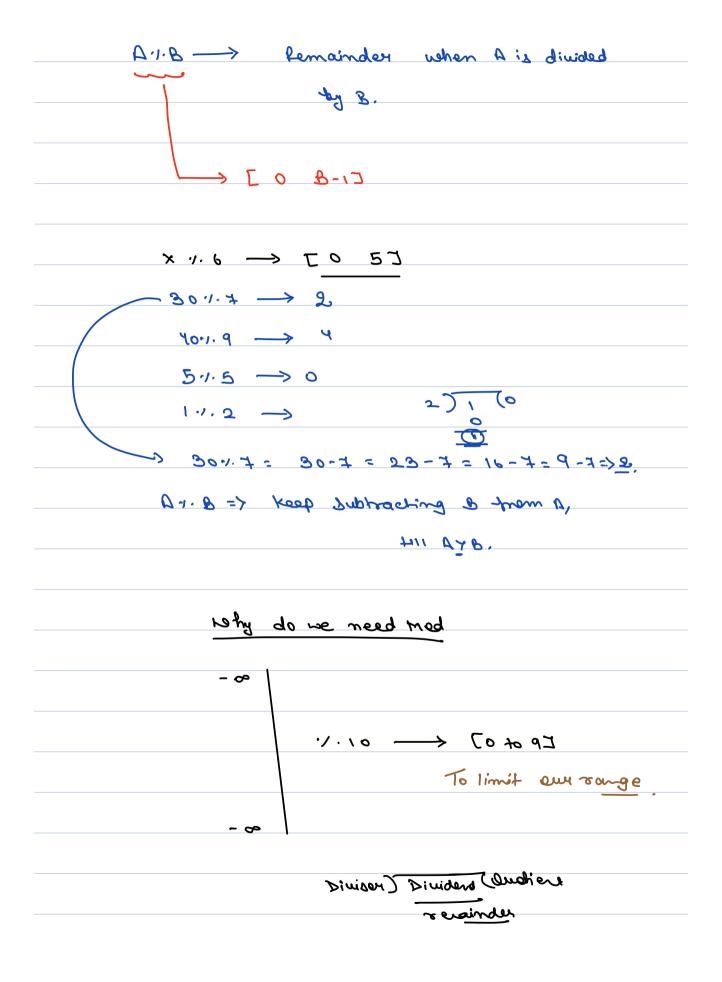
Today's Age	en <u>da:</u> -



## Remainder = Dividend - greatest multiple of divisor <= dividend

$$30 - 28 \Rightarrow 2$$

$$61 \cdot 1 \cdot 5 \Rightarrow 61 - 60 \Rightarrow 1$$

$$-7 \cdot 1 \cdot 2 \Rightarrow -7 - (-9) \Rightarrow 2$$

$$-80 \cdot 1 \Rightarrow -30 - (-35) \Rightarrow 5$$

$$-1 + 2 \Rightarrow -2 + 7$$

$$0 \cdot 1 \Rightarrow -2 + 7$$

Rules of Modulaer anithemetic

(0 
$$2m-1$$
)  $\frac{1}{m}$ 

(0  $2m-1$ )  $\frac{1}{m}$ 

(1  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(1  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(2  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(2  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(3  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(4  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(5  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(6  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(9  $\frac{1}{m}$ )  $\frac{1}{m}$ 

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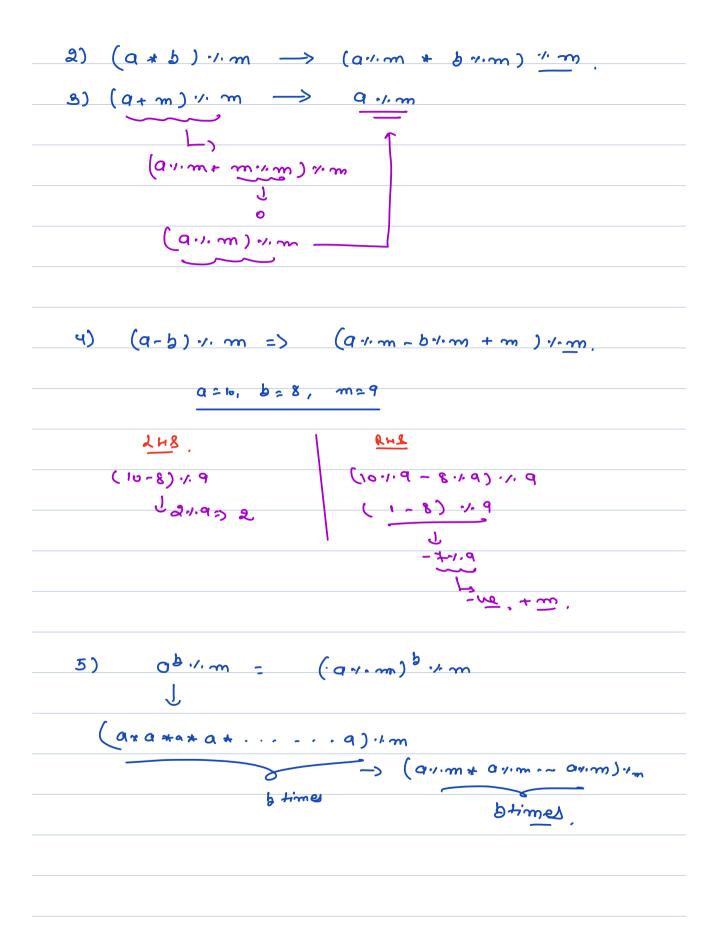
(5  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(6  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(7  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(8  $\frac{1}{m}$ )  $\frac{1}{m}$ 

(9  $\frac{1}{m}$ )  $\frac{1}{m}$ 



```
Ouig (87^{108}-1) \cdot 1 \cdot 12

(97^{108} \cdot 1 \cdot 12 - 1 \cdot 1 \cdot 12) \cdot 7 \cdot m

(37 \cdot 1 \cdot 12) \cdot 103 \cdot 1 \cdot 12 - 1 \cdot 12) \cdot 1 \cdot m

(10^{3} \cdot 1 \cdot 12 - 1 \cdot 12) \cdot 1 \cdot 12

(1 \cdot 1 \cdot 12) \cdot 1 \cdot 12

(1 \cdot 1 \cdot 12) \cdot 1 \cdot 12

(0 \cdot 12) \cdot 1 \cdot 12

(0 \cdot 12) \cdot 1 \cdot 12
```

Ques	hiven Noway elements.
	tind pains (ins) sit,
	( aux[i]+ aux[j]) /·m=0, i!=]

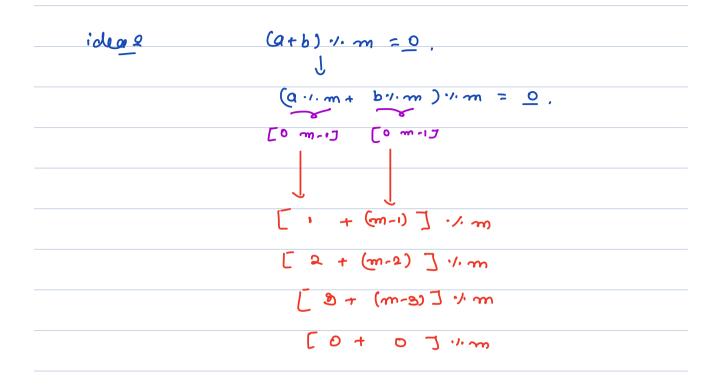
M= 6.

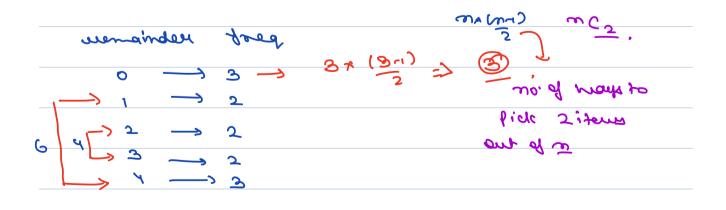
Brue force Approach:

Two for loads.

Checking all pains.

T.C > 0 cm2)





COUTIZZ: ~ {6,7,5,11,19,20,9,15,14,12,23
[ r = 6
01234367891011
aux [12] 16: 2015512332105]
sen <u>Joed</u> 3"(5-1)
$\frac{}{} \qquad 0 \qquad \frac{}{} \qquad 3$
D 2 -> 2 21(2-1) 1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
5 3
given autos & M,
toshnap <in>, in1&gt; hm;</in>
-> Insert all elevels in h Map.
-> Insert all elemb in h Map.  La anuc; 7.1.m
C=0;
Pairs of $0$ $ x = hm roz',  11 fneg of 0 $ $ C = C + x * (x-1) $
C = C + x + (x - 1)
2

id (m", 2== 0) &						
1						
$x = \mu m \left( \frac{\pi}{M} \right)$						
C- C+	C= C+ x x (x-1)					
	<u> </u>					
	W= 8					
for (i=x'; ixm+i	); (44) &					
C= C+ 1m Ti3 * 1m [m-13;						
	4m[2] * 4m[3]					
3	·					
T. C → 0 Cm	) † M )					
J· C ->						
Cose -1	Cone. 2					
	100					
N=150	M = Ivo					
M=10,	3. C = 0 Cm)					
8. C3 0 € Lu).	<u> </u>					
گ· ر ج	0 (mim (N, M))					
	— ,					
	8:94Am - 8:44am					
	<del></del>					

$$gcd(a,b) = x$$
,

Ly x is the greatest mo',

 $0.1.x = 0$ 
 $b.1.x = 0$ 

$$gcd(0, x) = (x)$$
  $gcd(0, 5) = 5$ .

A, 
$$0 > 0$$
,  $(0 > -1)$ 

ged  $(0, 1) = 9$  and  $(0, 1) = 9$ 

✓ 3cd (q,b) = d	gcd(a-b,b)=m
Q1.d=0, b1.d=0,	(a-b)·1·m=0, & b·1·m=0.
a=d+k1, b=d+k2	0-p= k3m, & p=k4m
=> (a-b)= d(k1-k2)	**/
~ (a-b) ~/· d =0',	a = w (18+124)
	a.1.m20 ~
g cd (a, b) = d, & m is also a factor of a & b.	gcd(a-b,b)=m Edia
d>= m	foctor of (a-p) or p.
	m> 2 d

m = 0

```
Property:
     g cd (a,b) = g cd (a.b,b)
9cd (24,16) = 9cd (8,16) = 9cd (8,16) = 9cd (8,16)
      9 cd (9, b) = 9 cd (b, a.1.b) =
 9 cd (24,16) = 9 cd (16,8) = 9 cd (8,0)
  3 cd (14, 24) = 9 cd (24, 14) = 9 cd (14, 10)
                         = 9 cd (10,4)
                         - 900 (4,2)
                         = 9cd (2,0) => 2 only
      9d (191,161);
     int gcd (a,b) &
             id(b==0) Querum a3
            vieluen od (b, an.b);
         3
             T. C→ 0 (10g (max (0, b)))
```

Ques) biven aux , delete one element, s.t., ged of semaning elevels obecome ar[]= { 24 16 18 30 15} 9 0 24 16 18 30 15} ar[]= { 24 ]x 18 30 15} 0 1 2 3 4 ar[]={24 16 1× 30 15} ar[]= { 24 16 18 3/4 15} ar[]= { 24 16 18 30 13/

mx (mx leg mor courtis)

delete an auti? elemet, coloulate g cd of remaining dents & get ouevall mas

ideal: 0 1 2 3 4

Pfaced -> 24 8 2 2 1

1faced -> 1 1 3 15 15

int delete One (int[] aur, int n) {

Pfgcd [n];

Sfgcd (n]:

aus: There(sfgcd[], pfgcd (n-s]);

too (i=1; i< n-1; i+1) {

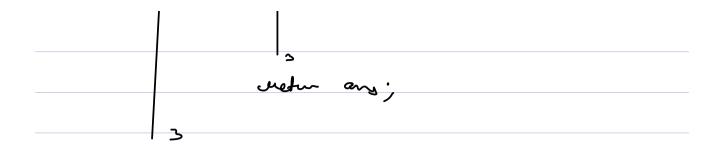
Ideleting ith elever.

left = pfgcd [i-1];

right = sfgcd [i+1];

uel: gcd (left, right);

au = Mar (aus, vel);



## T.C= 0 (n/09mos (aur [i]))

11 a>b		7 0 C2
و	cd (a, b) = 9cd (c	(··· b · b ·)
Case - 1	Case - <u>a</u>	Case-3
y < a 2 2	P = 0 3	9 xd
21.b < b < 9	04.9 < 9 = 0	→ 2b>a
0 10 10 10 10	020b-1 2	→ 2b-a>0
	a1. b < a	// (-) bath mides
9-1-2	2	9-25 40
		adding a on both
		20-25 < 0
		$(a-p) \prec \vec{a}$
Q ./. b	a-2b	0 4- P < 0
	de~D	q

-30 1/3 = (2) (Jana follows the rule of
high of
28 Lane of
28 Lane of finished)
2 man of dividual)
-30·1·4·2 -30~ (-3s) = <u>s</u>
= 109, Prime 200,
~ 109, Prime no'.
1- 0103
<u>(37·/·2)</u> = 1 102
(37·1·2) <sup>103</sup> ~ 103