Question 1:

A and B were partners in a firm sharing profits and losses in the ratio of 3:2. They admit C into the partnership with 1/6 share in the profits. Calculate the new profit sharing ratio?

ANSWER:

	A	:	B
Old Ratio	3	:	2

OR

$$\frac{3}{5} \quad : \quad \frac{2}{5}$$

C admits for $\frac{1}{6}$ share of new profit in new firm.

Let new firm profit = 1

Remaining share of A and B in the new firm = 1 − C's share

$$= 1 - \frac{1}{6}$$

$$= \frac{5}{6}$$

New Ratio = Old Ratio **×** Remaining Share of A and B

$$A = \frac{3}{5} \times \frac{5}{6}$$

$$= \frac{15}{30}$$

$$B = \frac{2}{5} \times \frac{5}{6}$$
$$= \frac{10}{30}$$

$$\text{New Ratio} = \begin{array}{ccccc} A & : & B & : & C \\ \dfrac{15}{30} & & \dfrac{10}{30} & : & \dfrac{1}{6} \end{array}$$
$$= \frac{15 : 10 : 5}{30}$$
$$= 15 : 10 : 5$$
$$= 3 : 2 : 1$$

Question 2:

A, B, C were partners in a firm sharing profits in 3:2:1 ratio. They admitted D for 10% profits. Calculate the new profit sharing ratio?
ANSWER:

$$\begin{array}{c} A : B : C \\ \text{Old Ratio} = 3 : 2 : 1 \\ = \dfrac{3}{6} : \dfrac{2}{6} : \dfrac{1}{6} \end{array}$$

D admits for $\dfrac{10}{100}$ share in the new firm

Let new firm profit = 1

Remaining share of A, B and C in new firm = 1 − D's share

$$= 1 - \frac{10}{100}$$
$$= \frac{90}{100}$$
$$= \frac{9}{10}$$

New Ratio = Old Ratio × Remaining Share of A, B and C in new firm

$$A = \frac{3}{6} \times \frac{9}{10}$$

$$= \frac{27}{60}$$

$$B = \frac{2}{6} \times \frac{9}{10}$$

$$= \frac{18}{60}$$

$$C = \frac{1}{6} \times \frac{9}{10}$$

$$= \frac{9}{60}$$

$$\text{A : B : C : D}$$

$$\text{New Ratio} = \frac{27}{60} : \frac{18}{60} : \frac{9}{60} : \frac{1}{10} = \frac{27 : 18 : 9 : 6}{60}$$

$$= 9 : 6 : 3 : 2$$

Question 3:

X and Y are partners sharing profits in 5:3 ratio admitted Z for 1/10 share which he acquired equally for X and Y. Calculate new profit sharing ratio?
ANSWER:

$$\text{A : B}$$
$$\text{Old Ratio} = 5 : 3$$
$$= \frac{5}{8} : \frac{3}{8}$$

Z admits for $\frac{1}{10}$ share in the new firm.

X and Y each sacrifice = $\frac{1}{10} \times \frac{1}{2} = \frac{1}{20}$

New Ratio = Old Ratio − Sacrificing Ratio

$$X's = \frac{5}{8} - \frac{1}{20}$$
$$= \frac{25 - 2}{40} = \frac{23}{40}$$

$$Y's = \frac{3}{8} - \frac{1}{20}$$

$$= \frac{15-2}{40} = \frac{13}{40}$$

$$
\begin{array}{ccccc}
& A & : & B & : & C \\
\text{New Ratio} = & \dfrac{23}{40} & : & \dfrac{13}{40} & : & \dfrac{1}{10}
\end{array}
$$

$$= \frac{23:13:4}{40}$$

$$= 23:13:4$$

Question 4:

A, B and C are partners sharing profits in 2:2:1 ratio admitted D for 1/8 share which he acquired entirely from A. Calculate new profit sharing ratio?
ANSWER:

$$
\begin{array}{c}
A : B : C \\
\text{Old Ratio} = 2 : 2 : 1 \\
= \dfrac{2}{5} : \dfrac{2}{5} : \dfrac{1}{5}
\end{array}
$$

D admits for $\frac{1}{8}$ share in new firm, which he takes from A.

Here only A will sacrifice.

New Ratio = Old Ratio − Sacrificing Ratio

$$A = \frac{2}{5} - \frac{1}{8}$$

$$= \frac{16-5}{40}$$

$$= \frac{11}{40}$$

$$A : B : C : D$$

$$\text{New Ratio} = \frac{11}{40} : \frac{2}{5} : \frac{1}{5} : \frac{1}{8} = \frac{11:16:8:5}{40}$$

$$= 11:16:8:5$$

Question 5:

P and Q are partners sharing profits in 2:1 ratio. They admitted R into partnership giving him 1/5 share which he acquired from P and Q in 1:2 ratio. Calculate new profit sharing ratio?

ANSWER:

$$P : Q$$
$$\text{Old Ratio} = 2 : 1$$
$$= \frac{2}{3} : \frac{1}{3}$$

R admits for $\frac{1}{5}$ share in the new firm which he takes from $\frac{1}{3}$ from P and $\frac{2}{3}$ from Q.

P's sacrifice = R's share × $\frac{1}{3}$

$$= \frac{1}{5} \times \frac{1}{3} = \frac{1}{15}$$

Q's sacrifice = R's share × $\frac{2}{3}$

$$= \frac{1}{5} \times \frac{2}{3} = \frac{2}{15}$$

New Ratio = Old Ratio − Sacrificing Ratio

$$P = \frac{2}{3} - \frac{1}{15}$$
$$= \frac{10-1}{15} = \frac{9}{15}$$

$$Q = \frac{1}{3} - \frac{2}{15}$$
$$= \frac{5-2}{15} = \frac{3}{15}$$

$$\begin{array}{cccccc} & P & : & Q & : & R \\ \text{New Ratio} = & \dfrac{9}{15} & : & \dfrac{3}{15} & : & \dfrac{1}{5} \\[2mm] = & \multicolumn{4}{l}{\dfrac{9:3:3}{15}} \\[2mm] = & \multicolumn{4}{l}{3:1:1} \end{array}$$

Question 6:

A, B and C are partners sharing profits in 3:2:2 ratio. They admitted D as a new partner for 1/5 share which he acquired from A, B and C in 2:2:1 ratio respectively. Calculate new profit sharing ratio?
ANSWER:

$$\begin{aligned} & \qquad\qquad A:B:C \\ \text{Old Ratio} &= 3:2:2 \\ &= \frac{3}{7}:\frac{2}{7}:\frac{2}{7} \end{aligned}$$

D admits for $\dfrac{1}{5}$ share in the new firm which he takes $\dfrac{1}{5}$ in the ratio 2:2:1 from A, B and C.

A's sacrifice = D's share × $\dfrac{2}{5}$

$$= \frac{1}{5} \times \frac{2}{5} = \frac{2}{25}$$

B's sacrifice = D's share × $\dfrac{2}{5}$

$$= \frac{1}{5} \times \frac{2}{5} = \frac{2}{25}$$

C's sacrifice = D's share × $\dfrac{1}{5}$

$$= \frac{1}{5} - \frac{1}{5} = \frac{1}{25}$$

New Ratio = Old Ratio − Sacrificing Ratio

$$A = \frac{3}{7} - \frac{2}{25}$$

$$= \frac{75 - 14}{175} = \frac{61}{175}$$

$$B = \frac{2}{7} - \frac{2}{25}$$

$$= \frac{50 - 14}{175} = \frac{36}{175}$$

$$C = \frac{2}{7} - \frac{1}{25}$$

$$= \frac{50 - 7}{175} = \frac{43}{175}$$

$$A : B : C : D$$

$$\text{New Ratio} = \frac{61}{175} : \frac{36}{175} : \frac{43}{175} : \frac{1}{5}$$

$$= \frac{61 : 36 : 43 : 35}{175}$$

$$= 61 : 36 : 43 : 35$$

Question 7:

A and B were partners in a firm sharing profits in 3:2 ratio. They admitted C for 3/7 share which he took 2/7 from A and 1/7 from B. Calculate new profit sharing ratio?
ANSWER:

$$A : B$$

Old Ratio $= 3 : 2$

$$= \frac{3}{5} : \frac{2}{5}$$

C admitted for $\frac{3}{7}$ share in the new firm

A's sacrifice $= \frac{2}{7}$

B's sacrifice $\frac{1}{7}$

New Ratio = Old Ratio − Sacrificing Ratio

$$A = \frac{3}{5} - \frac{2}{7} = \frac{21-10}{35}$$

$$= \frac{11}{35}$$

$$B = \frac{2}{5} - \frac{1}{7} = \frac{14-5}{35}$$

$$= \frac{9}{35}$$

$$\text{New Ratio} = \begin{array}{ccccc} A & : & B & : & C \\ \frac{11}{35} & : & \frac{9}{35} & : & \frac{3}{7} \end{array}$$

$$= \frac{11:9:15}{35}$$

$$= 11:9:15$$

Question 8:

A, B and C were partners in a firm sharing profits in 3:3:2 ratio. They admitted D as a new partner for 4/7 profit. D acquired his share 2/7 from A. 1/7 from B and 1/7 from C. Calculate new profit sharing ratio?
ANSWER:

$$\begin{array}{cccc} & & A:B:C \\ \text{Old Ratio} & = & 3:3:2 \end{array}$$

$$= \frac{3}{8} : \frac{2}{8} : \frac{2}{8}$$

D admitted for $\frac{4}{7}$ share of profit in new firm.

D's share = A's sacrifice + B's Sacrifice + C's sacrifice

$$\frac{4}{7} = \frac{2}{7} + \frac{1}{7} + \frac{1}{7}$$

New Ratio = Old Ratio − Sacrificing Ratio

$$A = \frac{3}{8} - \frac{2}{7}$$

$$= \frac{21-16}{56} = \frac{5}{56}$$

$$B = \frac{3}{8} - \frac{1}{7}$$

$$= \frac{21-8}{56} = \frac{13}{56}$$

$$C = \frac{2}{8} - \frac{1}{7}$$

$$= \frac{14-8}{56} = \frac{6}{56}$$

$$\begin{array}{c} A : B : C : D \\ \text{New Ratio} = \dfrac{5}{56} : \dfrac{13}{56} : \dfrac{6}{56} : \dfrac{4}{7} \\ = \dfrac{5:13:6:32}{56} \\ = 5:13:6:32 \end{array}$$

Question 9:

Radha and Rukmani are partners in a firm sharing profits in 3:2 ratio. They admitted Gopi as a new partner. Radha surrendered 1/3 of her share in favour of Gopi and Rukmani surrendered 1/4 of her share in favour of Gopi. Calculate new profit sharing ratio?
ANSWER:

$$\begin{array}{ccc} & \text{Radha} & : & \text{Rukmani} \\ \text{Old Ratio} = & 3 & : & 2 \\ = & \dfrac{3}{5} & : & \dfrac{2}{5} \end{array}$$

Radha surrendered in favour of Gopi = $\frac{1}{3}$ of his share

Rukmani surrendered in favour of Gopi = $\frac{1}{4}$ of his share

Sacrificing Ratio = Old Ratio × Surrender Ratio

Radha = $\dfrac{3}{5} \times \dfrac{1}{3} = \dfrac{1}{5}$

Rukmani = $\dfrac{2}{5} \times \dfrac{1}{4} = \dfrac{1}{10}$

New Ratio = Old Ratio − Sacrificing Ratio

Radha = $\dfrac{3}{5} - \dfrac{1}{5} = \dfrac{2}{5}$

Rukmani = $\dfrac{2}{5} - \dfrac{1}{10} = \dfrac{4-1}{10} = \dfrac{3}{10}$

Gopi's Share = Radha's Sacrificing Ratio + Rukmani's Sacrificing Ratio

$= \dfrac{1}{5} + \dfrac{1}{10} = \dfrac{2+1}{10}$

$= \dfrac{3}{10}$

	Radha	:	Rukmani	:	Gopi
New Ratio =	$\dfrac{2}{5}$	:	$\dfrac{3}{10}$	:	$\dfrac{3}{10}$
	$= \dfrac{4:3:3}{10}$				
	$= 4:3:3$				

Question 10:

Singh, Gupta and Khan are partners in a firm sharing profits in 3:2:3 ratio. They admitted Jain as a new partner. Singh surrendered 1/3 of his share in favour of Jain: Gupta surrendered 1/4 of his share in favour of Jain and Khan surrendered 1/5 in favour of Jain. Calculate new profit sharing ratio?
ANSWER:

	Singh	:	Gupta	:	Khan
Old Ratio =	3	:	2	:	3
	$= \dfrac{3}{8}$	:	$\dfrac{2}{8}$	:	$\dfrac{3}{8}$

Singh Surrender $=\frac{1}{3}$ of his share

Gupta Surrender $=\frac{1}{4}$ of his share

Khan Surrender $=\frac{1}{5}$ of his share

Sacrificing Ratio = Old Ratio × Surrender Ratio

Singh's $=\frac{3}{8}\times\frac{1}{3}=\frac{3}{24}$

Gupta's $=\frac{2}{8}\times\frac{1}{4}=\frac{2}{32}$

Khan's $=\frac{3}{8}\times\frac{1}{5}=\frac{3}{40}$

New Ratio = Old Ratio − Sacrificing Ratio

$$\text{Singh's} =\frac{3}{8}-\frac{3}{24}=\frac{9-3}{24}=\frac{6}{24}$$

$$\text{Gupta's} =\frac{2}{8}-\frac{2}{32}=\frac{8-2}{32}=\frac{6}{32}$$

$$\text{Khan's} =\frac{3}{8}-\frac{3}{40}=\frac{15-3}{40}=\frac{12}{40}$$

$$\begin{array}{cccccc}
& \text{Singh} & + & \text{Gupta's} & + & \text{Khan's} \\
& \text{Sacrifice} & & \text{Sacrifice} & & \text{Sacrifice} \\
\text{Jain's Share} = & \dfrac{3}{24} & + & \dfrac{2}{32} & + & \dfrac{3}{40}
\end{array}$$

$$=\frac{60+30+36}{480}$$

$$=\frac{21}{80}$$

$$\begin{array}{ccccccc}
& \text{Singh} & : & \text{Gupta} & : & \text{Khan} & : & \text{Jain} \\
\text{New Ratio} = & \dfrac{6}{24} & : & \dfrac{6}{32} & : & \dfrac{12}{40} & : & \dfrac{21}{80}
\end{array}$$

$$=\frac{120:90:144:126}{480}$$

$$=20:15:24:21$$