KGS IAS

CSAT (MATHS)

By Dhrub Singh Sir

$12 = 2^2 \times 3^1$

$(2^1 + 2^2)(1 + 3^1)$

$-(1 + 3) + 2 + 6$

$+4 + 12$

$N = 2^a \times p^b \times q^c$

2, p, q — अभाज्य

(1) No. of even factor (सम गुणांक) $= a \times (b+1)(c+1)$

(2) No. of odd factors (विषम गुणांक) $= (b+1)(c+1)$

→ 30

$30 = 2^1 \times 3^1 \times 5^1$

(1) Even $= 1 \times (1+1) \times (1+1)$
$= 4$

(2) odd $= (1+1)(1+1)$
$= 4$

(3) Prime $= 3$

Prob: 200

$200 = 8 \times 25$

$= 2^3 \times 5^2$

(1) সংখ্যা $= 3 \times (2+1) = 9$

(2) বিঘাত $= 2+1 = 3$

(3) সমাত্য $= 2$

Prob: 72 এর

$= 72 \times 1$ এর

$= 8 \times 9 \times 4 \times 25$

$= 2^3 \times 3^2 \times 2^2 \times 5^2$

$= 2^5 \times 3^2 \times 5^2$

(1) লব $= 5 \times (2+1) \times (2+1)$
$= 45$

(2) হিছন $= (2+1) \times (2+1) = 9$

(3) ফলাফল $= 3$

Prob: 4356

$= 2^2 \times 3^2 \times 11^2$

(1) লব $= 2 \times (2+1) \times (2+1)$

$= 18$

(2) বিভাজক $= (2+1) \times (2+1)$

$= 9$

(3) বিজোড় $= 3$

Divisibility (विभाज्यता)

A) N (φ
R

$N = A\varphi + R$

$R = 0$

$N = A\varphi$

$A \mid N$

(Dividend) भाज्य

भागफल

7) 44 (6
42
2

भाजक (Divisor)

quotient

शेष
(Remainder)

$$
\begin{array}{r|l}
7 & 43 \\
\cline{2-2}
 & 42 \\
\cline{2-2}
 & 1 \\
\cline{2-2}
\end{array}
\quad 6
$$

7×43

$$
\begin{array}{r|l}
7 & 42 \\
\cline{2-2}
 & 42 \\
\cline{2-2}
 & 0 \\
\cline{2-2}
\end{array}
\quad 6
$$

$7 \mid 42$

① $a \mid b \quad a \mid c$

$\Rightarrow a \mid b+c,\ b-c,\ b \times c$

② $a \mid b,\ b \mid c$

$\Rightarrow a \mid c$

Ex: $2 \mid 10 \quad 2 \mid 8$

$\Rightarrow 2 \mid 10+8$

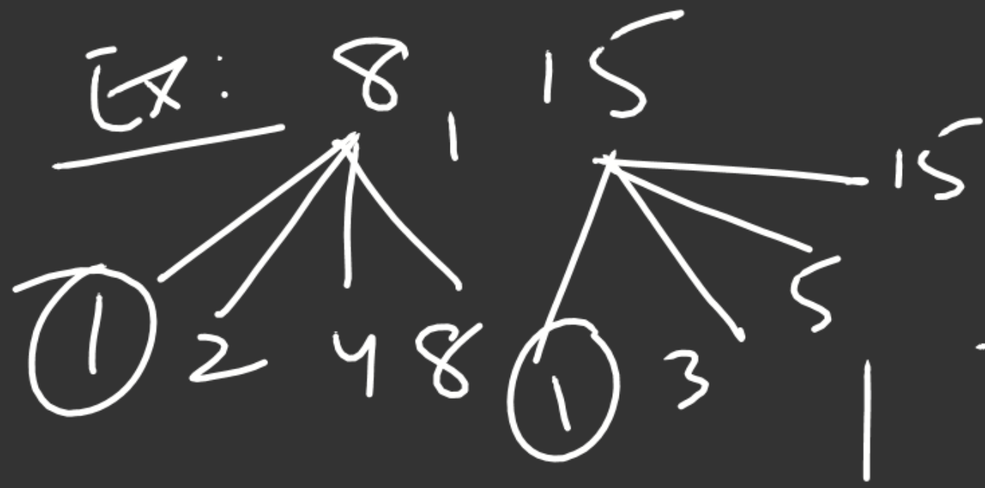
$2 \mid 10-8$

$2 \mid 10 \times 8$

Ex: $4 \mid 12 \quad 12 \mid 96$

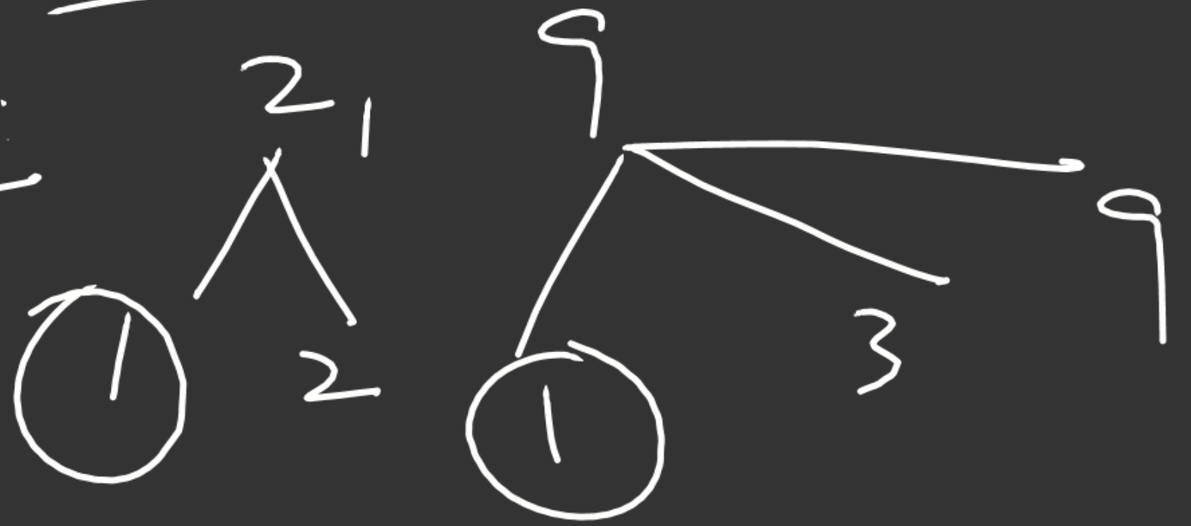
$\Rightarrow 4 \mid 96$

Ex: 8, 15

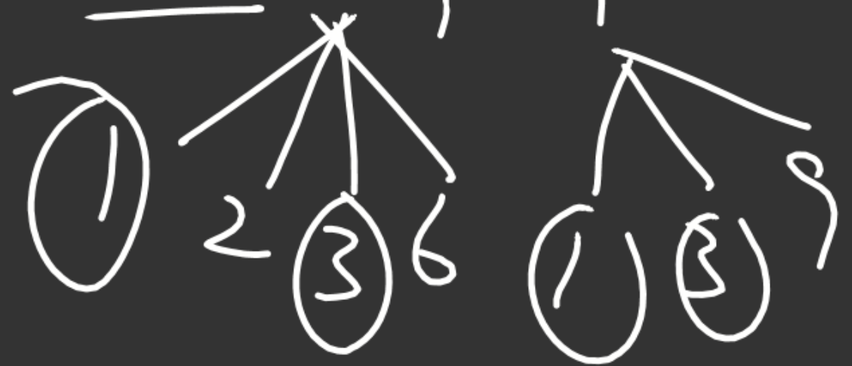


Coprime सहअभाज्य

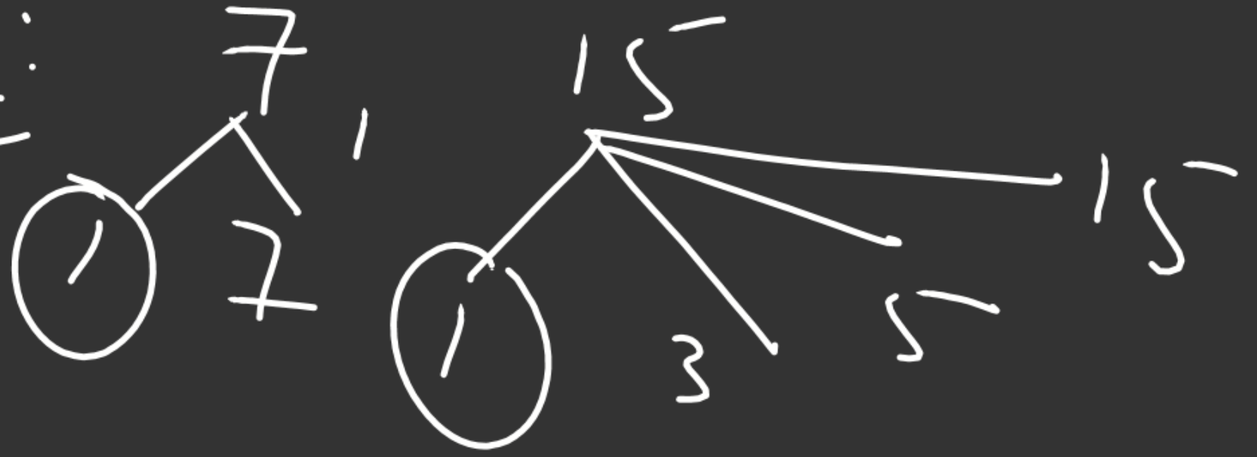
Ex:



Ex: 6, 9



Ex:



(3) $a|x$, $b|x$

$HCF(a, b) = 1$

a और b सहअभाज्य हैं।
(co-prime)

$\Rightarrow ab|x$

43212 0

4+3+2+1+2+0

= 12

9

By 2

a b c d e

(even)

0, 2, 4, 6, 8

By 3 a b c d e

a+b+c+d+e — 3 से

divisible

By 4 : a b c d e

↓

0 0

या

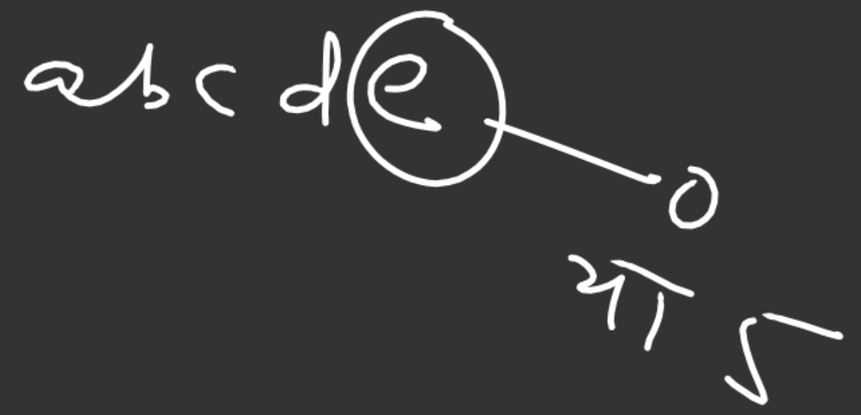
4 से कम का हो ।

By 6 = 2 × 3

2 से किसी

और 3 से भी

By 5



9+a — 3 से विभा

a=0 — 9 "

a=3 — 12 "

a=6 — 15 "

a=9 — 18 "

~~a=12~~

Prob 4a2120 6 से विभाज्य है. a के कितने संभावित मान होंगे?

(a) 3 (b) 4

(c) 6 (d) N.O.T.

9 8 2 3 4 5 6

By 8

a b c d e f 8

0 0 0

या

8 से भाग.

$\frac{627}{8}$

Prob: 1 + 36 (18)

+18

1 2 3 4 5 6 7 8 9 10 ... 27 (627) (45-अंक)

8 से आगे वाले 45 शेष = ?

(a) 5 (b) 4 (c) ~~3~~ (d) N.O.T.

111

110 + 1

55 के अंकों

लीलं.

Prob:

9 + 111

1 2 3 4 5 6 7 8 9 10 ... 646 (120 − 9 अंकों)

+55

8 से भाग देने पर

शेष = ?

(a) 3 (b) 4 (c) 6 (d) N.O.T.

$\frac{646}{8} \rightarrow 6$