

## Applications

*Debt certainly isn't always a bad thing. A mortgage can help you afford a home. Student loans can be a necessity in getting a good job. Both are investments worth making, and both come with fairly low interest rates.*

—Jean Chatzky, Financial journalist

1. Read the quote at the beginning of this section. Interpret the quote in terms of what you have learned about student loans. See margin.

Use the following situation to answer questions 2–6.

Rich is attending a 4-year college. As a freshman, he was approved for a 10-year, federal unsubsidized student loan in the amount of \$7,900 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 time, interest will accrue at 4.29%.

2. How much interest will Rich accrue during the 4.5-year nonpayment period? **\$1,525.10**
3. If Rich decides to make no payments during the 4.5 years, the interest will be capitalized at the end of that period.
  - a. What will the new principal be when he begins making loan payments? **\$9,425.10**
  - b. How much interest will he pay over the life of the loan? **\$3,707.60**
4. Suppose Rich 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? **\$3,354.70**
5. Rich made his last monthly interest-only payment on November 1. His next payment is due on December 1. What will be the amount of that interest-only payment? **\$27.86**
6. Suppose that Rich had decided to apply for a private loan rather than a federal loan. He is considering a 10-year loan with an interest rate of 5.9%.
  - a. Determine his monthly payment. **\$87.31**
  - b. What is the total amount he will pay back? **\$10,477.20**
  - c. What is the total interest amount? **\$2,577.20**
7. Martina's grandparents paid for the first 3 years of her college costs. As a senior, she was approved for a federal unsubsidized loan in the amount of \$9,300 at a 4.29% interest rate for 10 years.
  - a. If she chooses to make interest-only payments until the monthly loan payments are due, for how long will she be making interest-only payments? **1.5 years**
  - b. What would be the total amount of her interest-only payments? **\$598.46**
  - c. If she begins her loan repayment with no interest capitalization since she already paid the interest when she was in school and during the 6-month grace period, how much will she have paid in interest for this loan by the end of the 10-year loan period? **\$2,752.46**
8. Ted is a freshman attending a 4-year college. He has been approved for an \$8,000 subsidized federal loan at 4.29% for 10 years. How much will the U.S. Department of Education subsidize in interest costs during his 4.5-year nonpayment period? **\$1,544.40**

Use the following situation to answer questions 9–13.

### TEACH

There are a variety of scenarios in the problems offered here. It is important that students classify problems by the types of loans and by whether or not interest is being capitalized. You might want to review a few of the problems ahead of time with students to make sure they understand the categories into which the problems fall.

### ANSWERS

1. Chatzky tries to ease our fears about carrying responsible debt. There are some major expenses in life that can't be paid for without taking out a loan. She believes that if the investment is worth making, then the debt is worth carrying.

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Britta has been accepted into a 2-year medical assistant program at a career school. She has been awarded a \$6,000 unsubsidized 10-year federal loan at 4.29%. She knows she has the option of beginning repayment of the loan in 2.5 years. She also knows that during this nonpayment time, interest will accrue at 4.29%.

**\$643.50** 9. How much interest will Britta accrue during the 2.5-year nonpayment period?

10. If Britta 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 she begins making loan payments? **\$6,643.50**

**\$2,033.10** 11. Suppose Britta only paid the interest during her 2 years in school and the 6-month grace period. What will she pay in interest over the term of her loan?

12. Britta made her last monthly interest-only payment on May 5. Her next payment is due on June 5. What will be the amount of that interest-only payment? **\$21.86**

13. Suppose that Britta decided to take out a private loan for \$6,000 for which loan payments start as soon as the loan amount is deposited in her account and continue for 10 years. The interest rate is 6.1%.

a. Determine her monthly payment. **\$66.91**

b. What is the total amount she will pay back? **\$8,029.20**

c. What is the total interest amount? **\$2,029.20**

14. There are many online student loan calculators that can assist you. Examine the input boxes for one such calculator (Cost of Interest Capitalization Calculator *www.finaid.org*).

Loan Balance	5500
Interest Rate	4.29
Deferment in Months	54
Capitalization	At Repayment
Loan Term in Years	10

After clicking “calculate,” the following information is reported:

Comment 1: After the deferment period of 54 months, the new loan balance is \$6,561.78, including \$1,061.78 in accrued interest.

Comment 2: Without the interest capitalization there would have been 120 payments of \$56.45 adding up to \$6,774.00 (including a total of \$1,274.00 in interest) plus an additional \$1,061.78 in interest paid during the deferment period.

Comment 3: With the interest capitalization, there are 120 payments of \$67.34 for a total payment of \$8,080.80 (including a total of \$1,519.03 in interest plus \$1,061.78 in interest accrued during the deferment period).

Comment 4: The total amount paid with interest capitalization is \$8,080.80, or \$245.03 more than would have been paid without capitalization. That’s an extra \$0.04 for every dollar borrowed.

Answer the questions below based on the comments above. [See margin.](#)

a. Examine comment 1. Explain the way in which a student chose to make payments if this comment applies.

b. Examine comment 2. Explain the way in which a student chose to make payments if this comment applies.

c. Examine comment 3. Explain the way in which a student chose to make payments if this comment applies.

d. Comment 4 states that the difference between “with interest capitalization” and “without interest capitalization” results in an extra \$0.04 for every dollar borrowed. Explain how that was calculated using the data given in this comment.

14a. No payments were made for 4.5 years. The interest was capitalized.

14b. Interest was paid during the 4.5 years. Loan repayment began after 4.5 years and continued for 10 years. The total interest for this loan is the sum of the interest paid during the nonpayment period and the interest accrued during the 10-year loan life.

14c. The student deferred all payments for 4.5 years. The accrued interest was added to the loan amount. The monthly payment is higher than without the capitalization.

14d. The difference between the interest amounts is \$243.03. \$6,000 was borrowed. Divide 243.03 by 6,000. The result is \$0.04 interest per dollar borrowed.