^nC_r ⟶ combination.

r elements from n options.

$$^nC_r = \frac{n!}{(n-r)!\,r!}$$

$$^3C_2 = \frac{3!}{1! \times 2!} = 3.$$

$$nCr = \frac{n!}{(n-r)!\, r!}$$

% $10^9 + 7$.

$10^9 + 7$ = 1 000 000 007

x , y

x = 8

y = 17

25 % 8

= 1

answer should be < 8

n = 45 % 8

0 < 8

3

127

% 5

36 % 5

=

=

0 < 5

1 ✓

0 1 2 3 4 ✓

73 % 4

0 1 2 3 5

18

4) 73 [

4

33

32

1

72

2147483647

1 2 3 4 5 6 7 8 9 10

$n = 100$

$r = 2$

$n C_r$

$$\frac{100!}{98!\ 2!} = \text{res}$$

res ↑

res { int / long

1000!

} int long.

% $10^9 + 7$.

res. % const.

[0 ——— const-1]

$(3 + 5) \% 7$

$(3 \% + 5) \% 7 = 1$

$${}^{n}C_{r} = \frac{n!}{(n-r)!\, r!}$$

$\Rightarrow$ factorial function.

$${}^{n}P_{r} = \frac{n!}{(n-r)!}$$

$${}^{2}C_{1} = \frac{2!}{1!\,1!} = \frac{n!}{r!}$$

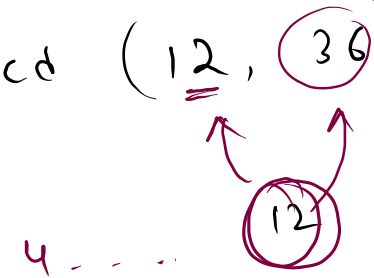
GCD :- Greatest common divisor

or

HCF

Highest common factor

gcd (12, 36) =



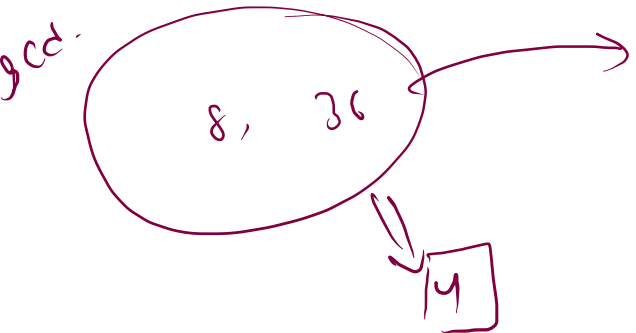
4 ....

12 24 36 48 ....

36 72 ....

---

gcd / HCF.



gcd.

ans = ~~1 2 3 4 6~~

12, 36

12 % 13 = 0

36 % 13 = 0

(12)

actual.

x < y

any no. (k) > min(x, y)

cannot be gcd.

highest common factor.

min(12, 36) = 12

gcd.

ans = 12

12 % 6 == 0

36 % 6 == 0

} break.

ans = 1

eg. (7, 42)

min(7),

ans = 7

42 % 7 =

7 % 7 =

min ... >= 0