Student, House, Car, Credit Card and Payday Loans

- words with mort are often deadly and among them are:
  mortgage=“death pledge”
  amortize a debt=to “kill the debt”
- loan rates are higher than savings rates

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$$\text{installment payment} = \frac{\text{loan } r}{1-(1+r)^{-n}}$$

Loan Payments and Amortization

$$\frac{\text{loan amount } r}{1-(1+r)^{-n}} = \text{loan payment}$$

- total paid= payment $\times$# times compounded - overpayment
- total interest = total paid - loan

Loan Payments and Amortization

$$\frac{\text{loan amount } r}{1-(1+r)^{-n}} = \text{loan payment}$$

- total paid= payment $\times$# times compounded - overpayment
- total interest = total paid - loan
- interest each period on a loan is computed just as in savings:
  account balance $\times$ periodic rate
  but now we pay it back rather than earn it

Congratulations—Now Feed Me Your Loan Payments!

https://www.brookings.edu/blog/up-front/2020/04/16/whats-the-government-done-to-relieve-student-loan-borrowers-of-their-

Dear Sarah J Greenwald

At this time you have a choice of repayment terms for your student loan $4795.00 at 8% compounded monthly:

Graduated Repayment Plan

# PMTS	PMT AMT
24	34.05
24	44.79
24	58.92
24	77.50
23	101.94
1	96.92
total	$ 7607.78

Level Payment Plan

# PMTS	PMT AMT
119	58.18
1	57.55
total	$ 6980.97

Student Loan

student loan \$4795.00 at 8% compounded monthly 10 years:

$$\text{loan payment} = \frac{\text{loan } r}{1-(1+r)^{-n}} = \frac{4795\frac{.08}{12}}{(1-(1+\frac{.08}{12})^{-120})} = 58.1766...$$

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amortization table for level payment plan

mo.	payment	interest paid	principal paid	loan balance
1	58.18	$4795\frac{.08}{12} = 31.97$	58.18 - 31.97	4795-26.21=4768.79
		balance$\times$period. rate	payment$-$int	balance$-$principal
2	58.18			

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total paid: $58.18 \times 120 - .63 = 6980.97$

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What if we paid an extra \$25 each month?

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73	83.18	0.55	82.63	(0.56)

total interest $73 \times 83.18 - .56 - 4795 = 1276.58$

- loan repayment

  $$\text{fixed payment} = \frac{\text{loan amount } r}{(1-(1+r)^{-n})}$$

  total paid= payment $\times$# times compounded - overpayment

  total interest = total paid - loan amount

  = payment $\times n$ - overpayment - loan amount

  amortization table

mo.	payment	interest paid	principal paid	loan balance
	fixed	balance$\times$periodic rate	payment$-$int	balance$-$principal

  for the repayment of a loan with a fixed payment

- periodic payment

  $$\text{total} = \frac{\text{PMT}((1+r)^n - 1)}{r}, \quad \text{total interest= total} - PMT \times n$$

  for a repeated deposit of new principal money for savings

- lump sum

  $$\text{total} = \text{lump}(1+r)^n, \quad \text{total interest= total} - \text{lump}$$

  for a one-time-principal deposit

  or an account that converts over to lump sum

  after no new additional principal additions

Some Loans Require Payments While in School

Your last payment of $50.00 was received on 07/16 If you would like to repay your loan in full, send the total Payoff Amount shown below to the address listed on Item 6 on the back of this form. **Payoff payments must be sent to this address.** This payoff amount is estimated 10 days from the statement date above.

If you have any questions, please contact our office at (877)872-4768 or at our web site www.usagroup.com.

BILLING INFORMATION

DISBURSEMENT DATE	LOAN PROGRAM	ORIGINAL LOAN AMOUNT	INTEREST RATE	PAYOFF AMOUNT	CURRENT AMOUNT DUE	AMOUNT PAST DUE	LATE CHARGES	OTHER FEES	AMOUNT DUE
08/06	STF3	$2,450.00	6.920%	$2,569.04	$50.00	$.00	$.00	$.00	$50.00
				$2,569.04	$50.00	$.00	$.00	$.00	$50.00

$$\text{installment payment} = \frac{\text{loan } r}{1-(1+r)^{-n}}$$

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$$50 = \frac{2450\frac{.0692}{12}}{1-(1+\frac{.0692}{12})^{-n}}$$


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caglecartoons.com
JEFF PARKER
jparker@flatoday.net
MOVE BACK HOME?!... KIDS TODAY ARE SO LAZY AND IRRESPONSIBLE! YOUR MOTHER AND I STARTED OUT WITH NOTHING!...
FIVE-FIGURE STUDENT LOAN DEBT
20 AND 30 SOME-THINGS
TRUST ME, I WOULD'VE LOVED STARTING OUT WITH NOTHING!...

	8/28	43257454	PAYMENT THANK YOU				-150.00
8/08	8/08	BTXWGX2X	PAPA JOHN S PIZZA		BOONE	NC	9.53
8/15	8/15	CY62CFD0	MICHAELS STORES, INC. #50		RALEIGH	NC	43.45
8/18	8/18	W6PSB300	HARRIS TEETER 165 SAA		BOONE	NC	25.86
8/18	8/18	QRVGLHG0	BP OIL	47653449	BURLINGTON	NC	10.00
8/19	8/19	4MDWYYG9	WAL MART		BOONE	NC	9.01
8/20	8/20	KN48HZG9	WAL MART		BOONE	NC	13.29
8/21	8/21	HY3LXZG9	WAL MART		BOONE	NC	37.43
8/21	8/21	NR9XK600	HARRIS TEETER 165 SAA		BOONE	NC	11.85
8/21	8/21	QVKGVFD*	EXXON USA 7540945909		BOONE	NC	10.00
8/24	8/24	GKD8V600	HARRIS TEETER 165 SAA		BOONE	NC	18.06
8/24	8/24	VTJTGX00	UNIVERSITY BOOK STORE		BOONE	NC	24.33
8/25	8/25	BJ5XGX00	UNIVERSITY BOOK STORE		BOONE	NC	39.75
8/26	8/26	*L*ZGX00	UNIVERSITY BOOK STORE		BOONE	NC	15.90
8/26	8/26	0K*ZGX00	UNIVERSITY BOOK STORE		BOONE	NC	20.74
8/29	8/29	3D1KMYS2	CITGO6162 BOONE CITGO		BOONE	NC	12.10

Enroll in optional CreditShield today! Simply indicate your date of birth and initial the box in the lower left-hand corner of your billing statement coupon. Remember to return the coupon with your payment.

CHANGING YOUR ADDRESS? LET US KNOW.
Maintain your good credit rating. Keep us informed of your new address. When you move, please correct your address on the payment coupon or call Citibank Customer Service.

Account Summary

	Previous Balance	(+) Purchases & Advances	(-) Payments	(-) Credits	(+) FINANCE CHARGE	(+) Late Charges	(=) New Balance
Purchases	347.12	301.30	150.00		6.71		505.13
Advances							
Total	347.12	301.30	150.00		6.71		505.13

Amount Due

Purchases Minimum Due	20.00
Advances Minimum Due	
Amount Over Credit Line	
Fees	
Past Due	
Minimum Amount Due	20.00

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Rate Summary	Purchases	Advances
Number of days this Billing Period 29		
Balance Subject to Finance Charge	449.67	
Periodic Rate (Purchases-Monthly, Advances-Daily)	1.49170%	.04904%
Nominal Annual Percentage Rate	17.900%	17.900%
ANNUAL PERCENTAGE RATE	17.900%	17.900%

finance charge = interest paid that month

account balance $\times$ periodic rate

$$449.67 \times \frac{.179}{12}$$

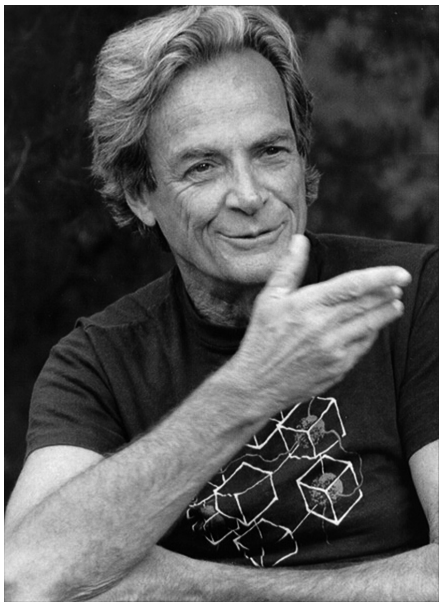
Payday lender in Boone

Within 2 weeks of my next paycheck I can (if I qualify) write a check for $117.50 and receive $100 (so the interest on $100 is $17.50). Then, when I'm paid, I bring $117.50 and buy back my check. If I don't show up, they deposit my check, and if it bounces I owe "returned check charges" They told one of our faculty members that their rate was better than a credit card.

First, what is the 2-week rate as the percentage of interest? Next, what is the annual rate (multiply the 2-week rate by 26, as there are 26 double weeks in a year) and how does it compare to credit card rates?

a) 17.5%, which is about the same as some credit cards
b) 26%, which is about the same as some credit cards
c) 117.5%, which is much higher than credit cards!
d) 455%, which is much higher than credit cards!
e) none of the above

Richard Feynman: astronomical debt



http://stopthedebttrap.org/takeaction/ndoa/kansas-city-story/
doorofperception.com/wp-content/uploads/doorofperception.com-richard_feynman-2.jpg

There are 10^{11} stars in the galaxy. That used to be a huge number. But it's only a hundred billion. It's less than the national deficit! We used to call them astronomical numbers. Now we should call them economical numbers.

$$\text{debt-to-income ratio } 35\% = \frac{\text{monthly debt}}{\text{monthly income}}$$

50-30-20