Applications

Round monetary amounts to the nearest cent.

1. Faith is taking an $8,100, 2½-year loan with an APR of 3.22%. What is the monthly payment for this loan? Round to the nearest cent. $281.38
2. Shania bought a $1,455 drum set on an installment plan. The installment agreement included a 15% down payment and 18 monthly payments of $80.78 each.
   a. How much is the down payment? $218.25
   b. What is the total amount of the monthly payments? $1,454.04
   c. How much will Shania pay for the drum set on the installment plan? $1,672.29
   d. What is the finance charge? $217.29
3. Pauline's credit card was lost on a business trip. She immediately reported it missing to her creditor. The person who found it hours later used it and charged w dollars' worth of merchandise on the card, where $w < \$50$. How much of the w dollars is Pauline responsible for paying? $0
4. Sal took out a 20-day payday loan from the Just Loans store. He borrowed $350 and is being charged $75 interest. What is the APR for this loan? 391%
5. Carly took a $7,000, 3-year loan with an APR of 3.15%.
   a. What is the monthly payment? Round to the nearest cent. $204.03
   b. What is the total amount of the monthly payments? $7,345.08
   c. What is the finance charge? $345.08
6. Sarah is taking out a $24,400, 4-year new-car loan with an APR of 2.88%. What is the finance charge for this loan? Round to the nearest hundred dollars. $1,500.00
7. The policy of the Black Oyster Pawnshop is to lend up to 30% of the value of a borrower's collateral. Pete wants to use a $2,000 guitar and a $900 camera as collateral for a loan. What is the maximum amount that he could borrow from Black Oyster? $870
8. Rodrigo is attending a 4-year college. As a freshman, he was approved for a 10-year, federal unsubsidized student loan in the amount of $5,300 at 4.29%. He knows he has the option of beginning repayment of the loan in 4.5 years. He also knows that during this nonpayment period, interest will accrue at 4.29%.
   a. How much interest will Rodrigo accrue during the 4.5-year nonpayment period? $1,023.17
   b. If Rodrigo decides to make no payments during the 4.5 years, the interest will be capitalized at the end of that period. What will the new principal be when he begins making loan payments, and how much interest will he pay over the life of the loan? $6,323.17; $2,486.80
   c. Suppose Rodrigo only paid the interest during his 4 years in school and the 6-month grace period. What will he now pay in interest over the term of his loan? $2,249.97
   d. Rodrigo made his last monthly interest-only payment on July 8. His next payment is due on August 8. What will be the amount of that interest-only payment? $19.31
9. Maribel was approved for a 7-year private student loan at 6.8% to cover her college costs of $10,900.
   a. Determine her monthly payment. Round to the nearest cent. $163.45
   b. What is the total amount she will pay back? $13,729.80
   c. What is the total interest amount? $2,829.80

10. Ben has been accepted into a 2-year culinary arts program at the Greenfield Career Institute. He has been approved for a $5,000 unsubsidized 10-year federal loan at 4.29%. He knows he has the option of beginning repayment of the loan in 2.5 years. He also knows that during this nonpayment period, interest will accrue at 4.29%.

a. How much interest will Ben accrue during the 2.5-year nonpayment period? $536.25

b. If Ben decides to make no payments during the 2.5 years, the interest will be capitalized at the end of that period. What will the new principal be when he begins making loan payments, and how much will he pay in interest over the life of the loan? $5,536.25; $1,818.40

c. Suppose Ben only paid the interest during his 2 years in school and the 6-month grace period. What will he pay in interest over the term of his loan? $1,157.20

d. Ben made his last monthly interest-only payment on September 25. His next payment is due on October 25. What will be the amount of that interest-only payment? $17.63

11. Juan purchased a tool set for t dollars on the installment plan. He made a 15% down payment and agreed to pay m dollars per month for the next y years. Express the finance charge algebraically. $0.15t + 12ym - t = 12ym - 0.85t$

12. Blair had these daily balances on his credit card for his last billing period. He did not pay the card in full the previous month, so he will have to pay a finance charge. The APR is 18.6%.

2 days @ $331.98
11 days @ $1,203.04
4 days @ $996.71
13 days @ $1,002.76

a. What is the average daily balance? Round to the nearest cent. $1,030.67

b. What is the finance charge? $15.98

13. Kim's credit card was not paid in full last month so she will pay a finance charge this month. She had an average daily balance of d dollars during this billing period, which had 31 days. The APR was p percent.

a. Express the APR as an equivalent decimal algebraically. $0.01p$

b. Express the monthly percentage rate as an equivalent decimal algebraically.

c. Express the finance charge algebraically. $\left(\frac{0.01p}{12}\right)d$

14. Michelle's credit card billing cycle is 30 days. She had a daily balance of b dollars for d days. Then she charged one item for $56, and she made no more purchases for the rest of the month. There was no other activity on the credit card. Express her average daily balance algebraically. $\frac{bd + (30-d)(b+56)}{30}$

15. The finance charge on Lena's credit card bill last month was $13.50. Her APR is 18%. What was her average daily balance? $900

16. Riel had an average daily balance of $415.22 on his May credit card statement. The bill showed that his APR was 21.6% and that his finance charge was $89.69. When he verified the finance charge, did he find that it was correct or incorrect? Explain. See margin.

17. What is the monthly periodic rate on a loan with an APR of 19.5%? 1.625%

18. Harold borrowed $8,000 for 5 years at an APR of 2.75%.

a. What is Harold's monthly payment? Round to the nearest cent. $142.86

b. What is the total amount that Harold paid in monthly payments for the loan? $8,571.60

c. What is the amount Harold will pay in finance charges? $571.60

ANSWERS

16. Incorrect; the APR should be divided by 12 before multiplying by the average daily balance. The correct finance charge is $7.47.

19. Examine the summary section of the monthly credit card statement. Use the first five entries to determine the new balance. $0

	Previous Balance	Payments / Credits	New Purchases	Late Charge	Finance Charge	New Balance	Minimum Payment
SUMMARY	$421.36	−$1,703.50	$1,273.11	$0.00	$9.03		$18.00

20. The table lists the balances at the end of each year for a 15-year, $50,000 loan with an 8% interest rate.

Year	Balance
0	$50,000.00
1	$48,201.08
2	$46,252.85
3	$44,142.91
4	$41,857.85
5	$39,383.13
6	$36,703.01
7	$33,800.44
8	$30,656.96
9	$27,252.57
10	$23,565.62
11	$19,572.66
12	$15,248.28
13	$10,564.98
14	$5,492.97
15	$0.00

a. Construct a scatter plot using the data points (year, loan balance). See margin.

b. Write a linear regression equation that approximates the year–loan balance relationship. Round to the nearest integer. $y = -3{,}271x + 54{,}077$

c. Write a quadratic regression equation that approximates the year–loan balance relationship. Round to the nearest integer. $y = -129x^2 - 1{,}338x + 49{,}566$

d. Write a cubic regression equation that approximates the year–loan balance relationship. Round to the nearest integer. $y = -3x^3 - 52x^2 - 1{,}782x + 50{,}030$

21. Bill can afford a monthly payment of $475. He wants to take out a $20,000 loan at a 4.25% interest rate. What should the length of the loan be? Round your answer to the nearest year. approx. 4 years

22. Kayla wants to take out a $7,500 loan with a 3.3% APR. She can afford to pay $128 per month for loan payments.

a. What should be the length of her loan? Round to the nearest tenth of a year. 5.3 years

b. What would an increase of $20 to the monthly payment do to the length of her loan? It would decrease the loan length to 4.6 years.

23. Use the credit card statement and a blank credit card calendar.

ACCOUNT INFORMATION

Account Number	3-22767195	Billing Date	5 May	Payment Due	18 May

TRANSACTIONS		DEBITS / CREDITS (−)
7 APR	124576893 Macy's	$676.00
15 APR	762938471 Bedford Auto Body Shop	$721.80
19 APR	309175832 Barnes and Noble Books	$93.15
27 APR	100445638 Payment	−$1,340.00
30 APR	876655411 FedEx	$115.75
3 MAY	998430828 TicketMaster	$450.95

	Previous Balance	Payments / Credits	New Purchases	Late Charge	Finance Charge	New Balance	Minimum Payment
SUMMARY	$978.00	−$1,340.00	$2,057.65	$0.00			$115.00

Total Credit Line	$ 3,000.00	Average Daily Balance	# Days in Billing Cycle	APR	Monthly Periodic Rate
Total Available Credit			30	19.8%	1.65%

a. What is the total of all of the purchases made this billing cycle? $2,057.65

b. What is the amount of total payments? $1340.00

c. What is sum of the daily balances? $55,672.70

d. What is the average daily balance? Round to the nearest cent. $1,855.76

e. What is the monthly periodic rate? 1.65%

f. What is the finance charge? Round to the nearest cent. $30.62

g. What is the new balance? $1,726.27

h. What is the available credit? $1,273.73

ANSWERS

20a.