

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

Doug Larson, Newspaper Columnist

Points

8-4A

Key Terms

- points
- breakeven time

Objectives

- Calculate discount points for a mortgage.

IS BUYING POINTS A WISE DECISION?

Points are fees that are paid to a lending institution for the purpose of buying down or lowering the mortgage interest rate. The usual cost of a point is 1% of the loan amount. When faced with the choice of whether or not buying points is a wise financial decision, it is important to do the math and compare the costs with and without the discount that comes from buying the points.

Skills and Strategies

Many factors enter into the decision for purchasing points. First and foremost is the length of time that the buyer intends to keep the loan. The cost of the lower interest rate is an upfront expense. The savings from that expense may not be realized for a while. If the buyer only intends to keep the loan for a short period of time, then the points may not be cost effective.

EXAMPLE 1

Elizabeth and Nicholas want to buy a new home in Sunset Park. They need to borrow \$350,000. Their bank is offering the opportunity for the couple to buy down the quoted interest rate of 5.5% by 0.125% per point purchased. Each point will cost 1% of the amount borrowed. What will be the new interest rate if two points are purchased? What will be the cost to purchase two points?

SOLUTION The discount is 0.125% per point purchased. Find the new interest rate if two points are purchased.

Multiply to find the percentage drop. $2 \times 0.125 = 0.25$

Subtract to find the new interest rate. $5.5 - 0.25 = 5.25$

The new interest rate will be 5.25%.

Each point costs 1% of the loan amount.

Multiply to find the cost of two points. $350,000 \times 0.02 = 7,000$

It will cost Elizabeth and Nicholas \$7,000 to drop the interest rate from 5.5% to 5.25%.

■ CHECK YOUR UNDERSTANDING

Suppose Patrick wants to take out a D dollar loan. He has been quoted a $P\%$ interest rate for this loan. Patrick wishes to purchase Z points, each of which will decrease his interest by $Y\%$. Each point costs $X\%$ of the loan. Write algebraic expressions that represent Patrick's cost for the points and the new interest rate.

EXAMPLE 2

How can Elizabeth and Nicholas (from Example 1) determine whether or not the purchase of the points makes sense for their situation?

SOLUTION Suppose Elizabeth and Nicholas plan on paying off the loan in 15 years. They need to determine when the **breakeven time**, that is, the time it will take to recover the cost of purchasing the points will occur.

Assume that they had not purchased any points. Use the monthly payment formula to determine the monthly payment for their original interest rate.

$$M = \frac{p \left(\frac{r}{12} \right) \left(1 + \frac{r}{12} \right)^{12t}}{\left(1 + \frac{r}{12} \right)^{12t} - 1}$$
$$M = \frac{350,000 \left(\frac{0.055}{12} \right) \left(1 + \frac{0.055}{12} \right)^{12(15)}}{\left(1 + \frac{0.055}{12} \right)^{12(15)} - 1}$$
$$M = 2,859.79$$

The monthly payment for a 15-year loan of \$350,000 at 5.5% is \$2,859.79.

Now calculate the monthly payment at the discounted interest rate.

$$M = \frac{350,000 \left(\frac{0.0525}{12} \right) \left(1 + \frac{0.0525}{12} \right)^{12(15)}}{\left(1 + \frac{0.0525}{12} \right)^{12(15)} - 1}$$
$$M = 2,813.57$$

The monthly payment for a 15-year loan of \$350,000 at 5.25% is \$2,813.57.

Find the amount saved by subtracting the lower monthly payment from the higher monthly payment.

Subtract. $2,859.79 - 2,813.57 = 46.22$

The difference in the monthly payments for the two interest rates is \$46.22.

To find the length of time in months for the cost of the points to be recovered by the savings, divide the cost of the points by the monthly savings.

Divide. $7,000 \div 46.22 = 151.45$

It will take almost 152 months (or slightly over 12.5 years) to break even from the cost of the points. Since Elizabeth and Nicholas plan on keeping this loan for 15 years, they will realize a savings since the breakeven point is less than the length of the loan.

■ CHECK YOUR UNDERSTANDING

If you are unsure about how long you will stay in your home, does it make sense to buy points? Explain your reasoning.

EXAMPLE 3

How much will Elizabeth and Nicholas (from Example 1) save over the life of their loan from the purchase of the two points?

SOLUTION

Find the number of months in the life of the loan.

Multiply. $15 \times 12 = 180$

There are 180 months in 15 years.

The breakeven point for this loan occurs during the 152nd month.

The \$46.22 savings per month is only realized in the months after the breakeven point.

Find the number of payments after the breakeven month.

Subtract. $180 - 152 = 28$

Find the total savings.

Multiply. $28 \times 46.22 = 1,294.16$

Elizabeth and Nicholas will save \$46.22 per month for a total of 28 months. The savings due to the points is \$1,294.16.

■ CHECK YOUR UNDERSTANDING

In some instances, points are tax deductible on a primary residence. How might that also help Elizabeth and Nicholas?

Applications

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1. Interpret the quote in the context of what you learned about points.
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 5.1%, 1 point with a 0.2% discount
 - b. \$250,000, original APR 4.95%, 2 points with a 0.25% discount per point
 - c. \$300,000, original APR 6.1%, 3 points with a 0.125% discount per point
 - d. \$550,000, original APR 5.75%, 1 point with a 0.3% discount
 - e. \$1,000,000, original APR 5.45%, 2 points with a 0.215% discount per point
3. Rachel wants to take out a 30-year, \$280,000 loan with a 5.4% APR. She is considering purchasing two 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.
4. JP has been offered a 20-year, \$350,000 loan with a 4.9% APR. If he purchases 1 point, his APR will reduce to 4.7%. How much will his monthly payment savings be?
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 5.2% and the points cost her \$8,100.
 - a. What was the original APR?
 - b. What is her principal?
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
 - b. the principal
7. The bank offered Annette a \$380,000 30-year mortgage at 5.7%. 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.
 - b. Calculate her monthly payments without the points.
 - c. Determine the breakeven month.
8. The credit union offered Zach a \$200,000 10-year loan at a 4.625% 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.

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 4.8%. If she purchases one 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?
 - b. When will she break even?
 - c. Assume she decided not to buy the point and put the cost into a certificate of deposit that pays 5% interest compounded monthly. Would this have been a better way to use the cost of the points? Explain.