COMPOUND INTEREST

SUCCESSIVE

Successive Discount $= \left(x+y-\frac{xy}{100}\right)\%$ Successive Increase $= \left(x+y+\frac{xy}{100}\right)\%$

P = 2000 ₹

Rate = 3% For 1st year
Rate = 7% For 2nd year

CI = ?

$$CI = \left(x+y+\frac{xy}{100}\right)\% \qquad SI = (x+y)\%$$

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$CI = \left(x+y+\frac{xy}{100}\right)\%$$

$$= 10.21\%$$

$$= \frac{2000 \times 10.21}{10,000}$$

$$= 204.20 \text{ ₹}$$

Rate % = x% , y%		C.I $= \left(x + y + \frac{xy}{100}\right)\%$
1 %	2 %	= 3·02·/·
2 %	3 %	= 5·06·/·
3 %	4 %	= 7·12·/·
4 %	5 %	= 9·20·/·
5 %	6 %	= 11·30·/·
6 %	7 %	= 13·42·/·
10 %	8 %	= 18·80·/·
11 %	12 %	= 24·32·/·
9 %	13 %	= 23·17·/·
11 %	19 %	= 32·09·/·
20 %	21 %	= 45·20·/·
12 %	15 %	= 28·80·/·
20 %	25 %	= 50·/·
30 %	6%	= 37·8·/·

Some rates of CI	Final rates of CI $= \left[x + y + \frac{x \times y}{100}\right]$
1% , 2%	= 3·02·/·
1% , 5%	= 6·05·/·
2% , 3%	= 5·06·/·
12% , 5%	= 17·60·/·
4% , 3%	= 7·12·/·
3% , 5%	= 8·15·/·
2% , 9%	= 11·18·/·
12% , 8%	= 20·96·/·
13% , 10%	= 24·30·/·
11% , 11%	= 23·21·/·
9% , 12%	= 22·08·/·
13% , 10%	= 24·30·/·
12% , 15%	= 28·80·/·

Rate	Final rate of CI for 2 yrs = $\left[x+y+\frac{x\times y}{100}\right]$
1%	= २·०१·/·
2%	= ४·०४·/·
3%	= ६·०९·/·
4%	= ८·१६·/·
5%	= १०·२५·/·
6%	= १२·३६·/·
7%	= १४·४९·/·
11%	= २३·२१·/·
12%	= २५·४४·/·
13%	= २७·६९·/·

Rate % = x% , y%

C.I $= \left(x+y\frac{xy}{100}\right)\%$

↓

Effective rate

(C.I – S.I) $= \left(\frac{x\times y}{100}\right)\%$

1. Principal (मूलधन) = 2000, Rate (दर) = 10% p.a, Time (समय) = 2 year, C.I (चक्रवृद्धि ब्याज) = ?

P = 2000
R = 10·/· P.a
T = 2 years

$CI = \left(x+y+\frac{xy}{100}\right)\%$

$= 10+10+\frac{10\times10}{100}$

CI = 21·/·

CI = 2000 × 21·/·
= 420 ₹

2. Principal (मूलधन) = 1000, Rate (दर) = 3% p.a, Time (समय) = 2 year, C.I (चक्रवृद्धि ब्याज) = ?

P = 1000
R = 3·/· P.a
T = 2 years

$CI = \left(x+y+\frac{xy}{100}\right)\%$

$= \left(3+3+\frac{3\times3}{100}\right)\%$

= 6·09·/·

CI = 1000 × 6·09·/·
= 60.9 ₹

3. Principal (मूलधन) = 1700
Rate (दर) = 11% p.a
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(11 + 11 + \frac{11 \times 11}{100}\right)\%$$

$$CI = 23.21\%$$

$$CI = 1700 \times 23.21\%$$

$$= \frac{39457}{100} = 394.57$$

4. Principal (मूलधन) = ?
Rate (दर) = 17% p.a
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = 368.9

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(17 + 17 + \frac{17 \times 17}{100}\right)\%$$

$$= 36.89\%$$

$$\Rightarrow P \times \frac{36.89}{100} = 368.9 \quad \Rightarrow P = 1000 \text{ रु}$$

5. Principal (मूलधन) = 2500
Rate (दर) = 19% p.a
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(19 + 19 + \frac{19 \times 19}{100}\right)\%$$

$$CI = 41.61\%$$

$$= 2500 \times 41.61\%$$

$$CI = 1040.25 \text{ रु.} \quad \underline{\text{Ans}}$$

6. **Principal (मूलधन) = 750**
Rate (दर) = 11% p.a
Time (समय) = 2 year
Amount (मिश्रधन) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(11 + 11 + \frac{11 \times 11}{100}\right)\%$$

$$= 23.21\%$$

P
10000 unit
↓
750 ₹

A
12321 × 750/10000

⇒ 924.075 ₹ Ans

7. **Principal (मूलधन) = 3000**
Rate (दर) = 7% p.a
Time (समय) = 2 year
Amount (मिश्रधन) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(7 + 7 + \frac{7 \times 7}{100}\right)\%$$

$$= 14.49\%$$

P
10000 unit
↓
3000

A
11449 × 3000/10,000

⇒ 3434.7 ₹ Ans

8. **Principal (मूलधन) = 5000**
Rate (दर) = 11% p.a
Time (समय) = 2 year
Amount (मिश्रधन) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(11 + 11 + \frac{11 \times 11}{100}\right)\%$$

$$= 23.21\%$$

P
10,000 unit
↓
5000

A
12321 × 1/2

⇒ 6165.5 ₹ Ans

9. **Principal (मूलधन) = ?**
Rate (दर) = 6% p.a
Time (समय) = 2 year
(C.I –S.I) = 10. 8

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= 12.36\%$$

$CI - SI =$ 36% unit ⟶ 10.8

1 unit ⟶ .3

$P =$ 100 unit ⟶ $.3 \times 100 \times 100$

$\Rightarrow 30 \times 100$

$\Rightarrow 3000$

10. **Amount (मिश्रधन) = ?**
Rate (दर) = 3% p.a
Time (समय) = 2 year
C.I –S.I = 2.7

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= 6.09\%$$

$CI - SI =$ 0.9% unit ⟶ 2.7

1% unit ⟶ 0.3

$P =$ 100 unit ⟶ $3 \times 100 \times 10$

$= 3000$ ₹

OR

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= \left(\frac{3 \times 3}{100}\right)\%$$

$$= 0.09\%$$

$$P \times \frac{0.09}{100} = 2.7$$

$$P = \frac{2.7 \times 100}{0.09}$$

$$P = 3000 \text{ ₹}$$

11. **Amount (मिश्रधन) = ?**
Rate (दर) = 6% p.a
Time (समय) = 2 year
(C.I –S.I) = 7.56

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= 12.36\%$$

$$CI - SI = .36\% \text{ unit} \longrightarrow \frac{7.56 \times 100}{36}$$

$$1 \text{ unit}$$

$$A = 112.36 \text{ unit} \longrightarrow \frac{756}{36} \times 112.36$$

$$= 2359.56 \text{ Ans}$$

12. **Amount (मिश्रधन) = ?**
Rate (दर) = 2% p.a
Time (समय) = 2 year
(C.I –S.I) = 16

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= 4.04\%$$

$$CI - SI = 0.4\% \text{ unit} \longrightarrow 16$$

$$1 \text{ unit} \longrightarrow \frac{16 \times 100}{4}$$

$$104.04\% \longrightarrow \frac{16 \times 100}{4} \times 104.04$$

$$=$$

13. **Principal = Rs. 4000, Rate = 8%, Time = 2 year. Find CI - SI = ?**
मूलधान = Rs. 4000 समय = 2 वर्ष, दर = 8% (चक्रवृद्धि ब्याज–साधारण ब्याज) = ?
(a) 25.6 (b) 10 (c) 15.5 (d) 20

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= 0.64\%$$

$$= 4000 \times 0.64\%$$

$$CI - SI = 25.6 \text{ Ans}$$

14. **Principal (मूलधन) = 2000**
Rate (दर) = 3%, 2%
Time (समय) = 2 year
C.I – S.I (चक्रवृद्धि ब्याज - साधारण ब्याज) = ?

$$CI - SI = \frac{xy}{100}\%$$

$$= 0.06\%$$

$$CI - SI = 2000 \times 0.06\%$$

$$= \frac{2000 \times 6}{10000} = 1.2 \text{ ₹ Ans}$$

15. **Principal (मूलधन) = 1000**
Rate (दर) = 2%, 3%
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(5 + \frac{6}{100}\right)\%$$

$$CI = 5.06\%$$

$$= 1000 \times 5.06\%$$

$$CI = \frac{1000 \times 506}{10000} = 50.6 \text{ ₹ Ans}$$

16. **Principal (मूलधन) = 1700**
Rate (दर) = 1%, 5%
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(6 + \frac{5}{100}\right)$$

$$CI = 6.05\%$$

$$= 1700 \times 6.05\%$$

$$= \frac{1700 \times 605}{100.00}$$

$$CI = 102.85 \text{ Ans}$$

17. **Principal (मूलधन) = ?**
Rate (दर) = 4%, 3%
Time (समय) = 2 year
(C.I – S.I) = 10.8

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= 0.12\%$$

$$CI - SI = \frac{0.12}{100}\text{ unit} \longrightarrow 10.8$$

$$P = 100\text{ unit} \longrightarrow \frac{100 \times 10.8}{0.12} = 9000\text{ ₹ Ans}$$

18. **Amount (मिश्रधन) = ?**
Rate (दर) = 1%, 5%
Time (समय) = 2 year
(C.I – S.I) = 1.5

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= 0.05\%$$

CI-SI	A
0.05%	106.05%
5	10605
1 unit	2121 ×1.5
↓	⇒ 3181.5 ₹ Ans
1.5	

19. **Principal (मूलधन) = ?**
Rate (दर) = 3%, 5%
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = 48.9

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= 8.15\%$$

$$CI = \frac{8.15}{100}\text{ unit} \longrightarrow 48.9$$

$$P = 100\text{ unit} \longrightarrow \frac{48.9 \times 100}{8.15} = 6000\text{ ₹}$$

20. **Amount (मिश्रधन) = ?**
Rate (दर) = 12% , 15%
Time (समय) = 2 year
(C.I –S.I) = 14.4

$$CI-SI = \left(\frac{xy}{100}\right)\%$$

$$= \left(\frac{12\times 15}{100}\right)\%$$

$$= 1.8\%$$

$$CI = \left(x+y+\frac{xy}{100}\right)\%$$

$$= 28.8\%$$

A	CI-S.I
1288	18
644× 1.6	9unit ⟶ 14.4
⇒ 1030.4₹ Ans	1unit ⟶ 1.6

21. **Principal (मूलधन) = 2500**
Rate (दर) = 13%, 10%
Time (समय) = 2 year
C.I (चक्रवृद्धि ब्याज) = ?

$$CI = \left(x+y+\frac{xy}{100}\right)\%$$

$$= \left(13+10+\frac{13\times 10}{100}\right)\%$$

$$CI = 24.03\%$$

$$= 2500\times 24.3\%$$

$$CI = 607.5\ ₹\ \text{Ans}$$

22. **Amount (मिश्रधन) = ?**
Rate (दर) = 2% , 9%
Time (समय) = 2 year
(C.I –S.I) = 4.5

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= 0.18\% \longrightarrow 4.5$$

$$1\% \longrightarrow \frac{4.5}{0.18}$$

$$A = 111.18\% \longrightarrow \frac{4.5}{0.18} \times 111.18$$

$$= 2779.5$$

23. **Principal (मूलधन) = 750**
Rate (दर) = 12%, 8%
Time (समय) = 2 year
Amount (मिश्रधन) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(12 + 8 + \frac{12 \times 8}{100}\right)\%$$

$$= 20.96\%$$

P
10000 unit
↓
750 ₹

A
12096 × 750/10,000

⇒ 907.2 ₹ Ans

24. **Principal (मूलधन) = 3000**
Rate (दर) = 5%, 12%
Time (समय) = 2 year
Amount (मिश्रधन) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(5 + 12 + \frac{5 \times 12}{100}\right)\%$$

$$= 17.60\%$$

P
10000 unit
↓
3000 ₹

A
11760 × 3000/10000

⇒ 3528 ₹ Ans

25. **Principal** (मूलधन) = 5000, **Rate** (दर) = 11%, 6%, **Time** (समय) = 2 year
Amount (मिश्रधन) = ?

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= 17.66\%$$

P	A
10000 Unit	11766
$\downarrow \times \frac{1}{2}$	$\times \frac{1}{2}$
5000 ₹	⇒ 5883 ₹ Ans.

26. **Principal** (मूलधन) = 2000. **Rate** (दर) = 5%, 7%, **Time** (समय) = 2 year
C.I – S.I (चक्रवृद्धि ब्याज – सामारण ब्याज) = ?

(a) 7 (b) 5 (c) 5.7 (d) 7.5

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= 0.35\%$$

$$= \frac{2000 \times 35}{10000}$$

$$CI - SI = 7 \text{ ₹ Ans}$$

27. **Principal** (मूलधन) = 2000, **Rate** (दर) = 8%, **Time** (समय) = 1 year 3 month
C.I – S.I (चक्रवृद्धि ब्याज – सामारण ब्याज) = ?

(a) 32 (b) 3.8 (c) 12 (d) 3.2

Rate = 8% P.a

$$= \frac{8\%}{12} \times 3$$

$$= 2\% \text{ for 3 month}$$

$$CI - SI = \left(\frac{xy}{100}\right)\%$$

$$= 0.16\%$$

$$= \frac{2000 \times 0.16}{10000}$$

$$= 3.2 \text{ ₹ Ans}$$

28. **Principal (मूलधन) = ?**
Rate (दर) = 10%, Time (समय) = 1 year 6 month, C.I – S.I (चक्रवृद्धि ब्याज - सामारण ब्याज) = 12

Rate = 10% P.q

$= \frac{10}{12} \times 6$

= 5% per 6 month

$CI - SI = \left(\frac{xy}{100}\right)\%$

$= 0.5\%$

$12 = \frac{P \times 0.5}{1000}$

$P = \frac{120000}{5}$

P = 24000 ₹

29. **Amount (मिश्रधन) = ?**
Rate (दर) = 12%, Time (समय) = 1 year 3 month, C.I (चक्रवृद्धि ब्याज) = 384

Rate = 12% P.q

$= \frac{12}{12} \times 3$

= 3% per 3 mont

$CI = \left(x + y + \frac{xy}{100}\right)\%$

$= 15.36\%$ unit ⟶ 384

100 unit ⟶ $\frac{384 \times 100}{15.36}$

A = 115.36 unit ⟶ $\frac{384 \times 100 \times 115.36}{15.36}$

30. **Principal (मूलधन) = 4500, Rate (दर) = 18%, Time (समय) = 1 year 2 month**
C.I – S.I (चक्रवृद्धि ब्याज - सामारण ब्याज) = ?

Rate = 18% P.q

$= \frac{18}{12} \times 2$

= 3% per 2 mont

$CI - SI = \left(\frac{xy}{100}\right)\%$

$= .54\%$

$= \frac{4500 \times 54}{10000}$

= 24.3 ₹ Ans

31. **Principal = ?, Time = 1 year 6 month Rate = 6%, CI = Rs. 4590**
मूलधन = ?, समय = 1 वर्ष 6 महिने, दर = 6% चक्रवृद्धि ब्याज = रु 4590

(a) 80,000 (b) 50,000 (c) 35,000 (d) 60,000

Rate = 6%

$= \frac{6}{12} \times 6$

= 3% Per 6 month

$CI = \left(x+y+\frac{xy}{100}\right)\%$

CI = 9.18% Unit ⟶ 4590

1 Unit ⟶ $\frac{4590 \times 100}{9.18}$

P = 100 Unit ⟶ $\frac{4590 \times 10000}{9.18}$

⇒ 50,000 Ans

32. **Principal (मूलधन) = ?**
Rate (दर) = 15%, Time (समय) = 1 year 4 month,
C.I – S.I (चक्रवृद्धि ब्याज – सामारण ब्याज) = 26.25

Rate = 15% P.a

$= \frac{15}{12} \times 4$

= 5% Per 4 month

$CI - SI = \left(\frac{xy}{100}\right)\%$

= 0.75%

CI - SI = $\frac{0.75}{100}$ Unit ⟶ 26.25

P = 100 Unit ⟶ $\frac{2625 \times 100}{0.75}$

⇒ 350000₹

33. **Principal (मूलधन) = 10,000, Rate (दर) = 12%, Time (समय) = 1 year 8 month**
C.I (चक्रवृद्धि ब्याज) = ?

Rate = 12% P.a

$= \frac{12}{12} \times 8$

= 8% Per 8 month

$CI = \left(x+y+\frac{xy}{100}\right)\%$

$= \left(12+8+\frac{12\times8}{100}\right)\%$

CI = 20.96%

$= \frac{10000 \times 20.96}{10000}$

CI ⇒ 2096 ₹ Ans

34. **Principal (मूलधन) = 2000, Rate (दर) = 5%,Time (समय) = 1 year 73 days**
C.I (चक्रवृद्धि ब्याज) = ?

Rate = 5% p.q

$= \frac{5}{365} \times 73$

= 1% Per 73 days

$CI = \left(x + y + \frac{xy}{100}\right)\%$

= 6.05%

= 2000 × 6.05%

= 121 ₹

35. **Principal (मूलधन) = ?**
Rate (दर) = 25%,Time (समय) = 1 year 73 days,C.I (चक्रवृद्धि ब्याज) = 625

Rate = 25% p.q

$= \frac{25}{365} \times 73$

= 5% Per 73 days

$CI = \left(x + y + \frac{xy}{100}\right)\%$

CI = 31.25% unit ⟶ 625

1 unit ⟶ $\frac{625}{31.25}$

P = 100 unit ⟶ $\frac{625}{31.25} \times 100 \times 100$

= 2000 ₹

36. **Amount (मिश्रधन) = ?**
Rate (दर) = 15%,Time (समय) = 1 year 73 days,C.I (चक्रवृद्धि ब्याज) = 590.4

Rate = 15% p.q

$= \frac{15}{365} \times 73$

= 3% Per 73 day

$CI = \left(x + y + \frac{xy}{100}\right)\%$

CI = 18.45% unit ⟶ 590.4

1 unit ⟶ $\frac{590.4 \times 100}{18.45}$

A = 118.45 ⟶ $\frac{590.4 \times 100 \times 118.45}{18.45}$

= 3,79,040 ₹

37. Principal = ?, Rate = 5%, Time = 1 year 73 days, CI = Rs. 302.50
मूलधन = ? समय = 1 वर्ष 73 दिन, दर ? 5% चक्रवृद्धि ब्याज = 302.50
(a) 5,000 (b) 4,000 (c) 3500 (d) 6,000

Rate = 5% p.a

$= \frac{5}{365} \times 73$

= 1% Per 73 days

$CI = \left(x + y + \frac{xy}{100}\right)\%$

CI = 6.05% ⟶ 302.50

1% ⟶ $\frac{302.50}{6.05}$

P = 100% ⟶ $\frac{302.50}{6.05} \times 100\%$

= 5000₹

38. Principal (मूलधन) = 1800. Rate (दर) = 50%, Time (समय) = 1 year 73 days
C.I – S.I = ?

Rate = 50% p.a

$= \frac{50}{365} \times 73$

= 10% Per 73 day

$CI - SI = \left(\frac{xy}{100}\right)\%$

= 5%

= 1800 × 5%

CI - SI = 90 Ans

39. Principal (मूलधन) = ?
Rate (दर) = 14 % p.a, Time (समय) = 1 year, (C.I – S.I) = 17.15
↓
(Compounded half-yearly)

Rate = 7% Per half year

Time = 2 half year

$CI - SI = \left(\frac{xy}{100}\right)\%$

= 0.49%

$P \times \frac{0.49}{100} = 17.15$

$P = \frac{1715 \times 100}{49}$

P = 3500₹ Ans

40. Principal (मूलधन) = 6000, Rate (दर) = 18 % p.a, Time (समय) = 1 year

C.I = ?

↓

(Compounded half-yearly)

Rate = 9% Per half yearly

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(9 + 9 + \frac{9 \times 9}{100}\right)\%$$

$$= 18.81\%$$

$$= 6000 \times 18.81\%$$

$$CI = 1128.6$$

41. Principal (मूलधन) = 1500, Rate (दर) = 12 % p.a, Time (समय) = 1 year 6 month

C.I = ?

↓

(Compounded every 9 month)

Rate = 12% P.a

$= \frac{12}{12} \times 9$ month

= 9% Per 9 month

Time = 2 cycle of 9 month

$$CI = \left(x + y + \frac{xy}{100}\right)\%$$

$$= \left(18 + \frac{81}{100}\right)\%$$

$$= 18.81\%$$

$$= 1500 \times 18.81\%$$

CI = 282.15 ₹ Ans

42. Principal (मूलधन) = 1500

Rate (दर) = 24 % p.a

Time (समय) = 16 month

C.I = ?

↓

(Compounded every 9 month)

43. **Principal (मूलधन) = 1100, Rate (दर) = 36 % p.a, Time (समय) = 10 month**
C.I = ?
↓
(Compounded every 5 month)

$\text{Rate} = \frac{36\%}{12} \times 5$

$= 15\%$

Time = 2 cycle of 5 month

$CI = \left(x + y + \frac{xy}{100}\right)\%$

$= \left(30 + \frac{225}{100}\right)\%$

$= 32.25\%$

$= \frac{1100 \times 32.25}{100}$

$CI = 354.75$ ₹ Ans

44. **Amount (मिश्रधन) = ?, Rate (दर) = 9 % p.a, Time (समय) = 1 year 4 month**
(C.I – S.I) = 6.48
↓
(Compounded every 8 month)

$\text{Rate} = \frac{9\%}{12} \times 8 = 6\%$

Time = 2 cycle

$CI - SI = \left(\frac{xy}{100}\right)\% = 0.36\%$

$CI = \left(x + y + \frac{xy}{100}\right)\% = 12.36\%$

CI-SI
0.36%
9unit
↓ 0.72
6.48

A
112.36%
2809 × 0.72
⇒ 2022.48 Ans

i. 1%, 2%, 3%

$CI = \left(1+2+\frac{1\times2}{100}\right)\%$

$= 3.02\%$

$3.02\%, 3\%$

$= \left(3.02+3+\frac{3.02\times3}{100}\right)\%$

$= \left(6.02+\frac{9.06}{100}\right)\% \Rightarrow 6.1106\%$

ii. 2%, 3%, 4%

$CI = 2+3+\frac{2\times3}{100}$

$= 5.06\%$

$CI = 5.06\%, 4\%$

$= \left(5.06+4+\frac{5.06\times4}{100}\right)\%$

$= \left(9.06+\frac{20.24}{100}\right)\%$

$= 9.2624\%$

iii. 3%, 4%, 5%

$CI = \left(3+4+\frac{3\times4}{100}\right)\%$

$= 7.12\%$

$CI = 7.12\%, 5\%$

$= (7.12+5+\frac{7.12\times5}{100})\%$

$= \left(12.12+\frac{35.60}{100}\right)\%$

$= 12.4760\%$

iv. 4% , 5% , 6%

$CI = 9.2\%, 6\%$

$= \left(15.2 + \frac{55.2}{100}\right)\%$

$= 15.752\%$

v. 2% , 5% , 7%

$CI = 7.1\%, 7\%$

$= \left(14.1 + \frac{49.7}{100}\right)\%$

$= 14.597\%$

vi. 3% , 1% , 12%

$CI = 4.03\%, 12\%$

$= 16.03 + 0.4836$

$= 16.5136\%$

vii. 2% , 2% , 2%

$CI = 4.04\%, 2\%$

$= 6.04\% + .0808$

$= 6.1208\%$

viii. 5% , 5% , 5%

10·25% . 5%

$= 15·25 + 0·5125$

$= 15·7625\%$

ix. 10% , 10% , 10% , 10%

21% 21%

$= \left(21 + 21 + \frac{21 \times 21}{100}\right)\%$

$= \left(42 + \frac{441}{100}\right)\%$

$= 46·41\%$

Rate (in %)	Final rate after 3 years	CI–SI(diff.) after 3 years. $3a^2\ a^3$ %
a	$3a . 3a^2\ a^3$ %	$. 3a^2\ a^3$ %
1	= '	=
2	= 3·0301%	=
3	= 6·1208%	=
4	= 9·2727%	=
5	= 12·4864%	=
6	= 15·7625%	=
7	= 19·1016%	=
8	= 22·5043%	=
9	= 25·9712%	=
10	= 33·1000%	=

• 5% ⟶ $39 \cdot 39^2\ 9^3$

$15 \cdot 75\ 25$
$+1$

$\Rightarrow 15 \cdot 7625\%$

7% ⟶ $21 \cdot \overset{+3}{47}\ 43$

$\Rightarrow 22 \cdot 5043\%$

8% $\Rightarrow$ $24 \cdot \overset{5}{92}\ 12$
$+1$

$\Rightarrow 25\ 97\ 12\%$

47. If the difference between the compound interest and the simple interest on a certain sum of money for 3 years at 10% per annum, compounded annually, is Rs. 279, then find the amount (in Rs.)

यदि एक निश्चित धनराशि पर, 3 वर्षों के लिए 10% वार्षिक दर से, वार्षिक रूप से चक्रवृद्धि होने वाला ब्याज और साधारण ब्याज का अंतर रु. 279 है तो वह धनराशि (रु. में) ज्ञात करें।

(a) 10,000 (b) 9,000 (C) 7,500 (D) 8,000

CI for 3 years = 33.1%

SI = 30%

CI − SI = 3.1%

$P \times \frac{3.1}{100} = 279$

$P = 9 \times 1000$

$P = 9000$ Ans

48. The difference between the interest payable on a sum invested for three years at 20% compound interest per annum compounded annually and 20% simple interest per annum for the same period is Rs. 448. What is the value of the sum invested?
तीन वर्षों के लिए निवेश की गई राशि पर 20% वार्षिक चक्रवृद्धि ब्याज पर देय ब्याज और समान अवधि के लिए 20% साधारण ब्याज के बीच का अंतर 448 रुपये है। निवेश की गई राशि क्या है?

(a) Rs. 3750 (b) Rs. 4000 (C) Rs. 3500 (D) Rs. 3000

$CI = 72.8\%$

$SI = 60\%$

$CI - SI = 12.8\%$

$20\% \rightarrow 30 \cdot 30^2 \quad 0^3$

$+12 \quad +80$

$60 \cdot 00 \quad 00$

72.8%

$$P \times \frac{12.8}{100} = 448$$

$$P = 7 \times 500$$

$$P = 3500 \text{ Ans}$$

49. The compound interest on a sum of Rs. 20,000 at 15% p.a for $2\frac{2}{3}$ years, interest compounded yearly is.\ ब्याज की गणना वार्षिक चक्रवृद्धि आधार से करते हुए, रूपये 20,000 की राशि पर, वार्षिक 15% की दर से $2\frac{2}{3}$ वर्ष में प्राप्त चक्रवृद्धि ब्याज ज्ञात कीजिए।

(a) Rs. 9,098 (b) Rs. 8,896 (C) Rs. 9,000 (D) Rs. 9,095

$$\text{Rate} = 15\%, \quad 15\%, \quad \frac{15\%}{3} \times 2 = 10\%$$

$$CI = 32.25\%, \quad 10\%$$

$$CI = (42.25 + 3.225)\%$$

$$CI \text{ on } 2\frac{2}{3} \text{ years} = 45.475\%$$

$$CI = \frac{20000 \times 45.475}{100 \times 1000}$$

$$CI = 9095 \text{ ₹ Ans}$$

50. The compound interest on a certain sum in $2\frac{1}{2}$ years, at 10% p.a interest compounded yearly is 1623 then sum is:\एक निश्चित राशि पर $2\frac{1}{2}$ वर्षों में 10% वार्षिक चक्रवृद्धि ब्याज की दर से चक्रवृद्धि ब्याज 1623 रु. है, तो राशि है:

(a) Rs. 5000 (b) Rs. 6000 (C) Rs. 6500 (D) Rs. 7200

Rate = 10% 10% 5%

CI = 21% , 5%

CI = 27.05%

$P \times 27.05\% = 1623$

$P = 6000$ ₹ Ans

51. A certain sum amounts Rs. 4205.55 at 15% per annum in $2\frac{2}{5}$ years interest compounded yearly. The sum is?\एक निश्चित राशि रु. 15% प्रति वर्ष की दर से $2\frac{2}{5}$ वर्षों में वार्षिक चक्रवृद्धि ब्याज पर 4205.55 रु. योग है?

(a) Rs.2700 (b) Rs.3500 (C) Rs.3000 (D) Rs.3200

Rate = 15% 15% $\frac{15}{5} \times 2 = 6\%$

CI = 32.25% 6%

CI on 3yrs = (38.25 + 1.9350)%

= 40.1850 %

Amount = 140.1850 %

P		A
100		140 (Approx)
5	:	7unit ⟶ 4200
		1unit ⟶ 600
		P = 5unit ⟶ 3000

52. Principal = Rs. 8000, Rate for 1st year = 1%, Rate for 2nd year = 2%, Rate for 3rd year = 3%, CI - SI = ?\मूलधन = Rs. 8000, समय = 3rd वर्ष, दर = पहले वर्ष 1%, दूसरे वर्ष 2%, तीसरे वर्ष 3%, (चक्रवृद्धि ब्याज - साधारण ब्याज) = ?

(a) 15 (b) 20 ~~(C)~~ 8.848 (D) 10.48

Rate = 1% , 2% , 3%

CI of 2yrs = 3.02% , 3%

CI of 3yrs = (6.02 + 0.0906)%

= 6.1106%

SI	= 6%
CI - SI	= 0.1106%

∵ $CI - SI = \frac{8000 \times 0.1106}{100}$

CI - SI = 8.848 Ans

53. Principal = ?, Time = 3 year. Rate for 1st year = 5%. Rate for 2nd year = 4%. Rate for 3rd year = 3%, CI = Rs. 12476\मूलधन = ?, समय = 3 वर्ष, दर = पहले वर्ष 5%, दूसरे वर्ष 4%, तीसरे वर्ष 3%, चक्रवृद्धि ब्याज = 12476 रुपये

~~(a)~~ 1 Lakh (b) 5 Lakh (C) 8 Lakh (D) 7 Lakh

Rate = 5% 4% 3%

9.2% , 3%

CI for 3 year = 12.2 + .276

= 12.476%

$\frac{P \times 12.476}{100} = 12476$

P = 1 Lakh Ans

P = 100, R = 20%

1 year	→	CI	→	20% Amt. 120
2 years	→	CI	→	44% Amt. 144
3 years	→	CI	→	72.8% Amt. 172.8
4 years	→	CI	→	107.36% Amt. 207.36

Double Money

1. 72 rule :-

$$R\% = \frac{72}{T}$$

Or,

$$T = \frac{72}{R\%}$$

2. 69 rule : -

$$T = \frac{69}{R\%} + 0.37$$

1. Four times के लिए double money वाला concept ✓

Note:

Triple Money

1. 114 rule :-

$$R\% = \frac{114}{T} \quad \text{Or} \quad T = \frac{114}{R\%}$$

1. In how many years will Rs. 100 will double itself at 30% per annum compound interest ?
30% वार्षिक चक्रवृद्धि ब्याज की दर पर 100 रूपये कितने वर्षों में दोगुना हा जाएगें?

(a) 2.5 (b) 1.5 (C) 3 (D) 4

$$\text{Time} = \frac{72}{\text{Rate}}$$

$$\text{Time} = \frac{72}{30} = 2.4 \text{ (Approx)}$$

option (A) - 2.5 year Approx

2. **In how many years will Rs. 1700 will double itself at 4% per annum compound interest ?**
4% वार्षिक चक्रवृद्धि ब्याज की दर पर 1700 रूपये कितने वर्षों में दोगुना हो जाएगें?

(a) 20 (b) 18.5 (C) 19.33 (D) 17.67

$$\text{Time} = \frac{72}{R}$$

$$= \frac{72}{4}$$

$$= 18 \text{ (Approx)}$$

$$T = \frac{69}{4} + 0.37$$

$$= 17.25 + 0.37$$

$$= 17.62 \text{ yrs}$$

3. **If the interest rate per annum is 12% which is compounded annually, in what time Rs. 2400 will double itself?**यदि ब्याज दर प्रति वर्ष 12% है जो वार्षिक रूप से संयोजित है, तो 2400 रूपये कितने समय में स्वयं का दोगुना हो जाएगा?

(a) 8 years (b) 6 years (c) 12 years (d) 10 years

$$\text{Time} = \frac{72}{R}$$

$$= \frac{72}{12}$$

$$= 6 \text{ years}$$

4. **A sum of money doubles itself in 50 years at a certain rate percent of simple interest. How long will it take to double itself at the same rate of compound interest ?**
एक धनराशि साधारण ब्याज की एक निश्चित प्रतिशत दर से 50 वर्ष में दुगनी हो जाती है। चक्रवृद्धि ब्याज की समान दर से स्वयं को दोगुना करने में कितना समय लगेगा?

(a) 25 years (b) 27 years ~~(c) 35 years~~ (d) 37 years

oh SI → P 100 — 50 yrs — A 200

$$\text{SI Rate} = \frac{100}{50} = 2\%$$

Now Rate = 2%

oh 2% CI $\quad \text{Time} = \frac{69}{2} + 0.37$

$$= 34.5 + 0.37$$

$$= 34.87 \text{ yrs (Approx)}$$ 35 years

5. **The minimum time in which some amount will become thrice of itself at 25% rate of compound interest:**
वह न्यूनतम समय जिसमें कुछ राशि चक्रवृद्धि ब्याज की 25% दर पर स्वयं की तीन गुनी हो जाएगी:
(a) 3 years (b) 6 years (c) 7 years (d) 5 years

$$\text{Time} = \frac{114}{R\%}$$

$$= \frac{114}{25} = 4.56 \text{ (Approx)}$$

option (d) = 5 years (Approx)

6. **Rs.450 is invested today, it will become Rs.1350 in 19 years. What is the compound interest rate?**
आज 450 रूपये का निवेश, 19 साल में 1350 रूपये हो जाएगा। चक्रवृद्धि ब्याज दर क्या है?
~~(a) 6%~~ (b) 7% (C) 8% (D) 9%

Amount = 1350 is thrice of 450

$$\text{Rate} = \frac{114}{19}$$

$$= 6\% \text{ Ans}$$

7. **In how many years a sum will becime 4 times of itself on compound interest at 6% per annum compounded annually?**
कितने वर्षों में एक राशि 6% वार्षिक चक्रवृद्धि ब्याज पर स्वयं का 4 गुना हो जाएगी?
(a) 20 ~~(b) 24~~ (C) 26 (D) 12

$$\text{Time} = \frac{69}{6} + 0.37$$

$$= 11.5 + 0.37$$

$$= 11.9 \text{ (Approx)}$$

$\Rightarrow 2^1 \longrightarrow 11.9$ yrs

$4 = 2^2 \longrightarrow 11.9 \times 2 = 23.8$ (Approx)

option (B) = 24 years Ans

8. **Rs.600 is invested today, it will become Rs.2400 at 9% per annum. In how many years this can happen?**

आज 600 रू. का निवेश करने पर यह 9% प्रति वर्ष ब्याज की दर पर 2400 रूपये कितने वर्षों मे हो जाएगा।

(a) 12 (b) 15 ~~(C) 16~~ (D) 18

Amount 2400 is 4 times of 600 Rs.

Double time $= \frac{69}{9} + 0.37$

$= 7.6 + 0.34$

$= 8$ yrs (Approx)

$2^1 \longrightarrow 8$ yrs

$4 = 2^2 \longrightarrow 16$ yrs Ans