# SIMPLIFICATION

सरलीकरण

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**01.** Simplify :

$1 + 2 + 3 + ..... + 999 + 1000 + 999 + ..... + 2 + 1$

(a) 999000 (b) 1000000 (c) 999999 (d) 990000

$1000^2 = 1000000$

# $1 + 2 + 3 + \cdots + 19 + 20 + 19 + \cdots + 2 + 1$

$20^2 = 400$

**02.** Simplify :

$\sqrt{1+2+3+....+78+79+78+....+2+1} = ?$

(a) 78 (b) 6084 (c) 79 (d) 6241

$\sqrt{1+2+3+\cdots+78+79+78+\cdots+2+1} = \sqrt{79^2}$

$= 79$ Ans.

**03.** $\sqrt{1+2+3+\ldots+(x-1)+x+(x-1)+\ldots+2+1}=169$

Find the falue of $x$.

(a) 169 (b) 13 →500/- ईनाम (c) 144 (d) 12

$\sqrt{x^2}=169$

$x=169$

04. What is the value of

$$\sqrt{4600+\sqrt{540+\sqrt{1280+\sqrt{250+\sqrt{36}}}}}$$

(a) 69 (b) 68 (c) 70 (d) 72

$\sqrt{36} = 6$

$\sqrt{250+6} = \sqrt{256} = 16$

$\sqrt{1280+16} = \sqrt{1296} = 36$

$\sqrt{540+36} = \sqrt{576} = 24$

$\sqrt{4600+24} = \sqrt{4624} = 68$

$70^2 = 4900$

(i) $\dfrac{(a+b)^2+(a-b)^2}{(a^2+b^2}=\dfrac{2(a^2+b^2)}{(a^2+b^2)}=2$

(ii) $\dfrac{(a+b)^2-(a-b)^2}{ab}=\dfrac{4ab}{ab}=4$

(iii) $\dfrac{a^3+b^3}{(a^2-ab+b^2)}=\dfrac{(a+b)(a^2-ab+b^2)}{(a^2-ab+b^2)}=(a+b)$

(iv) $\dfrac{a^3-b^3}{(a^2+ab+b^2)}=\dfrac{(a-b)(a^2+ab+b^2)}{(a^2+ab+b^2)}=(a-b)$

(v) $\dfrac{a^3+b^3+c^3-3abc}{(a^2+b^2+c^2-ab-bc-ca)} = \dfrac{(a+b+c)(a^2+b^2+c^2-ab-bc-ca)}{(a^2+b^2+c^2-ab-bc-ca)} = (a+b+c)$

# $a^2-b^2=(a+b)(a-b)$

**05.** The value of $\dfrac{18.43\times18.43-6.57\times6.57}{11.86}$ is:

$a^2 \quad - \quad b^2$

$\dfrac{18.43\times18.43-6.57\times6.57}{11.86}$ का मान है:

(a) 23.62 (b) 25 (c) 26 (d) 24.12

$$\frac{(18.43)^2-(6.57)^2}{11.86}=\frac{(18.43+6.57)(18.43-6.57)}{11.86}=\frac{25\times\cancel{11.86}}{\cancel{11.86}}=25$$

**06.** $x = \dfrac{(943+864)^2 - (943-864)^2}{(1886 \times 1728)} = ?$

$(a+b)^2 - (a-b)^2$

$\dfrac{4ab}{4ab} = 1$

$2 \times 943 \times 2 \times 864$

$4 \times a \times b$

(a) 1 (b) 4 (c) 79 (d) 1789

07.

$$\frac{5.75\times5.75\times5.75+3.25\times3.25\times3.25}{57.5\times57.5+32.5\times32.5-57.5\times32.5}$$ is equal to :

(a) 0.009 (b) 0.0009 (c) 0.9 (d) 0.09

$$\frac{a^3+b^3}{a^2+b^2-ab}=a+b$$

$5.75+3.25=\frac{9}{100}=0.09$

**08.**

If N = 1 + 11 + 111 + 1111 + ... + 111111111, then what is the sum of the digit's of N ?

यदि N = 1 + 11 + 111 + 1111 + ... + 111111111 हो, तो N के अंकों का योग क्या है ?

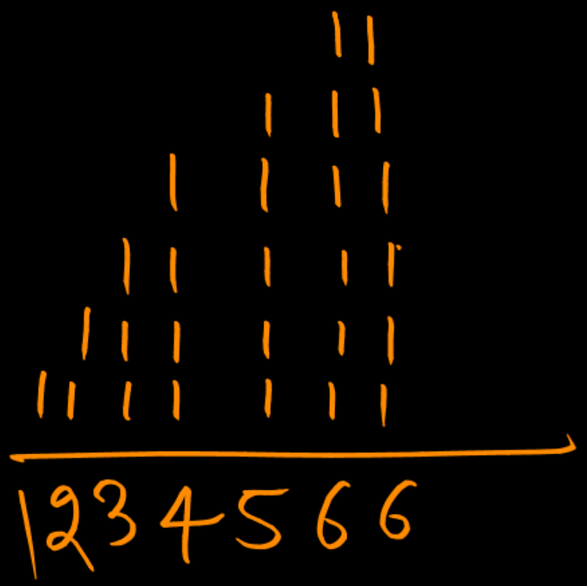
(a) 45 (b) 18 (c) 36 (d) 5

1 + 2 + 3 + 4 + ... + 9

$\frac{n(n+1)}{2} = \frac{9 \times 10^5}{2} = 45$

**09.** $\sqrt{121} + \sqrt{12321} + ..... + \sqrt{1234567654321} = ?$

(a) 1234567 (b) 1234566 (c) 1234565 (d) None



**10.** $\left(1-\frac{1}{2^2}\right)\left(1-\frac{1}{3^2}\right)\left(1-\frac{1}{4^2}\right).....\left(1-\frac{1}{120^2}\right)=?$

(a) $\frac{119}{240}$ (b) $\frac{119}{120}$ (c) $\frac{120}{240}$ (d) $\frac{121}{240}$

H·W/R·W

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