Nested Loops:

=> loop inside a loop.... :)

★ Same Thing:
- GCD : Greatest Common Divisor
- HCF : Highest Common factor

=> What is G,C,D of (3,5).

=> Co-primes:
- 3 : 1 & 3
- 5 : 1 & 5

=> in case of co-primes GCD => 1

=> GCD (6,8)

=> 6 : 1, 2, 3, 6
8 : 1, 2, 4, 8

gcd = 2

gcd (5, 10) : 5

5 : [1, 5]
10 : [1, 2, 5, 10]

i) find factor : A, B

=> A % i == 0
↳ i is factor of A

=> B % i == 0
↳ i is factor of B

=> A, B
min (A, B) => A

=> We have to check until A

=> 16, 24

16 : 1, 2, 4, 8, 16
24 : 1, 2, 4, 6, 8, 12, 24, 3

↗ expected range for gcd

min = 16 [1, 2, ... 16]

∴ max possible value for GCD is 16.

⇒ if 16 % 16 == 0 ✓ and 24 % 16 == 0 ✗

⇒ 16 % 15 ⇒ 24 % 15
⇒ 16 % 14 and 24 % 12
⋮ ⋮
16 % 8 and 24 % 8 ✓✓
↳ i ↳ i
print(i)
break

```
A = 16
B = 24
minm = (A, B)

for i in range(minm, 0, -1):        # start is included, end excluded ⇒ (16, 0, -1)
    if A % i == 0 and B % i == 0:
        print(i)
        break
```

★ LCM: Lowest Common Multiple:

lcm(2, 4) :

2 : 2, 4, 6, 8
4 : 4, 8, 12

*) lcm (6,8)

6 : 6, 12, 18, 24, 30, 36
8 : 8, 16, 24, 32, 40

lcm (4,5) :

4 : 4, 8, 12, 16, 20
5 : 5, 10, 15, 20

```
for i in range (2):
    for j in range (2):
        print ('*', end = '')
    print()
```

i	j
0	0
	1
1	0
	1

o/p :

» A = 16, B = 24

» lcm x gcd = A x B

» lcm = $\frac{A \times B}{lcm \times gcd}$