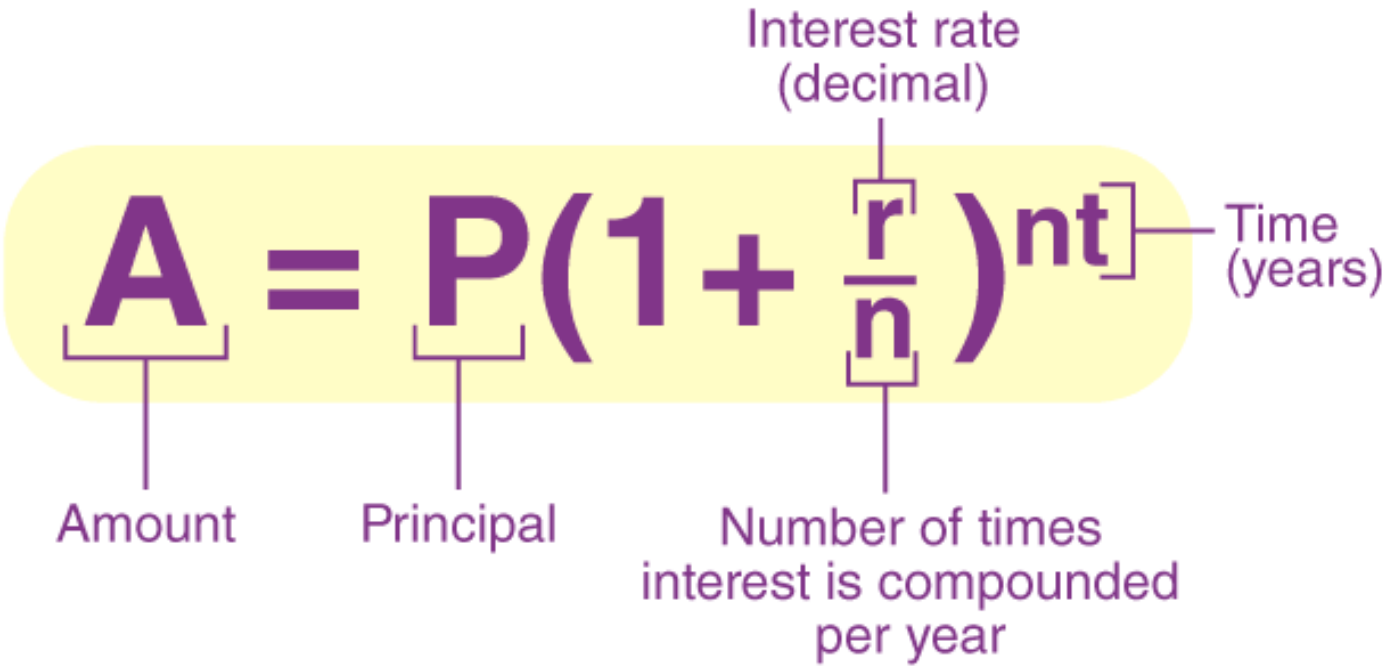
COMPOUND INTEREST

COMPOUND INTEREST FORMULA



- **Let us consider a principal P kept at compound interest of r% per annum, so the interest earned in the first year will be r% of P which is equal to**

$$P \times \frac{r}{100}.$$

- **For the second year, we have to first calculate the outstanding amount i.e. the principal plus the interest.**

Thus, the amount outstanding at the start of second year will be

$$P + \frac{P \times r}{100} = P\left(1 + \frac{r}{100}\right).$$

- **Interest for second year will be calculated as r% of this amount and using the same result, the amount at the end of the second year will be**

$$P\left(1 + \frac{r}{100}\right)\left(1 + \frac{r}{100}\right) = P\left(1 + \frac{r}{100}\right)^2$$

Similarly, amount after 3 years = $P\left(1+\frac{r}{100}\right)^3$ **and so on.**

So, amount after n years $= P\left(1+\frac{r}{100}\right)^n$

Please note that this formula is for the amount and if one needs to calculate the compound interest, one must deduct principal from the amount.

i.e. Compound Interest = Amount – Principal

$$= P\left(1+\frac{r}{100}\right)^n - P$$

$$= P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$$

RELATION BETWEEN THE VALUE OF CI AND SI FOR 2 YEARS

Let us consider an amount kept at SI and the same amount is kept at CI for two years.

Let, the simple interest for 1st year = I

So, compound interest for 1st year = I

Now, for 2nd year the Simple Interest will be the same as 'I' but the Compound Interest will be I + r% of I, as every year the compound interest increases by r%.

Year	SI	CI
1st	I	I
2nd	I	I + r% I

$$\frac{\text{SI for first 2 years}}{\text{CI for first 2 years}} = \frac{2I}{2I + r\% \times I} = \frac{2}{2 + r\%}$$

DIFFERENCE BETWEEN SI AND CI FOR 2 AND 3 YEARS

Year	SI	CI
1		$\frac{PR}{100}$
2		$\frac{PR}{100}+\frac{R}{100}\left(\frac{PR}{100}\right)=\frac{PR}{100}+\frac{PR^2}{100^2}$
3		$\frac{PR}{100}+\frac{PR^2}{100^2}+\frac{R}{100}\left(\frac{PR}{100}+\frac{PR^2}{100^2}\right)$ $=\frac{PR}{100}+\frac{2PR^2}{100^2}+\frac{PR^3}{100^3}$

$$\text{So, } CI_{2yrs} - SI_{2yrs} = \left(\frac{2PR}{100} + \frac{PR^2}{100^2}\right) - \left(\frac{2PR}{100}\right) = \frac{PR^2}{100^2}$$

$$CI_{2yrs} - SI_{2yrs} = \frac{PR^2}{100^2}$$

$$\text{Now, } CI_{3yrs} - SI_{3yrs} = \left[\frac{3PR}{100} + \frac{3PR^2}{100^2} + \frac{PR^3}{100^3}\right] - \frac{3PR}{100}$$

$$\therefore CI_{3yrs} - SI_{3yrs} = \frac{3PR^2}{100^2} + \frac{PR^3}{100^3}$$

COMPOUND INTEREST

Q1. Raviraj invested an amount of 10,000 at compound interest rate of 10 percent per annum for a period of three years. How much amount will Raviraj get after 3 years?

(1) 12340 (2) 13210 (3) 13320 (4) 13310 (5) None of these

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COMPOUND INTEREST

Q1. Raviraj invested an amount of 10,000 at compound interest rate of 10 percent per annum for a period of three years. How much amount will Raviraj get after 3 years?

(1) 12340 (2) 13210 (3) 13320 (4) 13310 (5) None of these

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COMPOUND INTEREST

Q 2. What principal will amount of 1352 in 2 years at 4 per cent compound interest?

(1) 1520 (2) 1260 (3) 1250 (4) 1220 (5) None of these

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COMPOUND INTEREST

Q 2. What principal will amount of 1352 in 2 years at 4 per cent compound interest?

(1) 1520 (2) 1260 (3) 1250 (4) 1220 (5) None of these

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COMPOUND INTEREST

Q 3. On what principal will the compound interest for 3 years at 5 per cent amount to 63.05?

(1) 400 (2) 500 (3) 450 (4) 550 (5) None of these

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COMPOUND INTEREST

Q 3. On what principal will the compound interest for 3 years at 5 per cent amount to 63.05?

(1) 400 **(2) 500** **(3) 450** **(4) 550** **(5) None of these**

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COMPOUND INTEREST

Q 4. Seema invested an amount of 16000 for two years at compound interest and received an amount of 17640 on maturity. What is the rate of interest?

(1) 8 pcpa (2) 5 pcpa (3) 4 pcpa (4) 3 pcpa (5) None of these

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COMPOUND INTEREST

Q 4. Seema invested an amount of 16000 for two years at compound interest and received an amount of 17640 on maturity. What is the rate of interest?

(1) 8 pcpa (2) 5 pcpa (3) 4 pcpa (4) 3 pcpa (5) None of these

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COMPOUND INTEREST

Q 5. Find the compound interest on 8000 in 2 years, the rate of interest being 5% for the first year and 10% for the second year.

(1) 1340 (2) 1420 (3) 1240 (4) 1350 (5) None of these

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COMPOUND INTEREST

Q 5. Find the compound interest on 8000 in 2 years, the rate of interest being 5% for the first year and 10% for the second year.

(1) 1340 (2) 1420 (3) 1240 (4) 1350 (5) None of these

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COMPOUND INTEREST

Q 6. What sum of money at compound interest will amount to 562.38 in 3 years, if the rate of interest is 3% for the first year, 4% for the second year and 5% for the third year?

(1) 400 (2) 450 (3) 500 (4) 520 (5) None of these

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COMPOUND INTEREST

Q 6. What sum of money at compound interest will amount to 562.38 in 3 years, if the rate of interest is 3% for the first year, 4% for the second year and 5% for the third year?

(1) 400 (2) 450 **(3) 500** (4) 520 (5) None of these

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COMPOUND INTEREST

Q 7. On what sum will the amount for 2.5 years at 10% becomes 6352.50?

(1) 4900 (2) 5500 (3) 5000 (4) 5800 (5) None of these

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COMPOUND INTEREST

Q 7. On what sum will the amount for 2.5 years at 10% becomes 6352.50?

(1) 4900 (2) 5500 (3) 5000 (4) 5800 (5) None of these

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COMPOUND INTEREST

Q 8. Find the amount of 1000 in 1 year at 5 per cent compound interest payable half yearly.

(1) 1050 (Approx) (2) 950 (Approx) (3) 1125 (Approx) (4) 1025 (Approx)

(5) None of these

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COMPOUND INTEREST

Q 8. Find the amount of 1000 in 1 year at 5 per cent compound interest payable half yearly.

(1) 1050 (Approx) **(2) 950 (Approx)** **(3) 1125 (Approx)** **(4) 1025 (Approx)**

(5) None of these

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COMPOUND INTEREST

Q 9. Find the compound interest on 10000 in 9 months at 4 per cent interest payable quarterly.

(1) 303 (Approx) (2) 313 (Approx) (3) 20 (Approx) (4) 204 (Approx)

(5) None of these

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COMPOUND INTEREST

Q 9. Find the compound interest on 10000 in 9 months at 4 per cent interest payable quarterly.

(1) 303 (Approx) **(2) 313 (Approx)** **(3) 20 (Approx)** **(4) 204 (Approx)**

(5) None of these

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COMPOUND INTEREST

Q 10. Find the compound interest on 8000 in 3 months at 5 per cent interest payable quarterly.

(1) 250 (2) 200 (3) 150 (4) 100 (5) None of these

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COMPOUND INTEREST

Q 10. Find the compound interest on 8000 in 3 months at 5 per cent interest payable quarterly.

(1) 250 (2) 200 (3) 150 (4) 100 (5) None of these

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COMPOUND INTEREST

Q 11. At what rate per cent compound interest will 625 amount to 676 in 2 years?

(1) 3% (2) 2% (3) 4% (4) 5% (5) None of these

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COMPOUND INTEREST

Q 11. At what rate per cent compound interest will 625 amount to 676 in 2 years?

(1) 3% (2) 2% (3) 4% (4) 5% (5) None of these

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COMPOUND INTEREST

Q 12. A sum of money placed at compound interest doubles itself in 6 years. In how many years will it amount to 16 times itself?

(1) 24 years (2) 26 years (3) 22 years (4) 20 years (5) None of these

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COMPOUND INTEREST

Q 12. A sum of money placed at compound interest doubles itself in 6 years. In how many years will it amount to 16 times itself?

(1) 24 years (2) 26 years (3) 22 years (4) 20 years (5) None of these

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COMPOUND INTEREST

Q 13. At what rate per cent will the compound interest, does a sum of money become four fold in 2 years?

(1) 150% (2) 100% (3) 200% (4) 75% (5) None of these

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COMPOUND INTEREST

Q 13. At what rate per cent will the compound interest, does a sum of money become four fold in 2 years?

(1) 150% **(2) 100%** **(3) 200%** **(4) 75%** **(5) None of these**

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COMPOUND INTEREST

Q 14. If the CI on a certain sum for 2 years at 4% be 510, what would be the SI?

(1) 500 (2) 505 (3) 400 (4) 475 (5) None of these

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COMPOUND INTEREST

Q 14. If the CI on a certain sum for 2 years at 4% be 510, what would be the SI?

(1) 500 (2) 505 (3) 400 (4) 475 (5) None of these

CHITKARA UNIVERSITY

COMPOUND INTEREST

Q 15. The simple interest on a certain sum of money for 2 years at 5% per annum is 100. Find the compound interest at the same rate and for the same time.

(1) 102.50 (2) 103 (3) 103.50 (4) 102.25 (5) None of these

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COMPOUND INTEREST

Q 15. The simple interest on a certain sum of money for 2 years at 5% per annum is 100. Find the compound interest at the same rate and for the same time.

(1) 102.50 (2) 103 (3) 103.50 (4) 102.25 (5) None of these

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COMPOUND INTEREST

Q 16. The compound interest on a certain sum for 2 years is 60.60 and simple interest is 60. Find the rate of interest per annum and the sum.

(1) 2%, 1600 (2) 2%, 1400 (3) 3%, 1500 (4) 2%, 1500

(5) None of these

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COMPOUND INTEREST

Q 16. The compound interest on a certain sum for 2 years is 60.60 and simple interest is 60. Find the rate of interest per annum and the sum.

(1) 2%, 1600 (2) 2%, 1400 (3) 3%, 1500 (4) 2%, 1500

(5) None of these

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COMPOUND INTEREST

Q 17. A person invested a certain amount at simple interest at the rate of 6 per cent per annum earning 900 as an interest at the end of three years. Had the interest been compounded every year, how much more interest would he have earned on the same amount with the same interest rate after three years?

(1) 38.13 (2) 25.33 (3) 55.08 (4) 35.30 (5) None of these

COMPOUND INTEREST

Q 17. A person invested a certain amount at simple interest at the rate of 6 per cent per annum earning 900 as an interest at the end of three years. Had the interest been compounded every year, how much more interest would he have earned on the same amount with the same interest rate after three years?

(1) 38.13 (2) 25.33 (3) 55.08 (4) 35.30 (5) None of these

COMPOUND INTEREST

Q 18. On a certain sum of money, the simple interest for 2 years in 150 at the rate of 3% per annum. Find the difference in CI and SI.

(1) 5 (2) 4.5 (3) 2.5 (4) 2.25 (5) None of these

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COMPOUND INTEREST

Q 18. On a certain sum of money, the simple interest for 2 years in 150 at the rate of 3% per annum. Find the difference in CI and SI.

(1) 5 (2) 4.5 (3) 2.5 (4) 2.25 (5) None of these

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COMPOUND INTEREST

Q 19. Find the difference between the compound interest and the simple interest for the sum 2500 at 6% per annum for 2 years.

(1) 9 (2) 8 (3) 7.5 (4) 6 (5) None of these

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COMPOUND INTEREST

Q 19. Find the difference between the compound interest and the simple interest for the sum 2500 at 6% per annum for 2 years.

(1) 9 (2) 8 (3) 7.5 (4) 6 (5) None of these

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COMPOUND INTEREST

Q 20. On what sum will the difference between the simple and compound interests for 3 years at 5 per cent per annum amount to 12.20?

(1) 1600 (2) 800 (3) 1200 (4) 1500 (5) None of these

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COMPOUND INTEREST

Q 20. On what sum will the difference between the simple and compound interests for 3 years at 5 per cent per annum amount to 12.20?

(1) 1600 (2) 800 (3) 1200 (4) 1500 (5) None of these

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COMPOUND INTEREST

Q 21. Find the difference between the simple and compound interest on 10000 for 3 years at 3 per cent.

(1) 27.8 (2) 27.27 (3) 37.27 (4) 37.8 (5) None of these

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COMPOUND INTEREST

Q 21. Find the difference between the simple and compound interest on 10000 for 3 years at 3 per cent.

(1) 27.8 (2) 27.27 (3) 37.27 (4) 37.8 (5) None of these

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COMPOUND INTEREST

Q 22. The difference between the compound interest and the simple interest on a certain sum of money at 10% per annum for 2 years is 2.50. Find the sum.

(1) 350 (2) 275 (3) 250 (4) 325 (5) None of these

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COMPOUND INTEREST

Q 22. The difference between the compound interest and the simple interest on a certain sum of money at 10% per annum for 2 years is 2.50. Find the sum.

(1) 350 (2) 275 (3) 250 (4) 325 (5) None of these

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COMPOUND INTEREST

Q 23. Find the ratio of CI to SI on a certain sum at 5% per annum for 2 years.

(1) 41 : 40 (2) 42 : 41 (3) 43 : 40 (4) 41 : 35 (5) None of these

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COMPOUND INTEREST

Q 23. Find the ratio of CI to SI on a certain sum at 5% per annum for 2 years.

(1) 41 : 40 (2) 42 : 41 (3) 43 : 40 (4) 41 : 35 (5) None of these

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COMPOUND INTEREST

Q 24. The compound interest on a certain sum for 2 years is 105 and simple interest is 100. Find the rate of interest per annum and the sum.

(1) 10%, 500 (2) 10%, 1000 (3) 20%, 1000 (4) 4%, 1500

(5) None of these

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COMPOUND INTEREST

Q 24. The compound interest on a certain sum for 2 years is 105 and simple interest is 100. Find the rate of interest per annum and the sum.

(1) 10%, 500 (2) 10%, 1000 (3) 20%, 1000 (4) 4%, 1500

(5) None of these

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COMPOUND INTEREST

Q 25. A certain amount of money at compound interest grows up to 7520 in 15 years and up to 7896 in 16 years. Find the rate per cent per annum.

(1) 10% (2) 8% (3) 5% (4) 6.5% (5) None of these

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COMPOUND INTEREST

Q 25. A certain amount of money at compound interest grows up to 7520 in 15 years and up to 7896 in 16 years. Find the rate per cent per annum.

(1) 10% (2) 8% (3) 5% (4) 6.5% (5) None of these

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COMPOUND INTEREST

Q 26. What sum of money at compound interest will amount to 650 at the end of the first year and 676 at the end of the second year?

(1) 625 (2) 630 (3) 620 (4) 720 (5) None of these

CHITKARA UNIVERSITY

COMPOUND INTEREST

Q 26. What sum of money at compound interest will amount to 650 at the end of the first year and 676 at the end of the second year?

(1) 625 (2) 630 (3) 620 (4) 720 (5) None of these

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COMPOUND INTEREST

Q 27. 2400 becomes 3000 in 3 years at a certain rate of compound interest. What will be the sum after 6 years?

(1) 4750 (2) 3750 (3) 3570 (4) 3850 (5) None of these

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COMPOUND INTEREST

Q 27. 2400 becomes 3000 in 3 years at a certain rate of compound interest. What will be the sum after 6 years?

(1) 4750 (2) 3750 (3) 3570 (4) 3850 (5) None of these

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COMPOUND INTEREST

Q 28. A man borrows 4000 at 20% compound rate of interest. At the end of each year, he pays back 1500. How much amount should he pay at the end of the third year to clear all his dues?

(1) 2592 (2) 2852 (3) 2952 (4) 2953 (5) None of these

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COMPOUND INTEREST

Q 28. A man borrows 4000 at 20% compound rate of interest. At the end of each year, he pays back 1500. How much amount should he pay at the end of the third year to clear all his dues?

(1) 2592 (2) 2852 (3) 2952 (4) 2953 (5) None of these

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COMPOUND INTEREST

Q 29. Divide 2708 between A and B, so that A's share at the end of 6 years may equal B's share at the end of 8 years, compound interest being at 8%.

(1) 1458, 1250 (2) 1448, 1260 (3) 1438, 1270 (4) 1468, 1240

(5) None of these

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COMPOUND INTEREST

Q 29. Divide 2708 between A and B, so that A's share at the end of 6 years may equal B's share at the end of 8 years, compound interest being at 8%.

(1) 1458, 1250 (2) 1448, 1260 (3) 1438, 1270 (4) 1468, 1240

(5) None of these

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THANK YOU

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