

Take out the notes you took on the loan practice on local and global debt and compare with one or more neighbors.

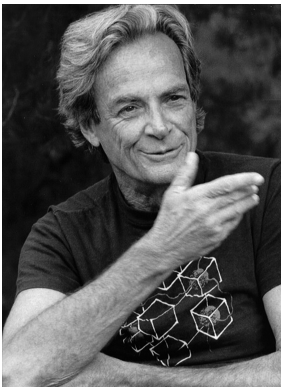
amortization  
car loan  
interest for the month  
kill the debt  
rate  
interest  
to principal  
loan balance  
algebra

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**amortization**

Recall prohibitions against charging interest on money to members of the local community (usury), but was ok for global strangers—lending to one's neighbors was considered philanthropy and part of a giving back to the community.

## *Richard Feynman quote connects geometry to finance*



[doorofperception.com/wp-content/uploads/doorofperception.com-richard\\_feynman-2.jpg](http://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.



## *Loan Payments and Amortization*

$$\text{payment} = \frac{\text{loan amount } r}{1 - (1 + r)^{-n}} = \frac{14500 \cdot \frac{.12}{12}}{(1 - (1 + \frac{.12}{12})^{-12 \times 4})} =$$

## Loan Payments and Amortization

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month	Payment	Interest Paid	Principal Paid	Loan Balance
1	381.84			

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month	Payment	Interest Paid	Principal Paid	Loan Balance
1	381.84	\$145	\$236.84	\$14,263.16
		$14500 \cdot \frac{.12}{12}$	$381.84 - 145$	$14500 - 236.84$
2	381.84	\$142.63	\$239.21	\$14,023.95
		$14263.16 \cdot \frac{.12}{12}$	$381.84 - 142.63$	$14263.16 - 239.21$
3	381.84	\$140.24	\$241.60	\$13,782.35
		$14023.95 \cdot \frac{.12}{12}$	$381.84 - 140.24$	$14023.95 - 241.60$

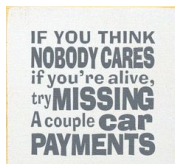
- total paid =

## Loan Payments and Amortization

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2	381.84	\$142.63 $14263.16 \cdot \frac{.12}{12}$	\$239.21 $381.84 - 142.63$	\$14,023.95 $14263.16 - 239.21$
3	381.84	\$140.24 $14023.95 \cdot \frac{.12}{12}$	\$241.60 $381.84 - 140.24$	\$13,782.35 $14023.95 - 241.60$

- total paid =  $381.84 \times 12 \times 4$  – overpayment (none here)
- total interest = total paid - loan = last response – 14500



	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	CY62CFDD	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	QRVGLHGD	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	QKVGVD*	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	DK*ZGX00	UNIVERSITY BOOK STORE	BOONE	NC		20.74
8/29	8/29	3D1KMY52	CITGO6162 BOONE CITGO	BOONE	NC		12.10

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Account Summary							Amount Due	
	Previous Balance	(+) Purchases & Advances	(-) Payments	(-) Credits	(+) FINANCE CHARGE	(+) Late Charges	(=) New Balance	Purchases Minimum Due
Purchases	347.12	301.30	150.00		6.71		505.13	20.00
								Advances Minimum Due
								Amount Over Credit Line
								Fees



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Purchases	347.12	301.30	150.00		6.71		505.13
Advances							
Total	347.12	301.30	150.00		6.71		505.13

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%
<u>ANNUAL PERCENTAGE RATE</u>		17.900%	17.900%

finance charge = interest paid that month

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finance charge = interest paid that month  
= average daily balance  $\times$  periodic rate  
=  $449.67 \times \frac{.179}{12}$

## *Algebraic Ratios for Finance*

- Dividing reward/risk is a common ratio to compare risk versus reward. Risking \$500 to gain millions in a lottery is a much better investment than investing in the stock market from a reward/risk perspective (millions/500). However, it is a much worse choice in terms of the probability of losing all your money!
- debt-to-income ratio  
 $35\% = \frac{\text{monthly debt}}{\text{monthly income}}$ . What if the monthly debt is \$700?

### STOP THE PAYDAY LOAN DEBT TRAP

