Compound Interest, Future Value and Effective Rate

Future value of a sum at a nominal annual rate compounded m times a year, the effective annual rate and the continuous-compounding value.

Method: F = P(1 + r/m)^(mn); i_e = (1 + r/m)^m − 1

Input parameters

Unit system: SI

Parameter	Value	Unit
Present sum	100,000	
Nominal annual rate	8.0000	%
Compounding periods per year	4.0000	
Years	10.000	

Calculated results

Parameter	Value	Unit
Future value	220,804	
Effective annual rate	8.2432	%
Future value with continuous compounding	222,554	
Doubling time (years)	8.7507	

Formula and method

$$F = P\left(1+\frac{r}{m}\right)^{mn}, \quad i_e = \left(1+\frac{r}{m}\right)^{m} - 1, \quad F_c = Pe^{rn}$$

Variables

P	Present sum	-
r	Nominal annual rate	-
m	Compounding periods per year	-
n	Years	-
F	Future value	-
i_e	Effective annual rate	-
F_c	Future value with continuous compounding	-
t_2	Doubling time (years)	-

Method and standards

Compound interest.

Assumptions and limits

- Constant rate; at zero rate no doubling time is shown.

References

- F = P(1 + r/m)^(mn); i_e = (1 + r/m)^m − 1

Report details

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Release checks	2 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/general/economics/compound-interest

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.