Which of the following can not be their HCF.
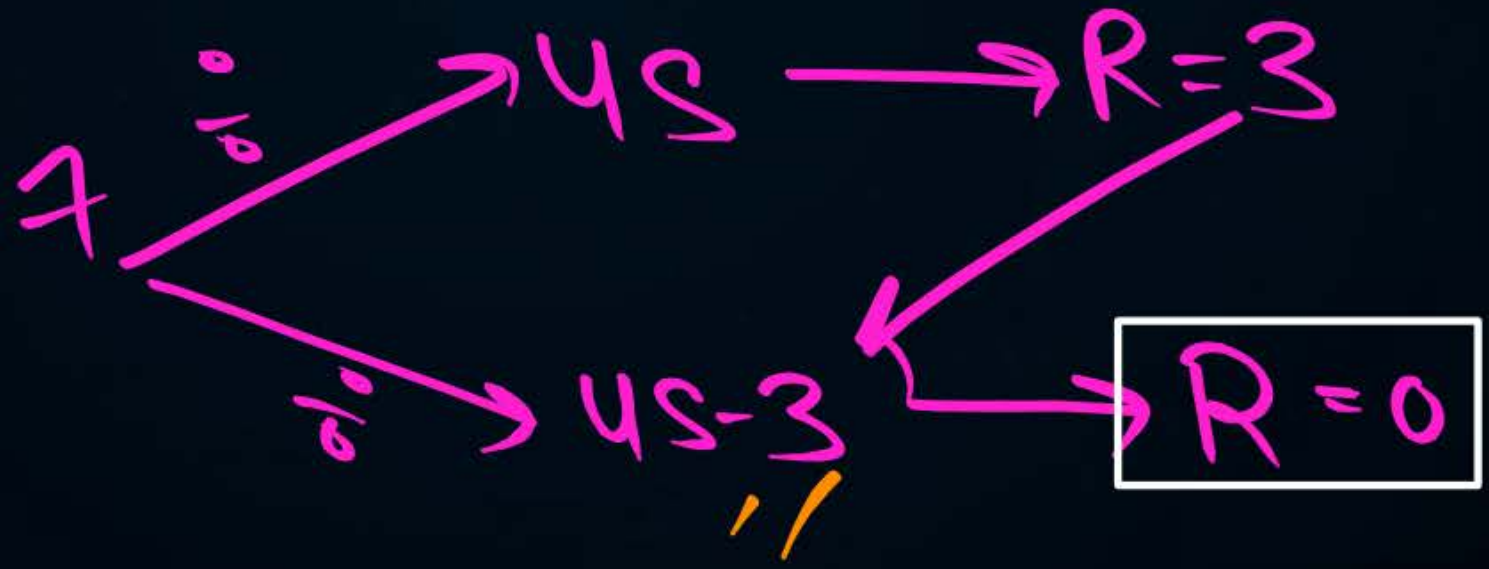
(A) 300

(B) 400

(C) 500

(D) 600

a, b

LCM
2400

HCF
300
400
600
500 XX

Q. The largest no. that divides 8 and 24 is?

$$HCF = 8$$

Quotient

$$
\begin{array}{r}
6 \\
7\overline{)45} \\
42 \\
\hline 3
\end{array}
$$

7 — divisor
45 — dividend
3 — Remainder

$$7 \xrightarrow{\div} 45 \longrightarrow R = 3$$

$$7 \xrightarrow{\div} 45-3 \longrightarrow R = 0$$

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

[NCERT Exemplar]

(A) 13

(B) 65

(C) 875

(D) 1750

$\div \to 70 \longrightarrow R = 5$

$\div \to 125 \longrightarrow R = 8$

$65 \atop 117$ $\Big] \to R = 0$

$$\begin{array}{c|c} 5 & 65 \\ \hline 13 & 13 \\ \hline & 1 \end{array} \qquad \begin{array}{c|c} 13 & 117 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$
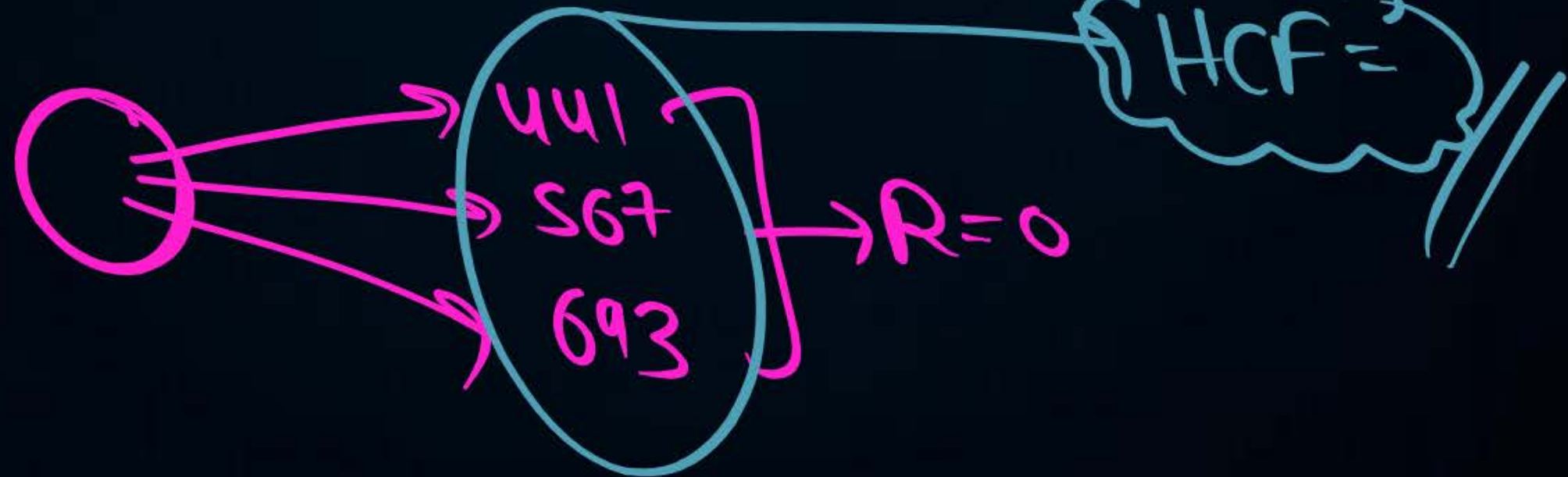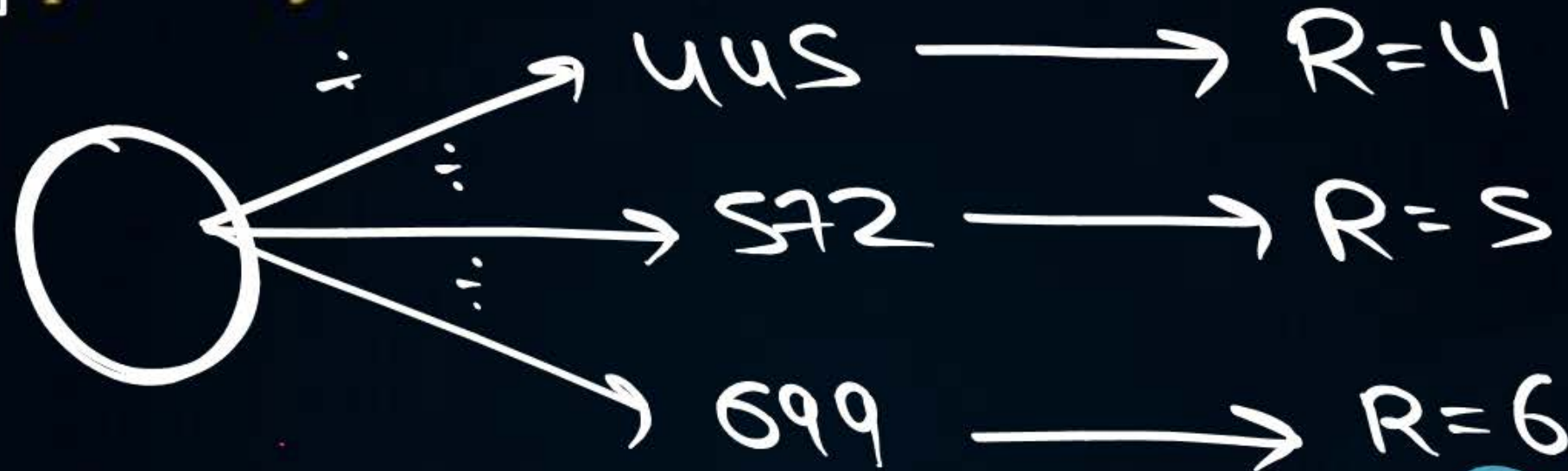
$65 = 5^1 \times 13^1 \times 3^0$

$117 = 13^1 \times 3^2 \times 5^0$

$HCF = 13^1 \times 5^0 \times 3^0 = \boxed{13}$

#Q. Find the greatest number that divide 445, 572 and 699 leaving remainder 4, 5 and 6 respectively.

(A) 63

(B) 65

(C) 67

(D) 69

$$445 \longrightarrow R=4$$
$$572 \longrightarrow R=5$$
$$699 \longrightarrow R=6$$

$$441$$
$$567$$
$$693$$
$$\longrightarrow R=0$$

$$HCF=$$

#Q. The greatest number which when divides 1251, 9377 and 15628 leaves remainder 1, 2 and 3 respectively is:

[CBSE Board Term – I, 2021]

(H.W)

A) 575

B) 450

C) 750

D) 625

#Q. The least number that is divisible by all the number from 1 to 10 (both inclusive) is

[NCERT Exemplar]

A) 10

B) 100

C) 504

D) 2520

$1, 2, 3, 4 \ldots \ldots 10$

$$
\begin{array}{c|l}
2 & 1,2,3,4,5,6,7,8,9,10 \\
\hline
2 & 1,1,3,2,5,3,7,4,9,5 \\
 & 1 \; 5,3,7,2,9,5
\end{array}
$$

LCM= Sabse chota no.
Jo in sabh sey divide hojaye.

HCF: Sabse bada no.,
Jo in sabh no. sko divide karde.

#Q. Explain why 1323334356371 5 is a composite number? [CBSE 2016]

more than
2 Factors

1   13233435637 15   5
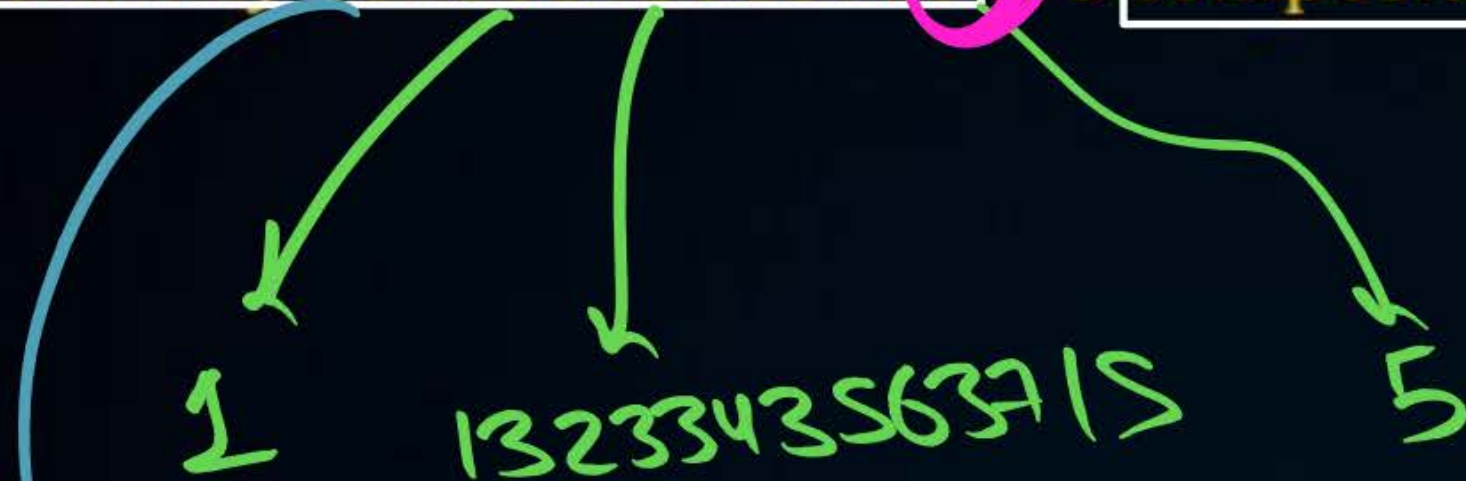
The given no. has atleast 3 factors....

#Q. Explain why $7 \times 11 \times 13 + 13$ and ~~wwwwwwwwwwwww~~ are composite numbers.

$= 7 \times 11 \times 13 + 13$

$= 13[77 + 1]$

$= 13 \times 78$

$1 \quad 13 \qquad 78$

$= 2^m \times 3^n \times 7^x$

$A \rightarrow comp.$

$B \rightarrow prime$

$C \rightarrow PX, CX$

#Q. If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$ where x, y are prime numbers, then the result obtained by dividing the product of the positive integers by the LCM (a, b) is

(A) xy

(B) xy^2

(C) x^3y^3

(D) x^2y^2

$$a = x^3 \times y^2$$
$$b = x^1 \times y^3$$

$$LCM(a,b) = x^3 \times y^3$$

$$\frac{a \times b}{LCM(a,b)} = ?$$

$$= \frac{x^3y^2 \times xy^3}{x^3y^3}$$

$$= y^2x$$

#Q. Find HCF of the numbers given below:

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

H.W

DPP/ DHA

H.W

#Q. Two numbers are in the ratio 2 : 3 and their LCM is 180. What is the HCF of these numbers.

let the nos be $2x$ and $3x$.

$2x = 2^1 \times x^1 \times 3^0$

$3x = 3^1 \times x^1 \times 2^0$

$HCF = 2^0 \times 3^0 \times x^1$

$\boxed{HCF = x}$

$HCF = 30$ Ans

$HCF \times LCM = $ product of two no's.

$x \times 180 = 2x \times 3x$

$180 = \dfrac{2x \times 3x}{x}$

$180 = 6x$

$30 = x$

#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