

Tvm Problems

1. a. 0% financing: $PMT = \frac{28,000}{60} = 466.67$

6.5% financing: $PVA = 28,000 - 4,000 = PMT \left[\frac{1 - \frac{1}{(1 + \frac{0.065}{12})^{60}}}{(\frac{0.065}{12})} \right] = PMT (51.10868)$

$$Pm = \frac{24,000}{51.10868} = 469.59 \left\{ \begin{array}{l} N=60 \\ I = 6.5/12 \\ PV = 24,000 \end{array} \right. \quad PMT = ? = 469.59$$

b. $PVA = 466.67(51.10868) = 23,851$

$N=60, I = \frac{6.5}{12} = 0.54167, PMT = -466.67, PV = ? = 23,851$

$\text{Rebate} = 28,000 - 23,851 = \$4,149$

2. $\text{monthly} = \frac{0.06}{12} = 0.005$; $EAR = (1.005)^{12} - 1 = 0.06168 = 6.168\%$

$PVA(\text{DUE}) = 1.5 \text{ million} \left[\frac{1 - \frac{1}{(1.0617)^{30}}}{0.0617} (1.0617) \right] = 1.5 \text{ million} (14.35209) = 21.53$

(DUE) $N=30, I=6.17$; $PMT=1.5 \text{ million}, PV=? = 21.53 \text{ million}$

3. $PVA = 180,000 = \left[\frac{1 - \frac{1}{(1 + \frac{0.072}{12})^{180}}}{(\frac{0.072}{12})} \right] PMT = PMT (109.88447)$; $PMT = \frac{180,000}{109.88447} = 1,638.08$

$N=180, I = \frac{7.2}{12} = 0.6, PV = 180,000, PMT = ? = 1,638.08$

five years later, $180 - 5(12) = 120$ payments remain:

$PVA = 1,638.08 \left[\frac{1 - \frac{1}{(1 + \frac{0.072}{12})^{120}}}{(\frac{0.072}{12})} \right] = 1,638.08 (85.36657) = 139,837$

$N=120, I = \frac{7.2}{12} = 0.6, PMT = 1,638.08, PV = ? = 139,837$