

Mortgage - loan for a house

Points - Pay a % of the loan amount in exchange for a lower interest rate.

A lower interest rate  
lowers your monthly  
payment.

Liz and Nick 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. The mortgage is for 15 years.

- a) What will be the new interest rate if two points are purchased?
- b) What will be the cost to purchase two points?

<p>Start 5.5%</p> <p>5.50</p> <p>- .25</p> <hr/> <p>5.25% with points</p>	<p><u>Interest Rate</u></p> <p>1 point = .125%</p> <p>2 points = .25%</p>
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<p>Cost</p> <p>350,000</p> <p>X .02 points</p> <hr/> <p>\$7,000 cost</p>	<p>2 points *</p> <p>1 point = 1% of loan</p>
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How can Elizabeth and Nicholas determine whether or not the purchase of the points makes sense for their situation?

\*\*\*You will have to find how much is saved per month by calculating the monthly payments with and without the points. Next, you will find the breakeven point by dividing the cost of the points by the monthly savings.

Loan = 350,000 15 years

Int = 5.5% 2 points

Int = 5.25% 2 points

Cost for points = \$7000

① Calculate monthly payment - & points

$$A = 350,000 \left( \frac{.055}{12} \right) \frac{1}{\left[ 1 - \left( 1 + \frac{.055}{12} \right)^{-180} \right]}$$
$$= 2859.79$$

② Calculate monthly payment  
- 2 points

$$A = 350,000 \left( \frac{.0525}{12} \right)$$

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$$\left[ 1 - \left( 1 + \frac{.0525}{12} \right)^{-180} \right]$$

2813.57



③ Find breakeven

cost of points

$$\frac{\text{Payment no points} - \text{Payment with points}}{\text{Cost of points}}$$

$$\frac{\$7000}{\$46.22} = 151 \text{ months}$$

$\div 12$

12.6 years

$$180 \times 2859.79 = 514,762.20$$

No  
Points

$$180 \times 2813.57$$

2 points

$$\begin{array}{r} 506,442.60 \\ \hline \$8319 \end{array}$$

Determine the cost of the points and the new interest rate for each loan amount . Assume each point costs 1.25% of the loan amount.

- a. \$300,000, original APR 4.8%, 1 point with a 0.3% discount per point
- b. \$225,000, original APR 5.37%, 2 points with a 0.15% discount per point
- c. \$157,000, original APR 6.25%, 3 points with a 0.15% discount per point

	<u>Interest Rate</u>	<u>Cost</u>
a	4.5%	\$3750
b	5.07%	\$5625
c	5.8%	\$5887.50

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.

$$\begin{array}{r} \text{\$ points} \\ \hline 1572.29 \end{array}$$

$$\begin{array}{r} 2 \text{ points} \\ \hline 1528.87 \end{array}$$

savings per month:

$$\text{\$43.42}$$

cost of 2 points:

$$\begin{array}{r} 280,000 \\ \times .02 \\ \hline \$ 5600 \end{array}$$

Breakeven

$$\frac{5600}{43.42} = 129 \text{ months} \div 12 = 10.7 \text{ years}$$

JP has been offered a 15-year, \$330,000 loan with a 3.7% APR. If he purchases 1 point, his APR will reduce to 3.55%. How much will his monthly payment savings be?



2 points  
2391.66

1 point  
2367.22

monthly savings  
24.43

The bank offered Annette a \$345,000 30-year mortgage at 4.75%. She is deciding whether to purchase 2 points to reduce her APR by 0.15% 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.

	<u>2 points</u>	<u>4 points</u>
payment	1737.82	1799.68

$$\text{savings} = \$61.85 \text{ per month}$$

$$\text{cost: } 345,000 \times 0.02 = 6,900$$

$$\text{Breakeven } \frac{6900}{61.85} = 111.6 \text{ months}$$

$$= 9.3 \text{ years } \textcircled{C}$$

Marina wants to take out a \$255,000 loan to purchase a new home. The bank offers a 15-year loan with an APR of 5.38%. If she purchases one point for 1% of the value of the loan, she will reduce her APR by 0.25%.

- a. What is her monthly savings with the point purchase?
- b. When will she break even?

$$\text{payment} \quad \frac{1 \text{ points}}{2033.83} \quad \frac{0 \text{ points}}{2067.36}$$

$$\text{savings} = \$33.53 \text{ per month}$$

$$\text{cost} : 255,000 \times 0.01 = 2550$$

$$\text{Breakeven} \quad \frac{2550}{33.53} = 76.1 \text{ months} \\ = 6.3 \text{ years } \textcircled{C}$$