Applications

People are living longer than ever before, a phenomenon undoubtedly made necessary by the 30-year mortgage.

—Doug Larson, newspaper columnist

1. Read the quote at the beginning of this section. Interpret the quote in terms of what you have learned about discount points. See margin.
2. Determine the cost of the points and the new interest rate for each loan amount and interest rate. Assume each point costs 1% of the loan amount.
   a. $400,000, original APR 4.1%, 1 point with a 0.2% discount $4,000; 3.9%
   b. $250,000, original APR 3.95%, 2 points with a 0.25% discount per point $5,000; 3.45%
   c. $300,000, original APR 3.51%, 3 points with a 0.125% discount per point $9,000; 3.135%
   d. $550,000, original APR 4.75%, 1 point with a 0.3% discount $5,500; 4.45%
   e. $1,000,000, original APR 4.45%, 2 points with a 0.215% discount per point $20,000; 4.02%
3. Rhonda wants to take out a 30-year, $280,000 loan with a 4.4% APR. She is considering purchasing 2 points, which will decrease her APR by 0.125% per point. Each point will cost 1% of her loan. Compare her monthly payments with and without the purchase of the points. $1,402.13 vs. $1,361.09
4. J.P. has been offered a 20-year, $350,000 loan with a 3.9% APR. If he purchases 1 point, his APR will reduce to 3.7%. How much will his monthly payment savings be? $36.52
5. Toni purchased 3 points, each of which reduced her APR by 0.125%. Each point cost 1% of her loan value. Her new APR is 3.2%, and the points cost her $8,100.
   a. What was the original APR? 3.575%
   b. What is her principal? $270,000
6. Dylan purchased A points, each of which reduced his APR by B%. The cost per point was 1% of the loan amount. His new APR is C%, and his points cost him D dollars. Write an algebraic expression for:
   a. The original APR $(C + AB)\%$
   b. The principal $\frac{D}{0.01A}$
7. The bank offered Annette a $380,000, 30-year mortgage at 3.54%. She is deciding whether to purchase 2 points to reduce her APR by 0.25% per point. Each point will cost 1% of the loan value.
   a. Calculate her monthly payments with the points. $1,610.30
   b. Calculate her monthly payments without the points. $1,714.87
   c. Determine the breakeven month. 72.7 months
8. The credit union offered Zach a $200,000, 10-year loan at a 3.625% APR. Should Zach purchase 1 point or no points? Each point lowers the APR by 0.125% and costs 1% of the loan amount. Justify your reasoning. No, the breakeven point is about 15 years.
9. Marina wants to take out a $500,000 loan to purchase a new home. The bank offers a 25-year loan with an APR of 3.8%. If she purchases 1 point for 1% of the value of the loan, she will reduce her APR by 0.3%.
   a. What is her monthly savings with the point purchase? $81.16
   b. When will she break even? 61.6 months
   c. Assume she decided not to buy the point and put the cost into a certificate of deposit that pays 1.5% interest compounded monthly. Would this have been a better way to use the cost of the points? Explain.
   Comparing total loan interest accrued in each situation and taking into account that $2,273.25 in savings interest will be accrued, the points are better.

ANSWERS

1. This is a tongue in cheek quote. In effect, it says that people want to live longer than their mortgage term so they can reap the benefits of being mortgage debt free!

10. Lincoln Towers Bank offers borrowers a zero closing cost loan. Each negative point reduces the bank's closing costs by 1% of the principal and increases the APR by 0.125%. Ibraheem wants to borrow $450,000 from Lincoln Towers at 3.48% for 20 years. The estimated closing costs are $9,000.
    a. How many negative points does he need to have a zero closing cost loan? 2
    b. What will his new APR be on the loan? 3.73%
    c. There is a chance that in 12 years, his company may be moving to a different state. Are these negative points worth the investment? Yes. The breakeven point is at 12.9 years. Ibraheem will move before that time.
11. Kennesaw Credit Union offers a 4.25%, 15-year mortgage. Sadie wants to borrow $300,000 and purchase enough negative points to eliminate her $9,000 closing costs. Each point increases her APR by 0.125% and reduces the bank's closing costs by 1% of the principal.
    a. How many points will she need? 3
    b. What will her new APR be? 4.625%
    c. What is the breakeven time for Sadie's loan? 156.9 months