

Applications

TEACH

Exercises 5 and 6

Exercise 5 will help students do the algebraic representation required for Exercise 6, if they are having trouble.

Life was a lot simpler when what we honored was father and mother rather than all major credit cards.

—Robert Orben, American comedy writer

ANSWERS

1. The writer is making a play on two senses of the word “honor” as a pun. When a store honors a credit card, it just means they accept it as a means of payment. The writer is lamenting what he sees as the replacement of personal interactions with financial transactions.

- Interpret the quote in the context of what you learned about credit and charge cards in this section. *See margin.*
- Janine’s credit card was stolen, and the thief charged a \$44 meal before she reported it stolen. How much of this is Janine responsible for paying? **\$44**
- Dan’s credit card was lost on a vacation. He immediately reported it missing. The person who found it days later used it, and charged x dollars’ worth of merchandise on the card, where $x > \$200$. How much of the x dollars is Dan responsible for paying? **\$0**
- Felix and Oscar applied for the same credit card from the same bank. The bank checked both of their FICO scores. Felix had an excellent credit rating, and Oscar had a poor credit rating.
 - Felix was given a card with an APR of 14%. What was his monthly percentage rate? Round to the nearest hundredth of a percent. **1.67%**
 - Oscar was given a card with an APR of 21%. What was his monthly percentage rate? Round to the nearest hundredth of a percent. **1.75%**
 - If each of them had an average daily balance of \$800 for a specific month, and had to pay a finance charge, how much more would Oscar pay than Felix? **\$0.64**
- Vincent 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 19.2%.
 - 9 days @ \$778.12
 - 8 days @ \$1,876.00
 - 4 days @ \$2,112.50
 - 10 days @ \$1,544.31
 - What is the average daily balance? Round to the nearest cent. **\$1,480.78**
 - What is the finance charge? Round to the nearest cent. **\$23.69**
- Express the average daily balance algebraically given this set of daily balances.
$$\begin{array}{l} x \text{ days @ } y \text{ dollars} \quad w \text{ days @ } d \text{ dollars} \quad \frac{xy + wd + rq + mp}{x + w + r + m} \\ r \text{ days @ } q \text{ dollars} \quad m \text{ days @ } p \text{ dollars} \end{array}$$
- Suzanne’s average daily balance for last month was x dollars. The finance charge was y dollars.
 - What was the monthly percentage rate? $100\left(\frac{y}{x}\right)$
 - What was the APR? $100\left(12\frac{y}{x}\right)$
- Jared’s average daily balance for last month was \$560. The finance charge was \$8.12.
 - What was the monthly percentage rate? **1.45%**
 - What was the APR? **17.4%**

9. Irina's credit card has an APR of 16.8%. She never pays her balance in full, so she always pays a finance charge. Her next billing cycle starts today. The billing period is 30 days. Today's balance is \$712.04. She is only going to use the credit card once this month, to make a \$5,000 down payment on a new car.
- If she puts the down payment on the credit card today, what will her daily balance be for each of the 30 days of the cycle? **\$5,712.04**
 - Find her average daily balance for the 30-day period if she puts the down payment on the credit card today. Round to the nearest cent. **\$5,712.04**
 - Find the finance charge for this billing period based on the average daily balance from part a. Round to the nearest cent. **\$79.97**
 - Find her average daily balance for the 30-day period if she puts the down payment on the credit card on the last day of the billing cycle. Round to the nearest cent. **\$878.71**
 - Find the finance charge on the average daily balance from part d. Round to the nearest cent. **\$12.30**
 - How much can Irina save in finance charges if she makes the down payment on the last day, as compared to making it on the first day? **\$67.67**
10. Gino has a debit card. The account pays no interest. He keeps track of his purchases and deposits in this debit card register. Find the missing entries a–f. See margin.

NUMBER OR CODE	DATE	TRANSACTION DESCRIPTION	PAYMENT AMOUNT		✓	FEE	DEPOSIT AMOUNT		\$ BALANCE
	8/4	Baseball Bat	\$ 92	19					778.19
									92.19
									a.
	8/5	Gas	51	00					51.00
									b.
	8/7	Deposit					400	00	400.00
									c.
	8/7	Gas	25	00					25.00
									d.
	8/7	Dinner at Spooner's On the Beach	71	12					71.12
									e.
	8/11	Books for Fall Semester	491	51					491.51
									f.

11. Ron did not pay his credit card bill in full last month. He wants to pay it in full this month. On this month's bill, there is a mistake in the average daily balance. The credit card company lists the average daily balance on his bill as \$510.50. Ron computed it himself and found that it is \$410.50.
- The APR is 18%. What finance charge did the credit card company compute on Ron's bill? **\$7.66**
 - If Ron's average daily balance is correct, what should the finance charge be? **\$6.16**
12. The terms of Medina's credit card state that the APR is 17.4%, and if a payment is not received by the due date, the APR will increase by w percent. The credit card company received Medina's payment 3 days after the due date in February. Write the interest rate, in decimal form, that she will be charged in March, assuming she carried a balance from February. **$0.0145 + 0.01w$**

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Exercise 9

This exercise highlights the classic manipulation of the billing cycle. If you make a purchase right after the billing period ends, it will not appear on a statement for about a month.

Exercise 10

A debit card is not a loan, since you are taking money out of your own account. Although the plastic card and the purchase process seem similar, it is actually a very different process.

ANSWERS

10. a. \$686.00
 b. \$635.00
 c. \$1,035.00
 d. \$1,010.00
 e. \$938.88
 f. \$447.37

me
 5
 2-203
 me
 -4
 2-199

ANSWERS

13. a. $m - x$
 b. $m - x - z$
 c. $m - x - z - y$
 d. $m - x - z - y - v$
 e. $m - x - z - y - v + r$
 f. $m - x - z - y - v + r - g$

14b. \$37,200; multiply the average by the number of days.

17b. Because Naoko paid his balance in full, there will be no finance charges. The average daily balance is used to calculate finance charges, so the average daily balance will not be needed.

17d. He only added the four given balances and divided by 4, instead of multiplying the balances by the number of days before adding and correctly dividing that sum by 30.

13. Express the missing entries in the debit card register algebraically.

NUMBER OR CODE	DATE	TRANSACTION DESCRIPTION	PAYMENT AMOUNT	✓	FEE	DEPOSIT AMOUNT	\$ BALANCE
	12/3	Arloff's Gifts	\$ X				a.
	12/6	Bonnie's Boutique	Z				b.
	12/7	Gas	Y				c.
	12/11	Cable TV	V				d.
	12/12	Deposit				r	e.
	12/14	Gas	g				f.

14. Jill's credit card was stolen. The thief charged a \$900 kayak on the card before she reported it stolen.
- How much of the thief's purchase is Jill responsible for? **\$50**
 - Jill's average daily balance would have been \$1,240 without the thief's purchase. What was the sum of her daily balances for the 30-day billing period? Explain. **See margin.**
 - The thief's purchase was on her daily balances for 10 out of the 30 days during the billing cycle. What was the sum of Jill's daily balances with the thief's purchase included? **\$46,200**
 - What was the average daily balance with the thief's purchase included? Round to the nearest cent. **\$1,540**
15. Kristin's credit rating was lowered, and the credit card company raised her APR from 14% to 15.2%. If her average daily balance this month is x dollars, express algebraically the increase in this month's finance charge due to the higher APR. **$0.001x$**
16. It is important to check your credit card bill each month. In the next section, you will carefully examine a credit card statement and learn how to look for errors. Most people would notice a major, expensive purchase that they did not make. A smaller, incorrect charge of \$6, for example, might go unnoticed unless the entire statement was checked with a calculator. If 1 million credit card holders were each overcharged \$6 each month for 5 years, what would be the total amount that debtors were overcharged, not including the extra finance charges? **\$360 million**
17. Naoko has these daily balances on his credit card for September's billing period. He paid his balance from the August billing in full.
- 2 days @ \$99.78
 - 15 days @ \$315.64
 - 11 days @ \$515.64
 - 2 days @ \$580.32
- His APR is 15.4%. How much is the finance charge on his September bill? Round to the nearest cent. **\$0**
 - Does the credit card company need to calculate his average daily balance? Explain. **See margin.**
 - Naoko calculated his average daily balance to be \$377.85. Is he correct? If not, what was his average daily balance? **No; \$392.23**
 - What mistake did Naoko make when calculating his average daily balance? **See margin.**