$1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \times 6^6 \times \cdots\cdots\cdots \times 20^{20}$

$5^5, 10^{10}, 15^{15}, 20^{20}$

$5 + 10 + 15 + 20 = 50$

No. of zero
$= 50$

② $1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \times \ldots \times 25^{25} \times 26^{26} \times 27^{27}$

$5^5 \quad 10^{10} \quad 15^{15} \quad 20^{20}$

$25^{25} \rightarrow (5^2)^{25} \rightarrow 5^{50}$

$5 + 10 + 15 + 20 + \boxed{25 + 25}$

$= 100$ (No. of zero)

25, 50, 75, 100

③ $1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \times 6^6 \times 7^7 \times \cdots\cdots \times 45^{45} \times \cdots \times 48^{48}$

$5^5 \quad 10^{10} \quad 15^{15} \quad 20^{20} \quad 25^{25} \quad 30^{30} \quad 35^{35} \quad 40^{40} \quad 45^{45}$

Extra

$[5+10+15+20+25+30+35+40+45]+25$

$5[1+2+3+\cdots\cdots+9]+25$

$\frac{n(n+1)}{2}$

$5 \times \frac{9 \times 10}{2} + 25$

$225+25$

250

④ $1^1 \times 2^2 \times 3^3 \times \cdots\cdots \times 60^{60}$

$5^5, 10^{10}, 15^{15}, 20^{20}, \boxed{25^{25}} \cdots \boxed{50^{50}}, \cdots\cdots, 60^{60}$

$[5+10+15+20+25+\cdots\cdots+60] + 25+50$ (Extra)

$5[1+2+3+4+5+\cdots\cdots+12] + 75$ ($\frac{n(n+1)}{2}$)

$5 \times \frac{12^6 \times 13}{2} + 75$

$390 + 75$

465

25, 50, 75, 100

⑤ $1^1 \times 2^2 \times 3^3 \times \cdots\cdots \times 72^{72}$

$5^5, 10^{10}, \cdots\cdots 25^{25}, \cdots\cdots 50^{50}, \cdots\cdots, 70^{70}$

$[5+10+15+\cdots\cdots+70] + \overset{Extra}{25+50}$

$\overset{n(n+1)}{\underset{2}{}}$

$5[1+2+3+\cdots\cdots+14] + 75$

$5 \times \frac{14^{7} \times 15}{2} + 75$

$525 + 75$

600 Ans.

$1^1 \times 2^2 \times 3^3 \times \cdots \times 76^{76}$

$5^5, 10^{10}, \cdots (25^{25}) \cdots (50^{50}) \cdots (75^{75})$

$[5 + 10 + 15 + \cdots + 75] + \underset{\text{Extra}}{25 + 50 + 75}$

$5[1 + 2 + 3 + \cdots + 15] + 150$

$\frac{n(n+1)}{2}$

$5 \times \frac{15 \times \overset{8}{16}}{2} + 150$

$600 + 150$

$= 750$ Ans.

$1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \times \cdots \times 100^{100}$

$$\left[5 + 10 + 15 + \cdots + 100\right] + \underset{25+50+75+100}{\text{Extra}}$$

$$5\left[\underbrace{1+2+3+\cdots+20}_{\frac{n(1+n)}{2}}\right] + 250$$

$$5 \times \frac{\overset{10}{\cancel{20}} \times 21}{\cancel{2}} + 250$$

$$1050 + 250$$

$$= 1350$$

57. How many zeroes are there at the end of the product ($1 \times 2 \times 3 \times 4 \times 5 \times ..... \times 100$) ?

($1 \times 2 \times 3 \times 4 \times 5 \times ..... \times 100$) के गुणनफल के अंत में कितने शून्य आयेंगे?

(A) 24
(B) 25
(C) 20
(D) 22

58. How many zeroes will take place in $1 \times 2 \times 3 \times 4 \times 5 \times ..... \times 1000$?

$1 \times 2 \times 3 \times 4 \times 5 \times ..... \times 1000$ के गुणनफल के अंत में कितने शून्य आयेंगे?

(A) 249
(B) 248
(C) 240
(D) 243

$\frac{1000}{5} = 200$

$\frac{200}{5} = 40$

$\frac{40}{5} = 8$

$\frac{8}{5} = 1$

Ans. = 249

59. Find the sum of $(1+2+3+\ldots\ldots+50)-(1+2+3+\ldots\ldots+50)$ का योग ज्ञात करें–

(A) 1250 (B) 1275

(C) 1280 (D) 1300

$\frac{n(n+1)}{2} = \frac{50 \times 51}{2} = 25$

60. Find the sum of $(1^3+2^3+3^3+.....+10^3)$?

$(1^3+2^3+3^3+.....+10^3)$ का योग निकालें–

(A) 3020 (B) 3035

(C) 3030 (D) 3025

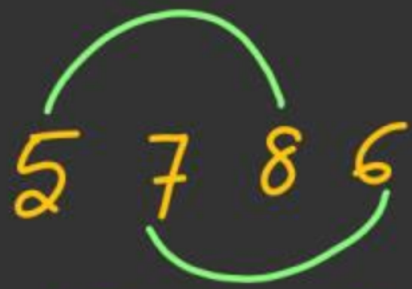
$= \left[\frac{n(n+1)}{2}\right]^2$

$\left[\frac{10 \times 11}{2}\right]^2$

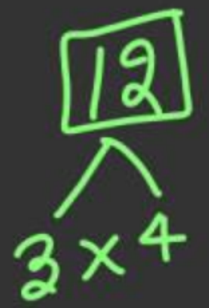
$55^2 \rightarrow 3025$

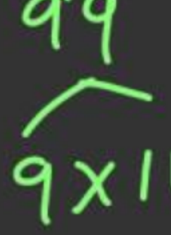
11 से विभाजित के नियम → एकांतर अंक के योग का अंतर 0 हो या 11 से विभाजित हो।

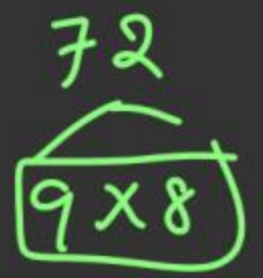
2-2=0



13-13=0







61. What is the greatest number of four digits which is exactly divisible by 88?

चार अंकों की सबसे बड़ी संख्या क्या है जो 88 से पुरी तरह विभाजित है?

(A) 8888 $= 16 - 16 = 0$

(C) 9944

$13 - 13 = 0$

(B) ~~9948~~ $+4$ ×

(D) ~~9988~~ $+4$ $= 92$ ×

8×11

(i) Even — —

(ii) odd — — $+4$

$2^n | 5^n$

9 { 3 → अंको का योग 3 से विभाजित
9 → अंको का योग 9 से विभाजित

62. If the square root of x is the cube root of y, then the relation between x and y is–

यदि x का वर्गमूल y का घनमूल है, तो x और y के बीच संबंध है–

(A) $x^3 = y^2$

(B) $x^2 = y^3$

(C) $x = y$

(D) $x^6 = y^5$

$\sqrt[2]{x} = \sqrt[3]{y}$

$x^3 = y^2$

$\sqrt[4]{x} = \sqrt[3]{y}$

$x^7 = y^4$

$\sqrt[11]{x} = \sqrt[16]{y}$

$x^{16} = y^{11}$