Applications

1. Go to www.cengage.com/financial_alg2e and download a blank check register. Add all of the following information to the check register. See additional answers.
   a. The balance on December 10 is $3,900.50.
   b. On December 11 check 1223 is written for $84.00 to the North Shore High School Drama Club.
   c. On December 12 a paycheck in the amount of $240.80 is deposited.
   d. On December 13 a birthday check for $100.00 received from grandparents is deposited.
   e. On December 17 three checks are written while holiday shopping. One is to Best Buy in the amount of $480.21, one is to Target in the amount of $140.58, and one is to Aeropostale in the amount of $215.60.
   f. Staples sells computers. On December 20 a laptop is purchased for $1,250.00. A mistake is made on the first check, and the check must be voided. A check for the correct amount, $1,250.00, is then written with the next available check.
   g. On December 22 a gift is returned to Barnes and Noble. The $120.00 refund is deposited into the checking account.
   h. On December 24, $300.00 is withdrawn from an ATM for food at a holiday party. The company that owns the ATM charges a $1.50 fee for the transaction, and the customer's bank charges a $2.50 fee for the transaction. The fees are taken directly out of the checking account.
   i. On December 28 a check for $521.00 is written to Len's Auto Body Shop to repair a dent in the fender of a car.
   j. On December 29 a check is written to Amtrak for $150.80 to visit a cousin in Washington, D.C., for New Year's Eve.

2. Use the check register from Exercise 1. It is now 1 month later, and the checking account statement has arrived. Does the account balance?

Checking Account Statement

Date	Description	Check #	Amount	Balance
12/12	Deposit		$240.80	$4,141.30
12/13	Deposit		$100.00	$4,241.30
12/19	W/D	1223	$84.00	$4,157.30
12/19	W/D	1226	$215.60	$3,941.70
12/20	W/D	1225	$140.58	$3,801.12
12/21	W/D	1224	$480.21	$2,320.91
12/24	ATM Withdrawal		$300.00	$3,020.91
12/24	ATM Fee		$1.50	$3,019.41
12/24	ATM Fee		$2.50	$3,016.91
01/15	W/D	1229	$521.00	$2,495.91
			Ending Balance:	$2,495.91

Ending balance from statement	a. $2,495.91
Deposits outstanding	b. $120.00
Checks outstanding	c. $1,400.80
Revised statement balance	d. $1,215.11
Balance from checkbook	e. $1,215.11

3. Find the simple interest on a $2,219.00 principal, deposited for 6 years at a rate of 1.91%. Round to the nearest cent. $254.30

4. Ruth has a savings account at a bank that charges a $3.50 fee for every month her balance falls below $1,500. Her account has $1,722 and then she withdraws $400. What is her balance in 5 months if her account balance never reaches $1,500? Round to the nearest cent. $1,304.50 not including interest

5. Nine months ago Alexa deposited $7,000 in a 3-year CD. She has received $224.16 in interest. She withdraws $1,000. This is before the CD matures, so she pays a $250 penalty. What is her balance after the withdrawal? $5,974.16

6. Ralph deposited $910 in an account that pays 1.75% simple interest for 3 years. Round to the nearest cent.
   a. How much interest did the account earn? $47.78
   b. What is the ending balance? $957.78
   c. How much interest did the account earn the first year? $15.93
   d. How much interest did the account earn the third year? $15.93

7. Matt has two single accounts at Midtown Bank. One account has a balance of $74,112.09 and the other has a balance of $77,239.01.
   a. What is the sum of Matt's balances? $151,351.10
   b. Is all of Matt's money insured by the FDIC? Explain. See margin.

8. Rhonda deposits $5,600 in a savings account that pays 1½% interest, compounded semi-annually. Round to the nearest cent.
   a. How much interest does the account earn in the first 6 months? $42
   b. What is the ending balance after 6 months? $5,642
   c. How much interest does the account earn in the second 6 months? $42.32
   d. What is the balance after 1 year? $5,684.32
   e. How much interest does the account earn the first year? $84.32

9. Rebecca opened a savings account on March 20 with a $5,200 deposit. The account pays 3.99% interest, compounded daily. On March 21 she made a $700 deposit, and on March 22 she made a $500 withdrawal. Use this information to find the missing amounts. Round to the nearest cent.

Date	March 20	March 21	March 22
Opening balance	a.	f.	k.
Deposit	b.	g.	-----
Withdrawal	-----	-----	l.
Principal used to compute interest	c.	h.	m.
Interest	d.	i.	n.
Ending balance	e.	j.	p.

10. Nick deposited $3,000 in a 3-year CD account that pays 4.08% interest, compounded weekly. What is the ending balance? Round to the nearest cent. $3.3

11. How much more would $10,000 earn in 3 years compounded daily at 1.33%, than compounded semi-annually at 4.33%? Round to the nearest cent. $1.37

12. Austin deposits $2,250 into a 1-year CD at an interest rate of 2.3%, compounded daily.
   a. What is the ending balance after the year? Round to the nearest cent. $2,302.35
   b. How much interest did the account earn during the year? $52.35
   c. What is the annual percentage yield? Round to the nearest hundredth of a percent. 2.33%

13. Find the interest earned on a $25,000 deposit for 2 years at 4.7% interest, compounded continuously. Round to the nearest cent. $2,463.99

14. Examine each of the following situations, labeled I, II, and III. Identify which of the three cases below applies. Do not solve the problems.

   I. future value of a single deposit investment

  II. future value of a periodic deposit investment

 III. present value of a periodic deposit investment

ANSWERS

ANSWERS

14a. II – future value of a periodic investment

14b. I – future value of a single deposit investment

14c. III – present value of a periodic deposit investment

  a. You want to save for a new car that you will buy when you graduate college in 4 years. How much will you be able to afford if you deposit $1,000 per quarter in an account that compounds interest at a rate of 1.14% quarterly?

  b. You deposit $3,000 into an account that yields 0.92% interest compounded semi-annually. How much will you have in the account in 5 years?

  c. You want to put a $40,000 down payment on a storefront for a new business that you plan on opening in 5 years. How much should you deposit monthly into an account with an APR of 1.4%, compounded monthly?

15. Santos deposited $1,800 in an account that yields 2.1% interest, compounded semi-annually. How much is in the account after 54 months? Round to the nearest cent. $1,977.42

16. Stephanie signed up for a direct deposit transfer into her savings account from her checking account. Every month $150 is withdrawn from her checking account. The interest in this account is at 1.6%, compounded monthly. How much will be in the account at the end of 6.5 years? Round to the nearest cent. $12,321.40

17. Jazmine needs $30,000 to pay off a loan at the end of 5 years. How much must she deposit monthly into a savings account that yields 1.15% interest, compounded monthly? $486.00

18. Use a table of increasing values of x to find each of the following limits. If no limit exists, say the limit is undefined.

  a. $\lim\limits_{x \to \infty} f(x)$ if $f(x) = \dfrac{9x - 1}{3x - 5}$ 3

  b. $\lim\limits_{x \to \infty} g(x)$ if $g(x) = \dfrac{3x^2 + 9x}{4x + 1}$ The limit does not exist since $g(x)$ approaches infinity.

  c. $\lim\limits_{x \to \infty} h(x)$ if $h(x) = \dfrac{7x}{x^2 - 41}$ 0

19. Tom wants to have $50,000 saved sometime in the future. How much must he deposit every month into an account that pays 1.45% interest, compounded monthly? Use a graphing calculator to graph the present value function. See margin.

20. Dennis won $96,000 in a lottery. He decided to deposit the money into an account that pays 1.8% interest, compounded monthly. When the balance reaches $120,000, he plans to buy a beach cottage. How long will it take before he can make that withdrawal? Approx. 12.4 years

21. Ellen wants to make quarterly deposits of $1000 into a savings account that offers 1.4% interest compounded quarterly. How long will it take for the balance to grow to $15,000? Approx. 3.7 years

22. Dani deposited $20,000 into an account that compounds interest monthly at a rate of 1.26%. His plan is to use the account to make direct withdrawals each month of $800 to pay his rent. How many months of rent will he be able to pay until the account gets to $0? Approx. 2.11 years

19. x = # of months

$$y = \dfrac{\left(50000 \cdot \dfrac{0.0145}{12}\right)}{\left(1 + \dfrac{0.0145}{12}\right)^x - 1}$$