

borrow money at

Suppose Sammy borrows \$25,000 to purchase a new vehicle. He will ~~be~~ borrow money at 7%/a compounded monthly and make monthly payments for the next 5 years to pay off the loan. How much is each payment?

$$R \frac{[1 - (1 + \frac{0.07}{12})^{-60}]}{\frac{0.07}{12}} = 25000$$

Each payment is \$495.03.

$$\frac{R(50.5019935)}{50.5019935} = \frac{25000}{50.5019935}$$

Erika will also borrow money at 7%/a compounded monthly. The loan will be amortized over 5 years. If she can only afford \$250 monthly payments, how much can she afford to borrow?

$$PV = \frac{250[1 - (1 + \frac{0.07}{12})^{-60}]}{\frac{0.07}{12}} = 12625.50$$

Erika can afford to borrow \$12625.50.

How much interest did Erika pay in total?

$$250 \times 60 - 12625.50 = \$2374.50$$

A mortgage is a special type of loan used to purchase a house. Find the monthly payments on a mortgage for \$280,000 amortized over 25 years at an interest rate of 3%/a, compounded monthly.

$$R \frac{[1 - (1 + \frac{0.03}{12})^{-300}]}{\frac{0.03}{12}} = 280000$$

Monthly payments are \$1327.79.

$$\frac{R(210.8764533)}{210.8764533} = \frac{280000}{210.8764533}$$

When purchasing a home a person usually saves up money to make a *down payment*. Suppose you want to purchase a home in 5 years. You save \$150 per month to go towards the down payment. The money collects interest at 2.5%/a compounded monthly. How much money will you have saved for a down payment?

$$FV = \frac{150[(1 + \frac{0.025}{12})^{60} - 1]}{\frac{0.025}{12}} = 9576.08$$

You will have \$9576.08 for a down payment.

Practice:

1. Mario wants to purchase a new truck for \$36,500. He will finance the truck at 3.9%/a compounded monthly. He will make monthly payments for the next 4 years to pay for the truck.
  - a) Find the monthly payment amount.
  - b) Find the total interest.
  - c) Suppose Mario decides to take 5 years to pay for the loan. Calculate the new monthly payment.
  - d) Find the total interest if Mario takes the 5 year loan.
  
2. Harry purchases furniture on a loan agreement. When he bought the furniture he paid for the sales tax in cash. He will make monthly payments of \$75 to pay off the remainder (for 2 years). The interest rate is 9%/a compounded monthly. How much did the furniture cost?
  
3. Find the monthly payments on a mortgage of \$215,000 at 2.85%/a compounded monthly over 20 years.