Present Value

Mariah Carey deal. what were they thinking?

Calculate that deal

backwards loan calc usage

read mixerman diaries

The agent escrow account. book keeping

Homework

Future value calculation.....

FV of \$25,000 loan. 2 years. 8 percent annual interest. calculated monthly.

FV of \$25,000 loan. 2 years 8 percent interest calculated quarterly.

FV of \$1000 loan. 6 months. 25% annual interest calculated daily.

Generate a loan amortization table for a \$5000 loan. Annual interest 11%, Length of loan is 18 months and payments are monthly.

make a pdf, screen shot or other digital file. print it out or if you must email it to me.

due tuesday at 5:00 pm

8 percent annual interest monthly calculation 8/12%= .00666666667

2 years in months = 24 months

 $FV = 25000(1 + .0067)^{24} = 29322.20$

8 percent interest calculated quartely 8%/4= .02

2 years of quarters = 8 time periods

 $FV = 25000(1+.02)^8 = 29291.48$

FV calculated more often is more! FV calculated less often is less!

25% annual interest = 0.0006849 daily interest 6 months has 182.5 days

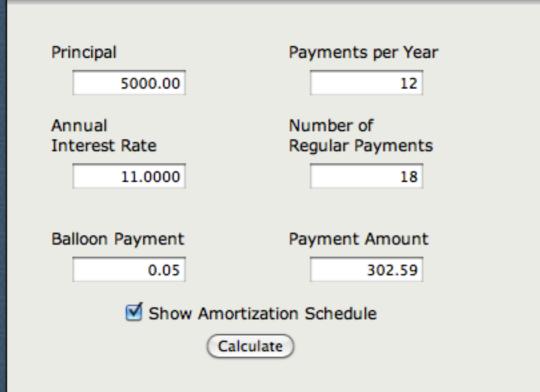
 $FV = \! 1000(1 \! + \! 0.0006849)^{182.5} = \! \! 1133.09$

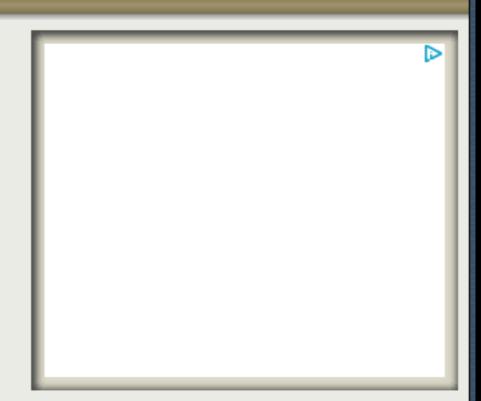
Assuming 365 days a year.

this is what your credit card is probably charging you

Amortization Calculator

Almost any data field on this form may be calculated. Enter the appropriate numbers in each slot, leaving blank (or zero) the value that you wish to determine, and then click "Calculate" to update the page.





This loan calculator is written and maintained by Bret Whissel.

See Bret's Blog for help, a spreadsheet, derivations, calculator news, and more information.

Summary

Principal borrowed: \$5,000.00
Regular Payment amount: \$302.59
Final Balloon Payment: \$0.05

Final Balloon Payment: \$0.05 Interest-only payment: \$45.83 Annual Payments: 12

Total Payments: 19 (1.58 years)
Annual interest rate: 11.00%
Periodic interest rate: 0.9167%

Pmt 1	Principal 256.76	Interest 45.83	Cum Prin 256.76	Cum Int 45.83	Prin Bal 4,743.24
2	259.11	43.48	515.87	89.31	4,484.13
3	261.49	41.10	777.36	130.41	4,222.64
4	263.88	38.71	1,041.24	169.12	3,958.76
5	266.30	36.29	1,307.54	205.41	3,692.46
6	268.74	33.85	1,576.28	239.26	3,423.72
7	271.21	31.38	1,847.49	270.64	3,152.51
8	273.69	28.90	2,121.18	299.54	2,878.82
9	276.20	26.39	2,397.38	325.93	2,602.62
10	278.73	23.86	2,676.11	349.79	2,323.89
11	281.29	21.30	2,957.40	371.09	2,042.60
12	283.87	18.72	3,241.27	389.81	1,758.73
13	286.47	16.12	3,527.74	405.93	1,472.26
14	289.09	13.50	3,816.83	419.43	1,183.17
15	291.74	10.85	4,108.57	430.28	891.43
16	294.42	8.17	4,402.99	438.45	597.01
17	297.12	5.47	4,700.11	443.92	299.89
18	299.84	2.75	4,999.95	446.67	0.05
19	*0.05	0.00	5,000.00	446.67	0.00

^{*}The final payment has been adjusted to account for payments having been rounded to the nearest cent.

What is the present value of a lump sum of money in the future?

What is the present value of a stream of monthly payments (example pension, royalties etc) in the future?

Why would you need to know this?

Divorce! Any of you going in to family law or accounting will eventually encounter this problem.

Buying out a partner in a business.

Buying out a member of the band.

Value of a life insurance policy.

Getting an advance against royalties owed in the future?

Could be a simple calculation.

A record companies often hold half the royalties for possible "returns" from stores. For 2 years!. Suppose all those sales were downloads? E.G. no returns. The record company still by contract has the right to wait two years to pay. The artist might negotiate with the record company to get those royalties now. You would use some sort of present value calculation. Or the sum would be *discounted*.

A divorcing spouse might ask NOW for his/her share of a lump sum in the future. Or the divorcing spouse may ask now for his/her share of a quarterly stream of royalty payments over the next 10 years.

A publishing company may wish to offer an advance for an established songwriters songwriting catalogue.

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Remember this equation

FV = PV*(1+i)<sup>n</sup>

This implies

PV = FV/(1 + i)<sup>n</sup>

As usual

PV is present value

FV is Future value

i is the interest rate per period

and n is the number of periods.
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What interest rate do we use?

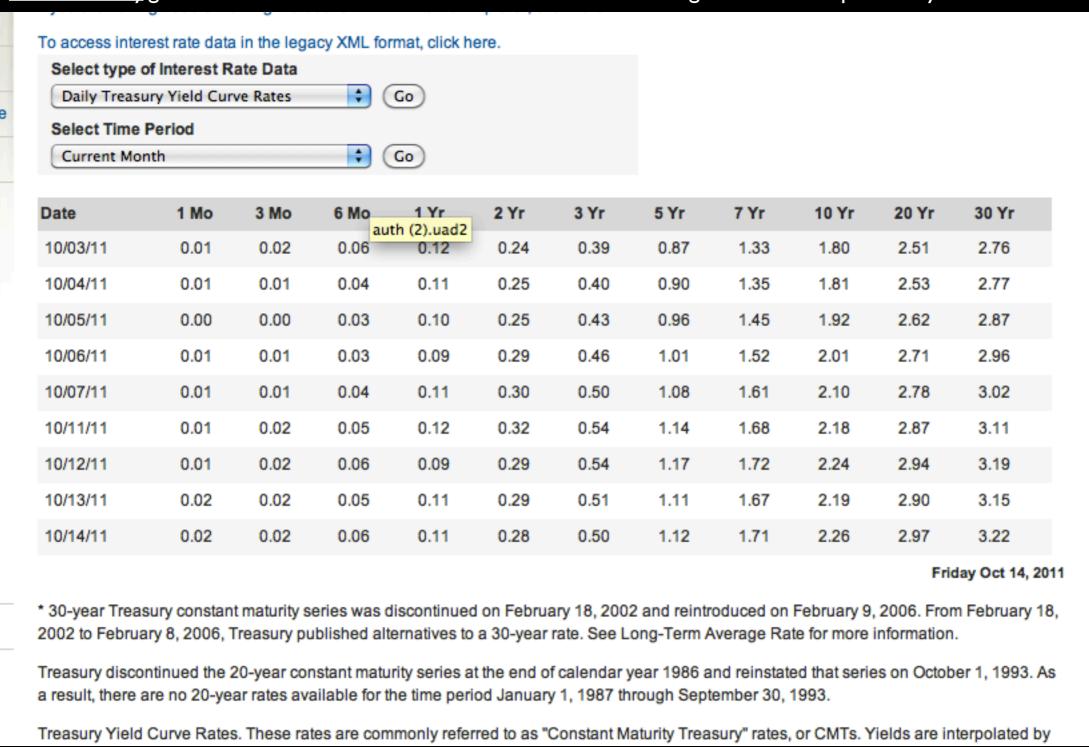
Interest rate represents the market expectation of inflation + risk.

If we assume this amount is risk free the only thing the interest rate represents is expectations of inflation.

in this case use the interest rate for US treasuries for that period of time.

How do we find that...

www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield



Interest rates are artificially low. so these PV calculations are probably to high. If i were buying a future lumps sum of money I wouldn't value them this way.

absolutely risk free \$100,000 due 30 years from now. we always calculate interest calculated annually when we are calculating a lump sum.

treasury 30 year yield is 3.22% (per year)

$$PV = 100,000/(1+.0322)^{30} = 38644.20$$

Calculate PV of 5000 dollars (risk free) payable 10 years from now. 10 year treasury is %2.26

 $PV = 5000/(1 + .0226)^{10} = 3998.64$

France vs Greece

More risk results in those countries paying a lot higher interest rate than the expected rate based on inflation. There is more risk.

\$10,000 from the government of Greece due 10 years from now. compare that to \$10,000 from the government of France due 10 years from now.

Greece 10 year yield = 26.9% French 10 year yield = 3.017%

$$PV = 10,000/(1 + .269)^{10} = 923.38$$

$$PV = 10,000/(1 + .0317)^{10} = 7319.23$$

NOTE! these are not bonds. bonds include quarterly interest. If these were bonds it'd have a different value. For instance a 10,000 euro bond issued by government of greece is currently valued by the markets at about \$2400. the interest payments make this a much more complicated present value calculatoion

As the interest rate increases PV decreases As the interest rate decreases PV increases

also note

As the interest rate increases FV increases AS the interest rate decreases FV decreases

Q.How do we calculate PV for an individual or entity?

There is no market to "price" their debt to suggest an interest rate.

A.We guess or estimate.

Example I'm gonna give you \$1000 dollars a year from now. But i'm known to sometimes not pay my debts. You guess there is a 1/4 chance of me not paying you. So to value this right now you would calculate PV using a interest rate of 25% + a little more to take into account inflation.

Or consider that David Barbe is gonna give you \$1000 a year from now. David is known to almost always pay his debts, you guess there is only a slight chance he will be unable to pay. Say 3%. To value this promise right now you would calculate PV using the interest rate of 3% + a little more to account for inflation.

PV of DB \$1000 > PV of DL \$1000

PV of stream of income

My BMI airplay royalty statements average about \$6000 a quarter. How do i calculate the PV of the next 3 years of BMI statements?

Amortization Calculate Almost any data field on this form may be calculated. Enter zero) the value that you wish to determine, and then click "	Amortization Calculator Almost any data field on this form may be calculated. Enter the a zero) the value that you wish to determine, and then click "Calcu		
Principal Payments per Year 4 Annual Number of Regular Payments 6.0000 12	Principal Payments per Year 65445.03 4 Annual Number of Regular Payments 6.0000 12		
Balloon Payment Payment Amount 6000 Show Amortization Schedule Calculate	Balloon Payment Payment Amount 6000.00 Show Amortization Schedule Calculate		
This loan calculator is written ar See Bret's Blog for help, a spreadsheet, deriva	This loan calculator is written and ma See Bret's Blog for help, a spreadsheet, derivations		

Note that \$72,000 is total is paid. to \$65,445. this stream has been "discounted".

How did i get 6%? i just guessed. i guessed that it's pretty likely to receive an average of \$6000 each quarter.

Also since this is music we are talking about, my BMI income is susceptible to positive Black Swans so this is actually likely to be undervalued.

*positive black swan? A song from my catalogue get's covered by some huge star? a song from my catalogue becomes the title song to a huge film.

Well actually that's not quite true. I treated my income as a stock and did a historical volatility analysis of it. But we'll save that for the graduate school version of this course.

This is simple way for someone buying my BMI royalties for 3 years to figure out what to offer me for that stream of income.

What if i you decided that their was a lot more variation or risk in that stream of inome. You would use a higher interst rate.

The first four Camper Van Beethoven Records generate an average of \$12,000 in royalties a year (to CVB). The licensing deal expires soon. Assume we don't want to release these ourselves. What is the PV of 5 years of \$12000 a year?

If I use 10% annual interest rate?

If I use 5%?

If I use 20%

Mariah Careys \$80,000,000 deal**

Principal 80000000.00	Payments per Year			
Annual Interest Rate 6.0000	Number of Regular Payments 28			
Balloon Payment	Payment Amount 3520086.12			
Show Amortization Schedule Calculate Calculate				
This loan calculator is written and maint See Bret's Blog for help, a spreadsheet, derivations, ca				

needs to generate 3.52 million a quarter plus cover all manufacture and distribution costs

of course typical record deal is usually not a lump sum. 7 years, 7 albums 7 advances. probably something like 15-20million upfront.

so average sales of abut 350,000 albums a quarter. not impossible but pretty unreasonable.

Homework

PV of a risk free 2000 dollars paid to you 7 years from now. you'll have to find 7 year us treasury rate or "yield"

PV of a stream of income. The income averages 4675 a quarter. 5 years. use an interest rate of 10%. calculate again with an interest rate of 20%. use the online mortgage calculator to do this.