HP 12c Calculator - Calculating a Compound Annual Growth Rate

Introduction

Compound Annual Growth Rate (CAGR) is a measure of the rate of return on an investment. The CAGR is often calculated to determine the change in the value of a stock or property. If there is a negative or zero value for the first or last year, the growth is not meaningful.

Beginning and ending values are known

To calculate the compound annual growth rate when the beginning and ending values are known, follow these steps:

1. 0, then PMT.
2. in the beginning value, press CHS, and then PV.
3. in the ending value, and press FV.
4. in the number of periods between the beginning and ending values, and then press n.
5. i to calculate the compound annual growth rate.

Multiple rates of return

To calculate the compound annual growth rate when multiple rates of return are involved, use the following procedure:

1. 0, then PMT.
2. in the beginning value, press CHS, PV, and then CHS. (If the beginning value is unknown, use $1.)
3. or subtract each year's return using the % (percent) key. Repeat this step for each rate of return.

4. each rate of return has been included, press **FV** to store the sum.
5. in the number of years, and then press **n**.
6. **i** to calculate the compound annual growth rate.

Example of a compound growth of a property

Ten years ago you purchased a home for $43,000. You have just sold it for $89,800. What is the periodic rate of appreciation?

Keys	Display	Description
Press **0**, then **PMT**	0.00	Stores 0 in PMT
Type **43000**, press **CHS**, then **PV**	-43,000.00	Stores beginning value
Type **89800**, then press **FV**	89,800.00	Stores ending value
Type **10**, then press **n**	10.00	Stores number of years
Press **i**	7.64	Calculates annual appreciation rate

Example of the growth rate on a fund

What is the annual yield or compound growth rate of a fund that has had the following annual returns?

Year 1	**5%**
Year 2	15%
Year 3	-3%
Year 4	8%

Keys	Display	Description
Press **0**, then **PMT**	0.00	Stores 0 in PMT
Press **1**, **CHS**, then **PV**	-1.00	Stores $1 as initial investment
Press **CHS**	1.00	
Press **5**, **%**, then **+**	1.05	Adds return for year 1
Type **15**, then press **%**, then **+**	1.21	Adds return for year 2
Press **3**, **CHS**, **%**, then **+**	1.17	Subtracts return for year 3

Year 1	5%	
Press **8**, **%**, then **+**	1.26	Adds return for year 4
Press **FV**	1.26	Stores amount at end of term
Press **4**, then **n**	4.00	Stores number of years
Press **i**	6.05	Calculates annual yield