$$A = P \times \left(1 + \frac{R}{100}\right)^n$$

$$= \text{Rs. } 20000 \times \left(1 + \frac{3}{100}\right)^2$$

$$= \text{Rs. } 20000 \times \left(\frac{100+3}{100}\right)^2$$

$$= \text{Rs. } 20000 \times \left(\frac{103}{100}\right)^2$$

$$= \text{Rs. } 20000 \times \left(\frac{103}{100}\right) \times \left(\frac{103}{100}\right)$$

$$= \text{Rs. } (2 \times 103 \times 103)$$

$$= \text{Rs. } 21218$$

Therefore, Sheela gets Rs. 21218 after 1 year.

Q8.

Answer:

Let the principal amount be $P = $ Rs. 65536.

Annual rate of interest, $R = \frac{25}{2}\%$

Rate of interest for a half year $= \frac{25}{4}\%$

Time, $n = 2$ years $= 4$ half years

Then the amount with the compound interest is given by

$$A = P \times \left(1 + \frac{R}{100}\right)^n$$

$$= \text{Rs. } 65536 \times \left(1 + \frac{25}{100 \times 4}\right)^4$$

$$= \text{Rs. } 65536 \times \left(\frac{400+25}{400}\right)^4$$

$$= \text{Rs. } 65536 \times \left(\frac{425}{400}\right)^4$$

$$= \text{Rs. } 65536 \times \left(\frac{17}{16}\right)^4$$

$$= \text{Rs. } 65536 \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right)$$

$$= \text{Rs. } (17 \times 17 \times 17 \times 17)$$

$$= \text{Rs. } 83521$$

Now, $CI = A - P$

$$= \text{Rs. } \left(83521 - 65536\right) = \text{Rs. } 17985$$

Therefore, interest earned when compounded half yearly = Rs. 17985
Amount when the interest is compounded yearly is given by

$$A = P \times \left(1 + \frac{R}{100}\right)^n$$

$$= Rs.\ 65536 \times \left(1 + \frac{25}{100 \times 2}\right)^2$$

$$= Rs.\ 65536 \times \left(\frac{200 + 25}{200}\right)^2$$

$$= Rs.\ 65536 \times \left(\frac{225}{200}\right)^2$$

$$= Rs.\ 65536 \times \left(\frac{9}{8}\right)^2$$

$$= Rs.\ 65536 \times \left(\frac{9}{8}\right) \times \left(\frac{9}{8}\right)$$

$$= Rs.\ 82944$$

Therefore, CI $= A - P = Rs.\ \left(82944 - 65536\right) = Rs.\ 17408$

$\therefore$ Difference between the interests compounded half yearly and yearly $= Rs.$

$\left(17985 - 17408\right) = Rs.\ 577$

Q9.
Answer :

Let the principal amount be $P = Rs\ 32000$.
Annual rate of interest, $R = 5\%$
Rate of interest for a quarter year $= \frac{5}{4}\%$
Time, $n = 6$ months $= 2$ quarter years
Then the amount with the compound interest is given by

$$A = Rs.\ P \times \left(1 + \frac{R}{100}\right)^n$$

$$= Rs.\ 32000 \times \left(1 + \frac{5}{100 \times 4}\right)^2$$

$$= Rs.\ 32000 \times \left(\frac{400 + 5}{400}\right)^2$$

$$= Rs.\ 32000 \times \left(\frac{405}{400}\right)^2$$

$$= Rs.\ 32000 \times \left(\frac{81}{80}\right)^2$$

$$= Rs.\ 32000 \times \left(\frac{81}{80}\right) \times \left(\frac{81}{80}\right)$$

$$= Rs.\ (5 \times 81 \times 81)$$

$$= Rs.\ 32805$$

Therefore, Sudershan will receive an amount of Rs. 32805 after 6 months.

Q10.

Let the principal amount be $P = Rs\ 390625$.
Annual rate of interest, $R = 16\%$
Rate of interest for a quarter year $= \frac{16}{4}\% = 4\%$
Time, $n = 1$ year $= 4$ quarter years
Then the amount with the compound interest is given by

$$A = Rs.\ P \times \left(1 + \frac{R}{100}\right)^n$$

$$= Rs.\ 390625 \times \left(1 + \frac{4}{100}\right)^4$$

$$= Rs.\ 390625 \times \left(\frac{100 + 4}{100}\right)^4$$

$$= Rs.\ 390625 \times \left(\frac{104}{100}\right)^4$$

$$= Rs.\ 390625 \times \left(\frac{26}{25}\right)^4$$

$$= Rs.\ 390625 \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right)$$

$$= Rs.\ (26 \times 26 \times 26 \times 26)$$

$$= Rs.\ 456976$$

Therefore, Arun has to pay Rs 456976 after 1 year.