5. Sidney took a $200 cash advance by using checks linked to her credit card account. The bank charges a two percent cash advance fee on the amount borrowed and offers no grace period on cash advances. Sidney paid the balance in full when the bill arrived. What was the cash advance fee? What was the interest for one month at an 18% APR? What was the total amount she paid? What if she had made the purchases with her credit card and paid off the bill in full promptly?

- Sidney's cash advance fee was $4.00.
- At an 18% APR, she paid $3.00 interest for one month.
- She paid a total of $207 (= $200 advance + $4 cash advance fee + $3 interest).
- If Sydney had made the purchase with her credit card and paid off the bill in full promptly, she would have paid only $200.
- The answer is true if the card has a grace period, but if there is no grace period (and some cards don’t offer one), she would have paid the $3 interest charge regardless and would have saved only on the cash advance of $4.

7. You have been pricing a compact disc player in several stores. Three stores have the exact same price of $300. Each of these stores charges 18 percent APR, has a 30-day free ride*, and sends out bills on the first of the month. On further investigation, you find that Store A calculates the finance charge by using the average daily balance method, Store B uses the adjusted balance method, and that Store C uses the previous balance method. Assume that you purchased the disc player on May 5 and that you made a $100 payment on June 15. What will the finance charge be if you made your purchase from Store A? from Store B? from Store C?

<table>
<thead>
<tr>
<th>Store</th>
<th>Average Balance</th>
<th>Finance Charge</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Store A:    | Average Daily Balance | $3.75 (= $250 x 0.015) | * How to treat the ”30-day free ride isn’t clear. Dr. PJ assumed that gave a free ride until the end of May. An alternative would be that the 30-day free ride covers 26 days in May (May 5 - May 31) and 4 days in June (June 1 – June 4). If the latter is the case, then the ADB would be calculated as follows: $0 balance x 4 days = 0
+ $300 balance x 11 days = 3300
+ $200 balance x 15 days = 3000
= 6300
So, ADB = 6300 / 30 days in June = $210
And the finance charge = 0.015 x $210 = $3.15
Note: Refer to footnotes to the table in the middle of page 218 for explanation of ADB calc. |
| Store B:    | Adjusted Balance Method ($300 - $100 = $200) | 3.00 (= $200 x 0.015) | Note: See table at bottom of page 218. |
| Store C:    | Previous Balance Method ($300 - $0 = $300) | 4.50 (= $300 x 0.015) | Note: See table at bottom of page 218. |

Remember, Store C does not count the amount you paid during the month and charges interest for the entire month on the beginning balance of $300. Note, too that 18 percent APR is equivalent to 1.5 percent monthly rate. The entire benefit of a grace period disappears when you carry a balance from one month to next.
8. What are the interest cost and the total amount due on a six-month loan of $1,500 at 13.2 percent simple annual interest?

Using the simple interest formula: Interest = P \times r \times T

= $1,500 \times 0.132 \times \frac{1}{2}\text{ year}

Interest = $99.00

Total amount due = $1,500 + $99 = $1,599.

9. After visiting several automobile dealerships, Richard Welch selects the car he wants. He likes its $10,000 price, but financing through the dealer is no bargain. He has $2,000 cash for a down payment, so he needs an $8,000 loan. In shopping at several banks for an installment loan, he learns that interest on most automobile loans is quoted at add-on rates. That is, during the life of the loan, interest is paid on the full amount borrowed even though a portion of the principal has been paid back. Richard borrows $8,000 for a period of four years at an add-on interest rate of 11 percent.

Questions:

a. What is the total interest on Richard’s loan?

b. What is the total cost of the car?

c. What is the monthly payment?

d. What is the annual percentage rate (APR)?

a. The total interest on Richard’s loan:

Cash price = $10,000
Down payment = $2,000
Amount of the loan = $8,000
Length of the loan = 4 years or 48 months
Quoted add-on interest = 11 percent
Total interest: I = P \times r \times T = $8,000 \times 0.11 \times 4 = 3,520

b. Total cost of the car:

Total cost = Down payment + total interest + principal
= $2,000 + $3,520 + $8,000 = $13,520

c. The monthly payment:

Monthly payment = ($3,520 + $8,000) / 48 = $240.00
d. **The annual percentage rate (APR):**

Using the BAII+ financial calculator:

\[
\begin{align*}
8000 & \text{ \( - \) PV} \\
48 & \text{ \( - \) n} \\
240 [\text{ +/- }] & \text{ \( - \) PMT} \\
\text{CPT } i & \text{ (that is } [I/Y] = 1.5991 \text{ per month or } 19.19\% \text{ APR } (= 1.5991 \times 12) \\
\end{align*}
\]

11. **Calculating Simple Interest on a Loan.** You can buy an item for $100 on a charge with the promise to pay $100 in 90 days. Suppose you can buy an identical item for $95 cash. If you buy the item for $100, you are in effect paying $5 for the use of $95 for three months. What is the effective annual rate of interest?

\[
\begin{align*}
I &= P \times r \times T \\
5 &= 95 \times r \times \frac{1}{4} \\
5 \times 4 &= 95 \times r \\
95r &= 20 \\
\text{Therefore, } r &= 20 \div 95 = 0.210 \text{ or } 21\% \\
\end{align*}
\]

15. A $1,000 loan is paid off in 12 equal monthly payments. The stated annual interest rate is 10 percent. What is the annual percentage rate?

Using the BAII+ financial calculator:

This sounds like it is an add-on interest loan, so the $100 interest (= 1000 \times .10) is added on to the $1000 principal and divided by 12 to get the monthly payments. So the monthly payments = (1000 + 100) / 12 = 91.67.

Now we can compute APR using the financial calculator:

\[
\begin{align*}
1000 & \text{ \( - \) PV} \\
91.67 [\text{ +/- }] & \text{ \( - \) PMT} \\
12 & \text{ \( - \) n} \\
\text{CPT } i & \text{ (that is } [I/Y] = 1.498 \text{ per month or } 17.98\% \text{ APR } (= 1.498 \times 12) \\
\end{align*}
\]