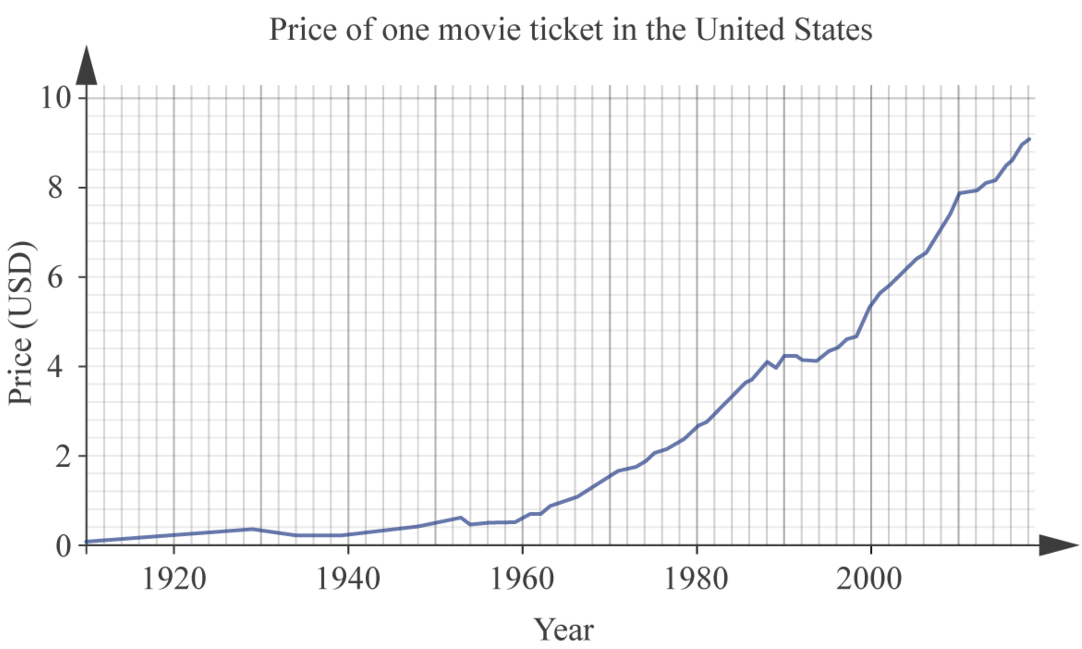
Index

1. Number and algebra / 1.4 Financial applications

The big picture

When people use money in their daily lives the value of the money is determined by how much that money can buy.

The graph below shows the price of a movie ticket in the United States over the past hundred years. Can you use this graph to decide which has more buying power, USD 8 in the year 2000 or USD 0.50 in 1940?



More information

Overview
(/study/app/sid-122-cid-754029/

The graph illustrates the price of a movie ticket in the United States from 1920 to 2020. The X-axis represents the year, starting from 1920 and ending in 2020, with labeled increments every 20 years. The Y-axis shows the price in USD, ranging from 0 to 10 dollars, with increments of 2 USD.

In the early years, from 1920 to about 1940, the price of a movie ticket remained close to 0.50 USD. There was a slight dip just before 1940. From 1940 onwards, there was a gradual increase until around 1980, where a more noticeable upward trend began.

This upward trend steepened significantly post-1980, with the price sharply increasing, surpassing 5 USD by around 2000. After 2000, the trend continued steeply, reaching close to 10 USD by 2020. This graph helps in assessing the purchasing power of 8 USD in 2000 compared to 0.50 USD in 1940.

[Generated by AI]

The idea that money is worth different amounts at different times is the main idea of this topic. Watch this video (http://ed.ted.com/lessons/how-to-calculate-the-future-value-of-your-cash-german-nande#watch) to see how this is applicable to you as a consumer.

Concept

Throughout this subtopic, you will be studying modelling techniques for predicting the future value of money and the future price of objects. Consider the assumptions that are made in the models and reflect on the validity of the predictions.

1. Number and algebra / 1.4 Financial applications

Interest compounded annually

Student view

Overview
(/study/app/sid-122-cid-754029/

Compound interest

When you put money into a savings account in a bank you will be paid interest which is calculated and added to your account on a regular basis. This is called compound interest.

A standard example is when interest is compounded annually (once a year).

Example 1

★☆☆

You invest 350 TRY (Turkish lira) in a savings account that offers a 2% interest rate compounded annually.

a) Calculate how much money will be in this account after 4 years, assuming that you don't make any withdrawals from the account, or make any further deposits into the account. Give your answer correct to the nearest lira.

b) Comment on any patterns that you notice in your calculations.

Student view

Section Student... (0/0) Feedback Print (/study/app/preview-p/sid-122-cid-754029/book/the-big-picture-id- Assign

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Overview
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cid-
754029/

	Steps	Explanatio
a)	After 1 year: $$350 \times 1.02 = 357.$$ After 2 years: $$357 \times 1.02 = 350 \times 1.02^2 = 364.14.$$ After 3 years: $$364.14 \times 1.02 = 350 \times 1.02^3 = 371.42.$$ After 4 years: $$371.42 \times 1.02 = 350 \times 1.02^4 = 378.85.$$	2% interest means th multiply the original a $1 + 0.02 = 1.02$. Annually means that this multiplication at each year. Compound interest r you earn 2% of the t amount at the end of previous year.
	There are 379 TRY in the account after 4 years.	
b)	The amount of money in the bank follows a geometric progression: $$350,\ 357,\ 364.14,\ 371.42,\ 378.85,\ \ldots$$ where $r = 1.02$.	The amount of mone bank is multiplied by the end of each year.

Making connections

You should notice that the amount of money in the bank after each year follows a familiar pattern. Compound interest is an example of a geometric sequence where $u_n = u_1 r^{n-1}$.

For convenience, you could use a modified equation for the nth term of a geometric sequence that is specific to compound interest.

Student
view

Overview
(/study/app/sid-122-cid-754029/

Important

The formula used for calculations of compound interest is

$$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn},$$

where,

- FV is the future value
- PV is the present value
- n is the number of years
- k is the number of compounding periods per year
- $r\%$ is the nominal annual rate of interest (without consideration of inflation).

This formula is given in the IB formula booklet.

Be aware

An algebraic expression such as PV means variable P is multiplied by variable V.

However, this is not true in the case of the compound interest formula, where PV and FV are abbreviations of the words ‘present value’ and ‘future value’ and should each be treated as one variable.

Example 2

★☆☆

Calculate the amount of money in an account where € 500 is invested at a nominal rate of 3.4% for 10 years. Give your answer correct to the nearest cent.

Student view

Overview
(/study/app/sid-122-cid-754029/

Steps	Explanation
$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ $FV = 500 \times \left(1 + \frac{3.4}{100 \times 1}\right)^{1\times 10} = 698.51$ The future value of the account will be €698.51.	$PV = 500$ $r = 3.4\%$ (You do not need to cor rate to decimal notation. That is dc in the equation.) $k = 1$ $n = 10$

Exam tip

Compound interest questions will often direct you to give your answer to a specified degree of accuracy that may be different from the 3 significant figures that you use otherwise. Read the question carefully so that your final answer is rounded correctly.

Example 3

★★☆

Joe invested $\text{USD}2750$ at an unknown interest rate that is compounded annually. At the end of 10 years this investment amounts to $\text{USD}5409.67$.

Find the interest rate at which this money was invested.

Student view

Overview (/study/app/sid-122-cid-754029/

Steps	Explanation
$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ $5409.67 = 2750\left(1 + \frac{r}{100 \times 1}\right)^{1\times10}$	$FV = 5409.67$ $PV = 2750$ $k = 1$ $n = 10$
$\frac{5409.67}{2750} = \left(1 + \frac{r}{100}\right)^{10}$ $\sqrt[10]{\frac{5409.67}{2750}} = 1 + \frac{r}{100}$ $1.070000 = 1 + \frac{r}{100}$ $1.070000 - 1 = \frac{r}{100}$ $0.070000 \times 100 = r$	Solve for r.
$r = 7.00\%$ The interest rate was 7.00%	Unless otherwise specified, give your answ to 3 significant figures.

International Mindedness

Keep in mind that different societies view the lending of money and the charging of interest differently.

Think about how these issues are viewed in your own society. Are these views recent or have they been the same for a long time?

Do some research to find out how other societies view the practice of lending money and charging interest. What are some of the reasons for the differences?

Student view

Overview (/study/app/sid-122-cid-754029/

You may also be asked a question about interest rather than the interest rate. The interest is the amount of money paid to you by the bank.

Example 4

★★☆

Calculate the amount of interest earned when 1000 RUB (Russian roubles) are invested for 9 years at a nominal rate of 5.3% compounded annually.

Give your answer correct to the nearest rouble.

Steps	Explanation
$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ $FV = 1000\left(1 + \frac{5.3}{100 \times 1}\right)^{1\times9} = 1591.68$	$PV = 1000$ $r = 5.3\%$ $k = 1$ $n = 9$
$\text{Interest} = 1591.68 - 1000 = 591.68 \approx 592$	The bank pays you approximately 5 so this is added to the 1000 roubles invested originally. The future value total amount of money in the accou

Inflation and real value of an investment

When you invest money with a compound interest rate the value of your investment grows over time. But this does not always mean that your actual wealth increases because while the amount of money grows in the bank account the value of money (how much you can buy with it) may decrease due to inflation.

Student view

The formula for compound interest,

Overview (/study/app/sid-122-cid-754029/

$$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn},$$

uses the nominal interest rate. A nominal interest rateis the rate advertised by the bank and does not take inflation into account.

This means that you need to incorporate the inflation rateinto your calculations if you want to find out the real value (buying power) of your investment.

Example 5

★★☆

Simone invests $\text{USD}12000$ for 20 years in an account that pays a nominal rate of 4.2% compounded annually. The annual inflation rate over this time period is $3.8\ \%$.

a) Calculate the real value of the investment after 20 years. Give your answer correct to two decimal places.

b) Deduce what must be true about the inflation and the interest rate for the real value of your investment to grow over time.

	Steps	Explanation
a)	$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ $FV = 12000\left(1 + \frac{4.2}{100 \times 1}\right)^{1\times 20} = 27\ 323.4557$	These are your calculati total value of the investi 20 years.

Student view

Overview
(/study/ap
p/sid-
122-
cid-
754029/

	Steps	Explanation
	Real value of the investment is: $$\frac{27\ 323.4557}{1.038^{20}} = 12\ 959.51$$ This is the amount with the same buying power in the time of the investment as $\text{USD}27\ 323.4557$ has twenty years later.	Now you need to consi inflation rate. The interest rate multipl investment by 1.042 ea The inflation rate divide investment by 1.038 ea
b)	For the investment to grow the annual interest rate must be greater than the annual rate of inflation.	You can try different val interest rate and inflatio see how this works.

Exam tip

In the example above you have seen one way of incorporating the inflation rate in the calculation of the real value of the investment. Other resources use the difference of the interest and the inflation to find an approximation of the real value of the investment. On IB exams both methods will be accepted.

Theory of Knowledge

You likely have heard the clichés that 'knowledge is power' and 'money is power'. If mathematics can be used in financial analysis to create money, can it be said that one who possesses a great deal of mathematical knowledge has a great deal of power?

A knowledge question that emerges is, 'To what extent should mathematical application be governed by ethical considerations?'

Student
view

4 section questions

1. Number and algebra / 1.4 Financial applications

Compound interest – other compounding intervals

Compound periods

In addition to compounding annually, interest is often compounded half-yearly, quarterly, or monthly.

Interactive 1. Understanding Compounding Periods.

More information for interactive 1

Overview (/study/app/sid-122-cid-754029/

This interactive allows users to explore the effects of different interest rates and compounding periods on investment growth. Users can select an interest rate ranging from 10% to 50% by adjusting the “Interest rate” slider at the top and choose the compounding frequency, from yearly to daily (such as half-yearly (2), quarterly (4), monthly (12), or even daily (365)), by adjusting the “Compounding periods in a year” slider, as they prefer.

The interactive displays a graph illustrating how the interest accumulates over time on an initial investment of 100%. Additionally, users can view the continuous compounding curve to compare how continuous compounding impacts growth by enabling the check box “Show the continuous compounding curve.”

The interactive uses two key formulas to demonstrate these concepts. For standard compounding, it applies $A = P(1 + \frac{r}{n})^{nt}$, where P is the principal 100%, r is the interest rate, n is the number of compounding periods per year, and t is time in years. For continuous compounding, it uses $A = Pe^{rt}$, where e is Euler’s number (2.718).

For example, if a user choose as interest rate of 20% and compounding periods in a year as 4, then this interactive tool visually demonstrates compound interest growth through two modes: stepped lines for periodic compounding (e.g., quarterly at 20% yields four distinct growth jumps from 100% to 121.55% annually) and a smooth curve for continuous compounding ($100\% \times e^{0.20} \approx 122.14\%$).

Users can practice adjusting interest rates and compounding periods to see real-time changes in investment growth. The interactive tool instantly updates the graph, making it easy to compare different scenarios.

Activity

The applet above allows you to change the interest rate and the number of compounding periods in a year. The result shows you what percentage of the original amount is obtained by the end of the year.

Use the applet to deduce how the number of compounding periods affects the value of an investment at the end of a year.

Important

Use

Student view

Overview (/study/app/sid-122-cid-754029/

$$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn},$$

for questions where interest is compounded half-yearly, quarterly, or monthly.

Use k = 2, 4 and 12 for interest compounded half-yearly, quarterly or monthly, respectively.

Example 1

★☆☆

Given that 2750 CNY (Chinese yuan) is invested at a 4.5% nominal interest rate, determine the value of the investment after 4 years if is compounded:

a) half-yearly

b) quarterly

c) monthly.

Give your answers correct to the nearest yuan.

	Steps	Explanation
a)	$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ $FV = 2750\left(1 + \frac{4.5}{100 \times 2}\right)^{2\times4} = 3286$	Half-yearly means that there compounding periods in the $k = 2$
b)	$FV = 2750\left(1 + \frac{4.5}{100 \times 4}\right)^{4\times4} = 3289$	Quarterly means that there a compounding periods in the $k = 4$

Student view

Overview
(/study/ap
p/sid-
122-
cid-
754029/

	Steps	Explanation
c)	$FV = 2750\left(1+\frac{4.5}{100\times 12}\right)^{12\times 4} = 3291$	Monthly means that there ar compounding periods in the $k = 12$

Be aware

Since these calculations are done routinely by bankers and financial analysists, there are financial applications for compound interest. One such application is available on your graphic display calculator and you are encouraged to use it in the exam.

Steps	Explanation
You will see how to use the finance application of your calculator to find the answer to part (b) of **Example 1.** Choose the financial application.	

Student
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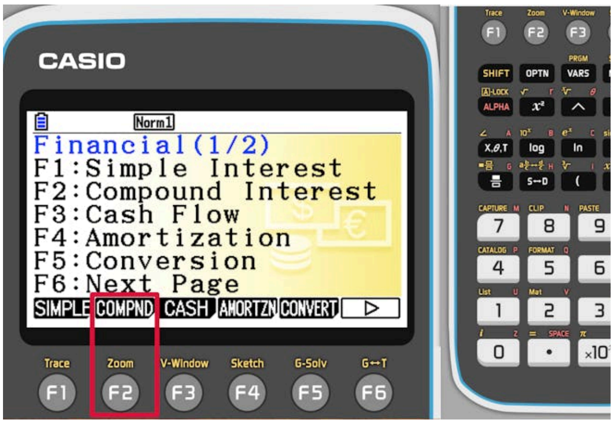
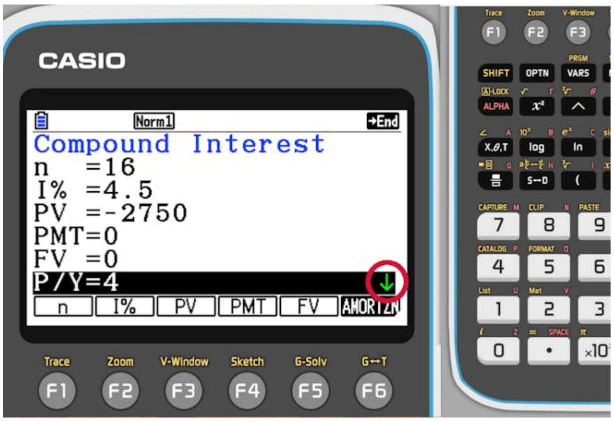
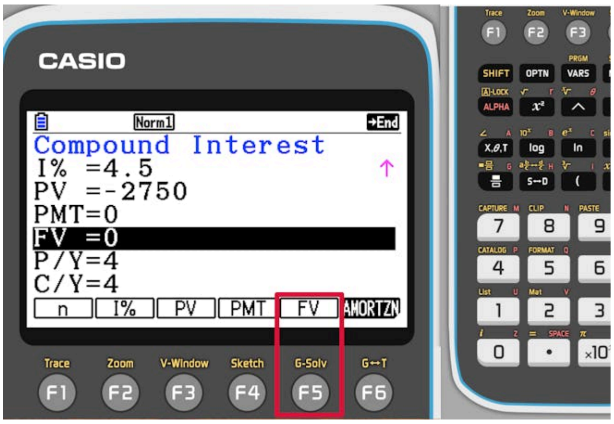
Overview
(/study/app/sid-122-cid-754029/

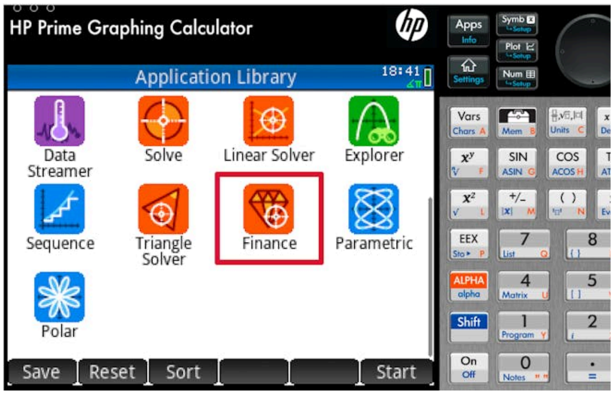
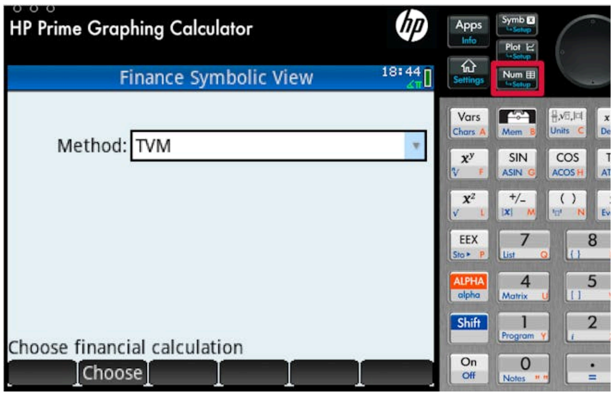
Steps	Explanation
Choose the application working with compound interest.	
Enter the data given in the question. • n: $4 \times 4 = 16$ (4 years and 4 compounding periods in each year) • $I\%$: annual interest rate • PV: negative, because the original investment is coming out of your pocket • PMT: regular payment (none in this example) • FV: this is what you are interested in, leave it as 0 • P/Y: number of payments made in a year • C/Y: number of compounding periods in a year. You will need to scroll down to enter the last bit of information.	

Student view

Steps	Explanation
Once the data is entered, choose the variable you want to calculate (in this example this is FV, the future value) and press the corresponding F-button (in this case F5).	
The calculator gives you the answer. In this example you already got the same answer using the formula. The advantage of the calculator is that it can solve for any of these variables if the others are given. For example, it can tell how long it takes to reach a given future value. Or it can tell what should be the interest rate to reach a given future value in a given time.	

Overview
(/study/app/sid-122-cid-754029/

<table>
<tr><th>Steps</th><th>Explanation</th></tr>
<tr><td>You will see how to use the finance application of your calculator to find the answer to part (b) of Example 1.

Choose the financial application.</td><td>
</td></tr>
<tr><td>Choose the TVM (Time Value of Money) method and enter the numeric view.</td><td>
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Student view

<table>
<tr><th>Steps</th><th>Explanation</th></tr>
<tr><td>
Enter the data given in the question.

$N: 4 \times 4 = 16$ (4 years and 4 compounding periods in each year)
PV: negative, because the original investment is coming out of your pocket
Pmt: regular payment (none in this example)
FV: this is what you are interested in, leave it as 0
$I\%$/Yr: annual interest rate
P/Yr: number of payments made in a year
C/Yr: number of compounding periods in a year.

Once the data is entered, move to the line you want to calculate (in this example this is FV, the future value) and press solve.
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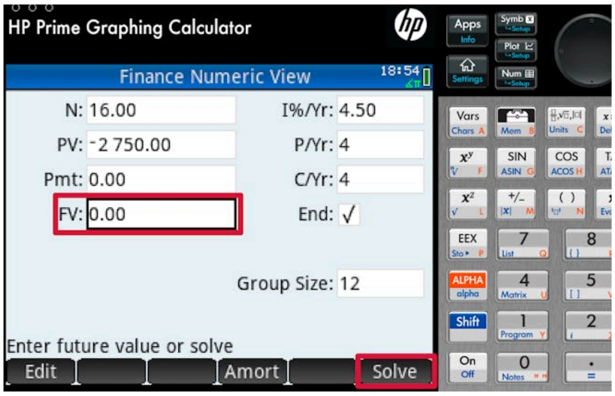

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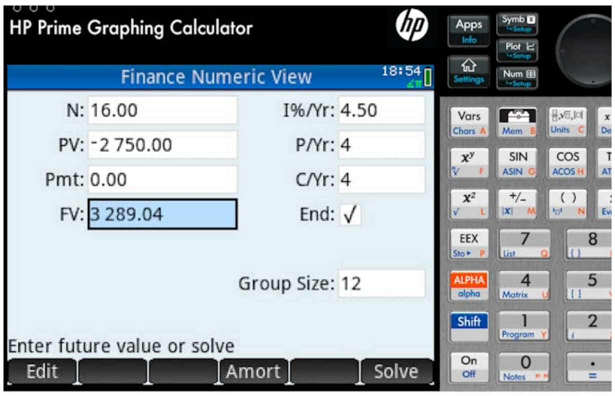
</td><td>


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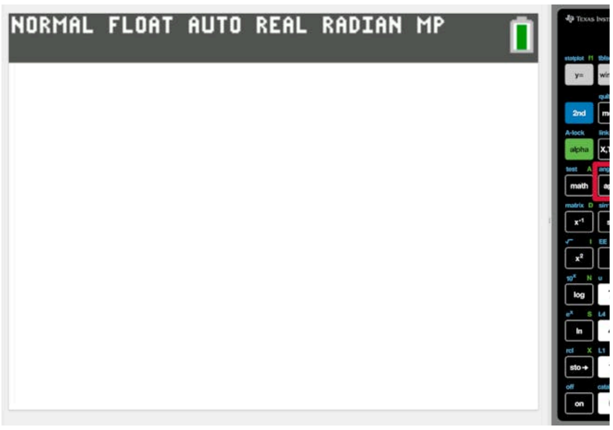
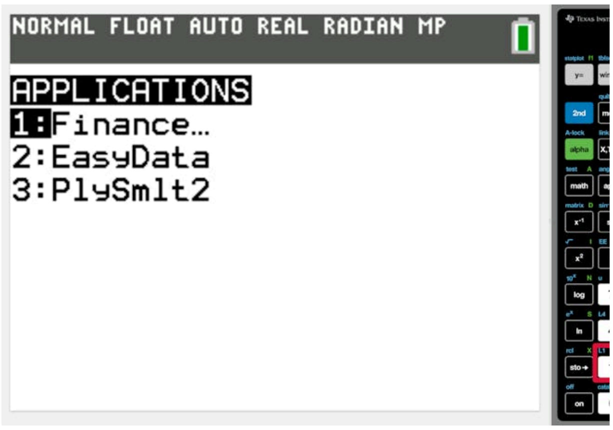
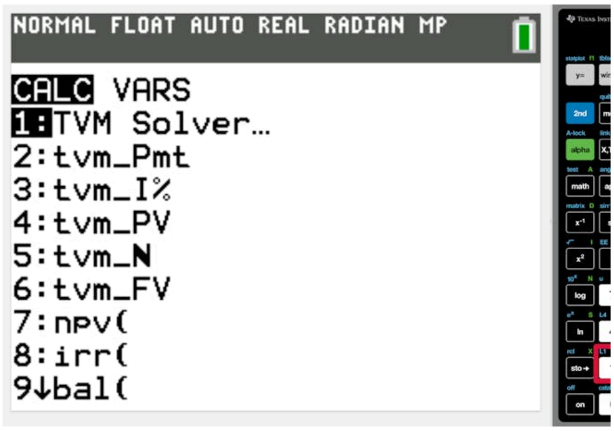
Steps	Explanation
You will see how to use the finance application of your calculator to find the answer to part (b) of **Example 1.** The financial solver is one of the available applications.	
Choose the finance application.	

<table>
<tr><th>Steps</th><th>Explanation</th></tr>
<tr><td>Choose the TVM (Time Value of Money) solver.</td><td>



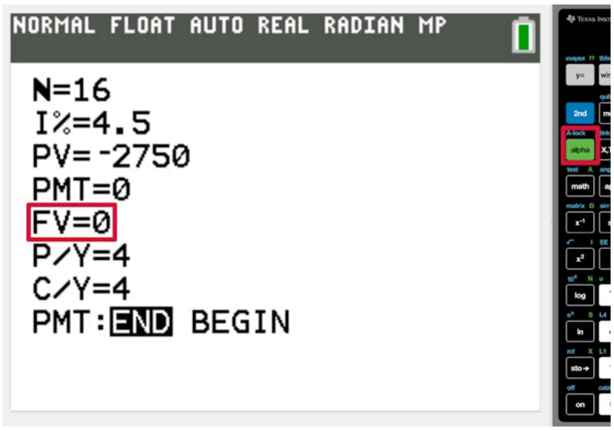
</td></tr>
<tr><td>

Enter the data given in the question.

N: $4 \times 4 = 16$ (4 years and 4 compounding periods in each year)
$I\%$: annual interest rate
PV: negative, because the original investment is coming out of your pocket
PMT: regular payment (none in this example)
FV: this is what you are interested in, leave it as 0
P/Y: number of payments made in a year
C/Y: number of compounding periods in a year.

Once the data is entered, move to the line you want to calculate (in this example this is FV, the future value) and press solve (alpha/enter).

</td><td>



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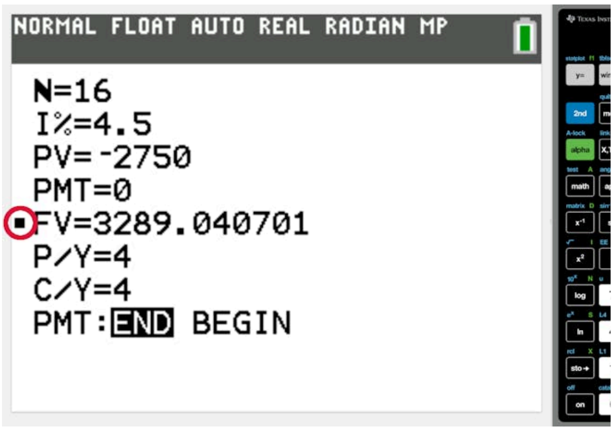
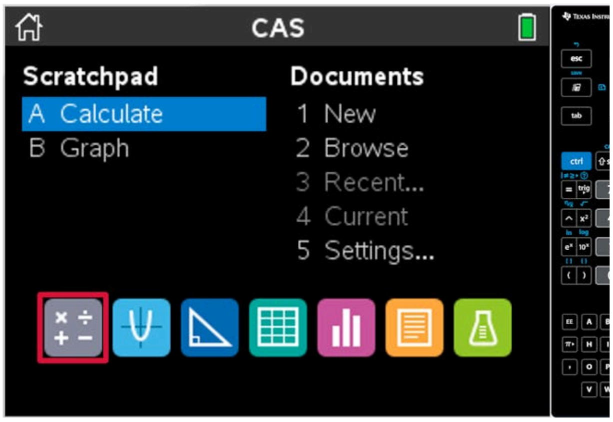
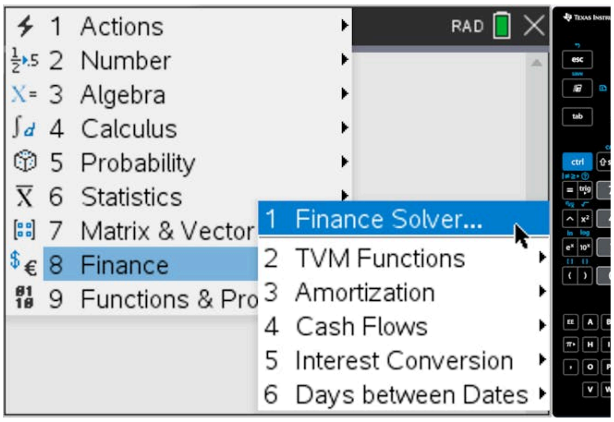
</table>

Overview
(/study/app/sid-122-cid-754029/

Steps	Explanation
The calculator gives you the answer (the little mark next to FV indicates that that is the value that changed). In this example you already got the same answer using the formula. The advantage of the calculator is that it can solve for any of these variables if the others are given. For example, it can tell how long it takes to reach a given future value. Or it can tell what should be the interest rate to reach a given future value in a given time.	

Student view

Steps	Explanation
You will see how to use the finance application of your calculator to find the answer to part (b) of **Example 1.** Choose the calculator application.	
Find the finance solver through the menu.	

Overview
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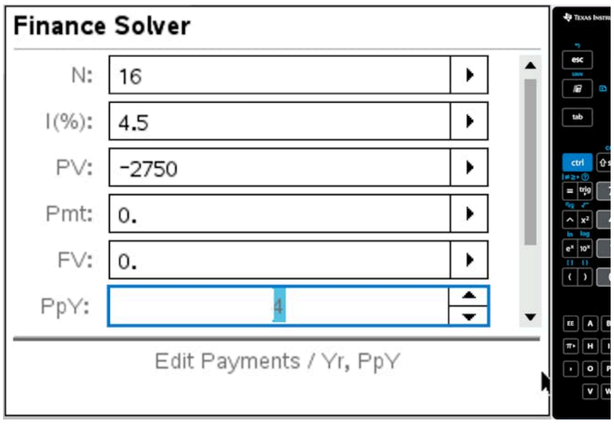
<table>
<tr><th>Steps</th><th>Explanation</th></tr>
<tr><td>

Enter the data given in the question.

- N: $4 \times 4 = 16$ (4 years and 4 compounding periods in each year)
- $I(\%)$: annual interest rate
- PV: negative, because the original investment is coming out of your pocket
- Pmt: regular payment (none in this example)
- FV: this is what you are interested in, leave it as 0
- PpY: number of payments made in a year
- CpY: number of compounding periods in a year.

You will need to scroll down to enter the last bit of information.

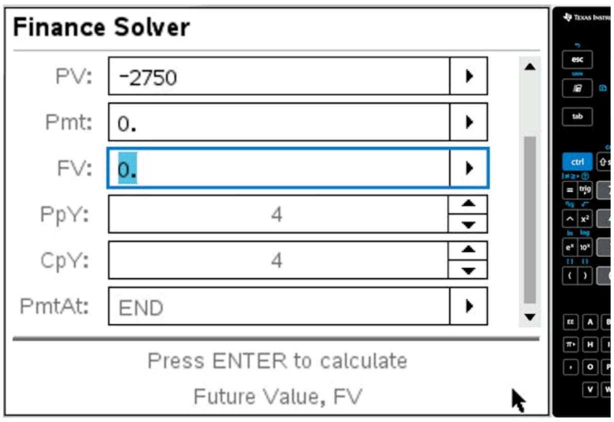
</td><td>



</td></tr>
<tr><td>

Once the data is entered, move to the line you want to calculate (in this example this is FV, the future value) and press enter.

</td><td>



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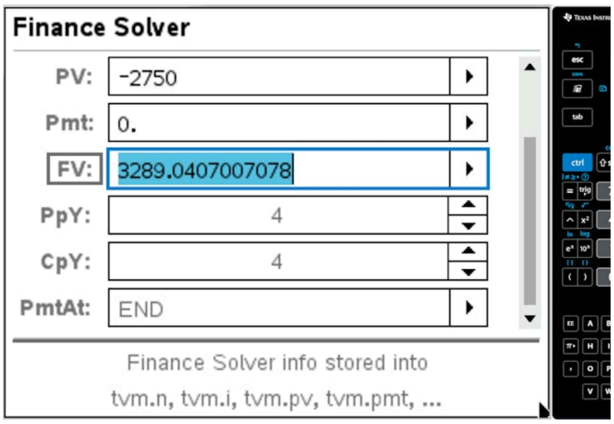
</table>

Student view

Overview
(/study/app/sid-122-cid-754029/

Steps	Explanation
The calculator gives you the answer. In this example you already got the same answer using the formula. The advantage of the calculator is that it can solve for any of these variables if the others are given. For example, it can tell how long it takes to reach a given future value. Or it can tell what should be the interest rate to reach a given future value in a given time.	

Example 2

★☆☆

You decide to invest USD 2300 in an account with a 2.4% nominal annual interest rate. Given that the interest is compounded monthly, find the minimum number of years that it will take for your investment to double. Give your answer correct to the nearest year.

Method 1

Student
view

Overview
(/study/ap
p/sid-
122-
cid-
754029/

Steps	Explanation
$4600 = 2300 \times \left(1 + \frac{2.4}{100 \times 12}\right)^{12 \times n}$	Use the formula and enter the informa $FV = 4600$ $PV = 2300$ $r = 2.4\%$ $k = 12$
The value given by the calculator is $n = 28.9$. It will take 29 years for the investment to double.	Use your graphic display calculator to equation. If you need help, take a look similar example in section 1.3.3.

Method 2

Steps	Explanation
Future value: $FV = 4600$ Present value: $PV = -2300$ Interest rate $I = 2.4$ Compounding periods per year: $C/Y = 12$ Payment: $PMT = 0$ Payment per year: $P/Y = 12$	Use the financial solver application, enter given. Note that the present and future values ne opposite signs. The payment needs to be set as 0 since th regular payment in or out of the account. When no regular payment is made, use th payment frequency as the compounding f
The value given by the calculator is $n = 346.92$. $\frac{346.92}{12} = 28.91$, so it will take 29 years for the investment to double.	Use the finincial solver to solve for the nur compounding periods. Since the interest is compounded monthly to divide this result by 12 to get the answe question.

Student
view

You can use the applet below to practise more of this kind of question.

Interactive 2. Practice Exercise on Compound Interest — Other Compounding Intervals.

More information for interactive 2

This interactive allows users to practice solving investment-related problems by presenting them with randomly generated scenarios. Each scenario includes variables such as future value, present value, length of investment, compounding periods, and interest rate, with one value intentionally left blank. Users must analyze the given data and apply the appropriate financial formulas to determine the missing value. The applet covers a wide range of investment calculations, making it a versatile tool for learning and practice.

To enhance the learning experience, the applet allows users to focus on specific variables they want to practice. For example, if a user wants to practice finding the interest rate, they can select the corresponding tab, and the applet will generate a unique set of values for the other variables. Similarly, users can practice calculating future value, present value, or any other missing parameter by selecting the relevant tab. The "Show solution" button reveals the correct answer, enabling users to verify their calculations and learn from their mistakes.

For example, if a user clicks on the "number of compounding periods per year" tab, they might see the following problem:

Find the missing number:

Present value of the investment: 7510.72

Length of the investment (in years): 29

Interest rate (per annum, in percent): 17.53%

Overview
(/study/app/sid-122-cid-754029/

Number of compounding periods in a year:

Future value of the investment: 1050526.05

The user can then apply the compound interest formula, $FV = PV \times (1 + \frac{r}{100k})^{nt}$ to solve for k. After performing the calculations, they can check their answer—revealing that the correct value is $k = 3$, meaning interest is compounded 3 times per year.

This interactive approach helps users practice and verify their understanding of compounding concepts.

4 section questions

1. Number and algebra / 1.4 Financial applications

Annual depreciation

Activity

Consider the price of a used car, as shown in the first graph below.

Describe what happens to the price of the car as it gets older.

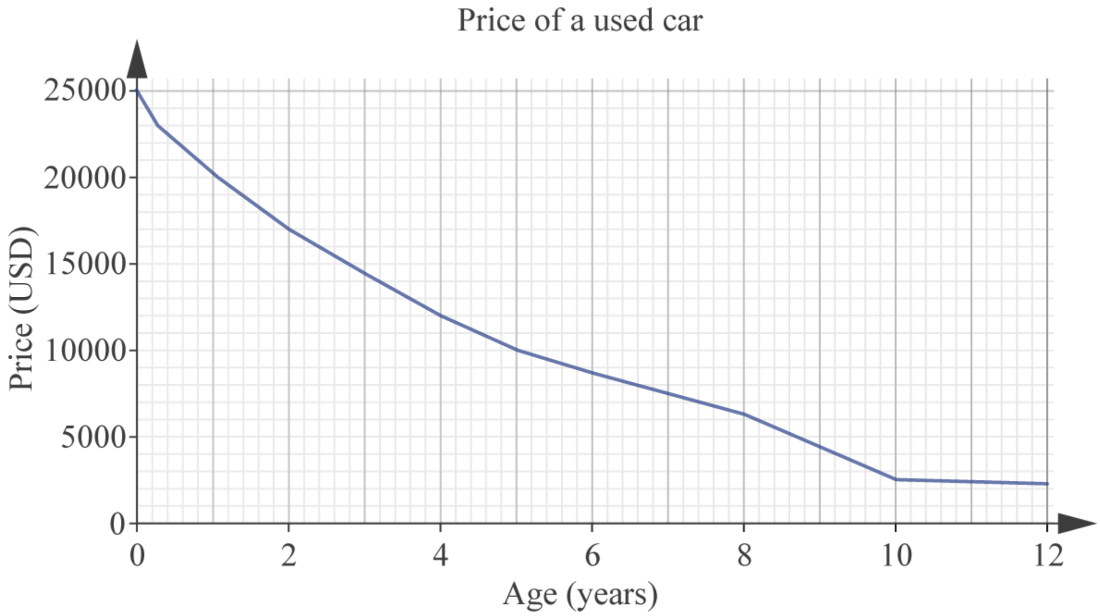
The second graph below shows the curve for $FV = 25\,000\left(1 - \frac{15}{100}\right)^n$

.

How does this curve compare with the first graph?

What conclusion can you draw about depreciation from this comparison?

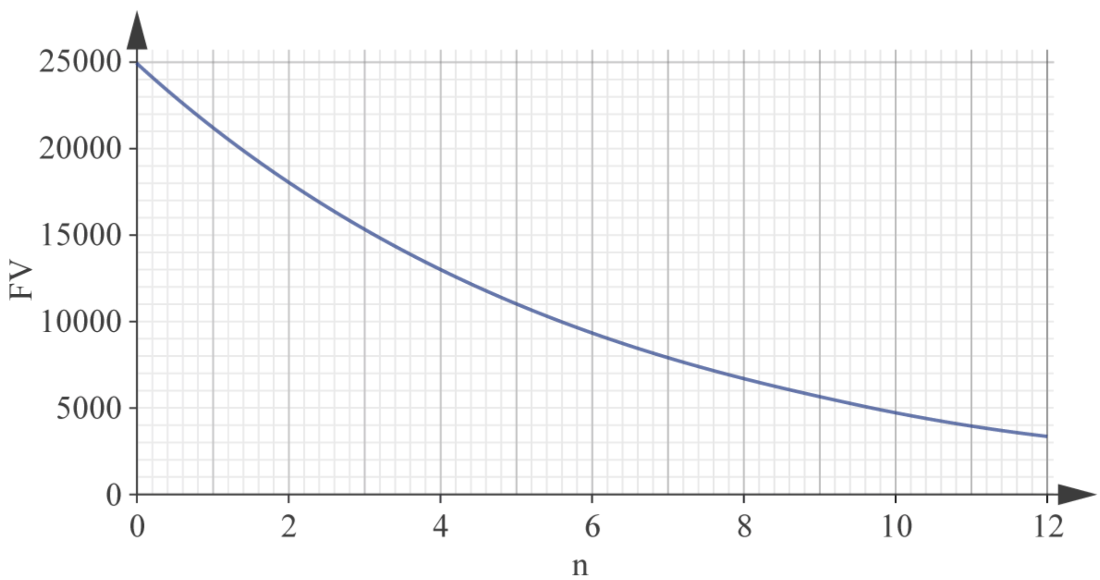
Student view



More information

The image shows a line graph titled "Price of a used car." The X-axis represents age in years, ranging from 0 to 12. The Y-axis represents price in USD, ranging from 0 to 25,000. The graph shows a downward trend indicating that as the age of the car increases, the price decreases.

[Generated by AI]



More information

The graph displays a downward curve indicating depreciation over time. The x-axis, labeled 'n', ranges from 0 to 12. The y-axis, labeled 'FV', ranges from 0 to 25000. The blue curve starts at the top left corner, where n equals 0 and FV equals 25000, and decreases steadily until it reaches close to the bottom right corner, where n equals 12 and FV approaches 0. The trend demonstrates a steady decline in value as n increases, illustrating depreciation.

[Generated by AI]

Depreciation is the loss in value of an object as it ages. Many objects that you buy will depreciate over time. However, some items, such as a house or a work of art, will appreciate, or increase in price, as they get older.

Think of at least five examples of objects that will depreciate and five that will appreciate.

As you can see from the Activity, a depreciation curve for the price of a car is similar the compound interest model, $FV = 25\,000\left(1 - \frac{15}{100}\right)^n$.

While the actual depreciation curve for the price of a car is not completely smooth like the one for compound interest, using the compound interest formula is still a very good approximation for depreciation.

Exam tip

When using the compound interest formula $FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ for calculations of depreciation, you need to remember that r is negative to account for the decrease in value.

Overview
(/study/app/sid-122-cid-754029/

You need only consider annual depreciation for the IB exam, so always use $k = 1$ for depreciation questions.

Example 1

★★☆

A washing machine costs €450 and depreciates at a rate of 15 % per year.

a) Write an equation for FV, the future value, in €, of the washing machine after n years.

b) Calculate the value of the washing machine after 4 years.
Give your answer to the nearest cent.

c) Find the value of the washing machine after 100 years and comment on this result.

Student view

Overview (/study/app/sid-122-cid-754029/

	Steps	Explanati
a)	$FV = 450\left(1 - \frac{15}{100}\right)^n = 450(0.85)^n$	
b)	$FV = 450(0.85)^4 = 234.90$ so the value of the washing machine will be €234.90.	Use $n = 4$.
c)	$FV = 450(0.85)^{100} = 0.0000394$	Use $n = 100$.
	The model predicts that the value is almost €0, but at this point it would make sense to sell the metal that the machine is made from. This metal will be worth more than €0 so the model does not work for large values of n.	

Making connections

Annual depreciation calculations can also be carried out using a geometric sequence model.

In this case, you would use $u_n = u_0 r^n$, where u_0 is the initial price, r is $1 - d$ (the depreciation rate), and n is the number of years.

Keep in mind that it is more convenient to use the compound interest formula for annual depreciation questions.

Example 2

★★☆

Calculate the rate of depreciation for a car that costs $\text{USD } 20\ 000$ when new and $\text{USD } 12\ 000$ when it is 8 years old.

Student view

Overview
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cid-
754029/

Method 1

Steps	Explanation
In the finance app on your graphic display calculator enter $$FV = -12\ 000$$ $$PV = 20\ 000$$ $$k = 1$$ $$n = 8$$ Solve for the interest rate to get $$r = -6.1857\%$$	You can solve this question using the fina your graphic display calculator.

Method 2

Steps	Explanation
$12\ 000 = 20\ 000\left(1+\frac{r}{100}\right)^8$	r is the depreciation rate.
$\frac{12\ 000}{20\ 000} = \left(1+\frac{r}{100}\right)^8$ $\sqrt[8]{\frac{12\ 000}{20\ 000}} = 1+\frac{r}{100}$ $0.93813 - 1 = \frac{r}{100}$ $r = -6.1857$	Solve for r . You can also answer this question by using the fi on your graphic display calculator.
The rate of depreciation is 6.19%.	Since the question does not specify accuracy, us significant figures.

Student
view

Overview
(/study/app/sid-122-cid-754029/

4 section questions

1. Number and algebra / 1.4 Financial applications

Checklist

Section Student... (0/0) Feedback Print (/study/app/preview-p/sid-122-cid-754029/book/checklist-id-26140/print/) Assign

What you should know

By the end of this subtopic you should be able to:

- identify questions about compound interest
- use $FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ for compound interest questions
- use $k = 1$ for interest compounded annually, $k = 2$ for interest compounded half-yearly, $k = 4$ for quarterly compounding, and $k = 12$ for monthly compounding
- use the finance application on your calculator to solve compound interest questions, particularly the ones where you are asked to find n
- use $FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$ for annual depreciation questions with $k = 1$ and a negative value for r
- give your solution to an appropriate level of accuracy as stated in the question.

1. Number and algebra / 1.4 Financial applications

Investigation

Section Student... (0/0) Feedback Print (/study/app/preview-p/sid-122-cid-754029/book/investigation-id-26142/print/) Assign

Student view

Overview
(/study/app/sid-122-cid-754029/

Imagine that you would like to use a savings account to save money for a future purchase. Identify the item that you would like to buy, and its cost.

Do some research to find a compound interest savings tool that is available in your country.

Present a savings plan that will allow you to purchase this item. Your plan should include all of the information that you studied in this topic. Do not forget to take the inflation rate into account.

Section Student... (0/0) Feedback Print (/study/app/preview-p/sid-122-cid-754029/book/annual-depreciation-id-26138/print/) Assign

Student view