

The Learning Center

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Future Value/ Present Value Annuities

Future Value: \$0 → \$\$\$\$\$

Present Value: \$\$\$\$\$ → \$0

$$FV = PMT \left[\frac{(1 + i)^n - 1}{i} \right]$$

$$PV = PMT \left[\frac{1 - (1 + i)^{-n}}{i} \right]$$

1. A family wants to start a college fund for their child. When the child is born, they contribute \$1000 at the end of each quarter for the next 18 years. The investment pays 8% compounded quarterly. How much will be in the college fund in 18 years?

2. A college student buys a new car priced at \$20,000. If the car is financed at 6% compounded monthly for 5 years, what are the monthly payments?

3. A couple wants to save \$15,000 over the next 3 years and then use this money as a down payment on a home. To reach this goal, how much money must they deposit at the end of each quarter into an account that earns interest at a rate of 5% compounded quarterly?

4. Suppose a person plans to set up an ordinary annuity with a \$100,000 inheritance. What size yearly payments will he/she receive for the next 10 years if the account pays 7% compounded yearly?

5. A homeowner's budget can afford a monthly mortgage payment of \$850. What is the most expensive home which can be purchased if the money is borrowed for 30 years at 7.2% compounded monthly?

6. A company establishes a sinking fund to discharge a debt of \$200,000 due in 5 years by making equal semiannual deposits. If the deposits are placed in an account that pays 6% compounded semiannually, what is the size of each deposit?

7. Find the lump sum that must be invested in an annuity in order to receive \$1000 at the end of each month for the next 16 years if the annuity pays 7% compounded monthly?