EVEREST

Assume savings at end of month:

relevant Time period: 1 month

interest Rate: $6\%/12 = 0.5\%$

6 yr → 72 periods, need $FV = 72{,}000$. (I could do $PV = \frac{72{,}000}{(1.005)^{72}}$, but that's 1 more step.

$$72{,}000 = FV = (1.005)^{72}\left[\frac{1}{0.005} - \frac{1}{0.005(1.005)^{72}}\right]\cdot C \Rightarrow C = \underbrace{\frac{72{,}000}{(1.005)^{72}}}_{50{,}277.77} \Big/ \underbrace{A^{72}_{0.005}}_{60.34} = 833.25$$

OFFICE SPACE

Growing Annuity $PV = C\left[\frac{1}{r-g} - \frac{1}{r-g}\left(\frac{1+g}{1+r}\right)^T\right]$

Want Purchase price = NPV of future returns.

$$NPV = 400{,}000\left[\underbrace{\frac{1}{.12-.04} - \frac{1}{.08}\left(\frac{1.04}{1.12}\right)^{10}}_{6.54}\right] + \frac{7{,}400{,}000}{(1.12)^{10}}$$

2.617 million $+ 2.382\text{m} \cong 5$ million

If you pay less, you are better off - higher return

BONDS.

Get \$1000 in 20 years, and \$60 every 6 months ($\frac{1}{2}$ of 12% of \$1000)

IR: EIAR of 10.25% ⇒ 5% semi-annual.

$$1.1025 = (1+r)^2 \Rightarrow 1+r = 1.05 \Rightarrow r = 5\%$$

$$PV \text{ bonds} = \$60\underbrace{\left[\frac{1}{r} - \frac{1}{r}\frac{1}{(1+r)^{40}}\right]}_{17.16} + \underbrace{\frac{\$1000}{(1+r)^{40}}}_{142.04} = \$1171.59$$ (> face value... ir < coupon rate)

If EAIR = 14.49% ⇒ 7% semi-annual

$$PV = \$60\underbrace{\left[\frac{1}{.07} - \frac{1}{.07(1.07)^{40}}\right]}_{13.33} + \underbrace{\frac{1000}{1.07^{40}}}_{66.78} = \$866.68$$