

## Assignment #9

HW #9      6.5      p 481   # 2, 6, 10, 16, 20, 24, 32, 34

2. 6% is better for the borrower because more of each payment goes to reduce the loan balance.

6.  $A_n = 10,000, n = 10, i = 0.015$

$$R = \frac{10,000}{a_{\overline{10}|0.015}} = 10,000 \left[ \frac{0.015}{1 - (1.015)^{-10}} \right] = \$1084.34$$

10.  $A_n = 50,000, n = 5, i = 0.05, R = \frac{50,000}{4.329477} = \$11,548.74$

Period	Payment	Interest	Balance Reduction	Unpaid Balance
				50,000.00
1	\$11,548.74	\$2500.00	\$9048.74	40,951.26
2	11,548.74	2047.56	9501.18	31,450.08
3	11,548.74	1572.50	9976.24	21,473.84
4	11,548.74	1073.69	10,475.05	10,998.79
5	11,548.73	549.94	10,998.79	----

16.  $A_n = 17,000, n = 20, i = 4\%$

a.  $R = 17,000 \cdot \frac{1}{a_{\overline{20}|4\%}} = 17,000 \left( \frac{1}{13.590326} \right) = \$1250.89$

b. Total paid:  $20(1250.89) = \$25,017.80$

c. Total interest  $\$25,017.80 - 17,000 = \$8017.80$

20.  $500 = A_n \cdot \frac{1}{a_{\overline{30}|1\%}}$

$$500 = A_n \frac{1}{30.107505}$$

$$15,053.75 = A_n$$

No down payment needed.

24.  $R = \$22,000, n = (2)(7) = 14$

a.  $i = \frac{0.089}{2} = 0.0445$

$$A_n = 22,000 \left[ \frac{1 - (1 + 0.0445)^{-14}}{0.0445} \right]$$

$$= \$225,634.51$$

b.  $i = \frac{0.073}{2} = 0.0365$

$$A_n = 22,000 \left[ \frac{1 - (1 + 0.0365)^{-14}}{0.0365} \right]$$

$$= \$237,851.77$$

32.  $A_n = \$100,000$

a.  $n = (12)(20) = 240, i = \frac{0.081}{12} = 0.00675$

$$R = A_n \left[ \frac{i}{1 - (1+i)^{-n}} \right] = 100,000 \left[ \frac{0.00675}{1 - (1 + 0.00675)^{-240}} \right] = 100,000(0.00842674) = \$842.67$$

Total interest:  $(240)(\$842.67) - \$100,000 = \$102,240.80$

b.  $n = (24)(20) = 480, i = \frac{0.081}{24} = 0.003375$

$$R = 100,000 \left[ \frac{0.003375}{1 - (1 + 0.003375)^{-480}} \right] = 100,000(0.00420557) = \$420.56$$

Total interest:  $(480)(\$420.56) - \$100,000 = \$101,868.80$

34.  $A_n = \$21,833(1 - 0.10) = \$19,649.70, n = (12)(15) = 180, i = \frac{0.165}{12} = 0.01375$

a.  $R = 19,649.70 \left[ \frac{0.01375}{1 - (1 + 0.01375)^{-180}} \right] = \$295.47$

b. Total monthly payments:  $(180)(295.47) = \$53,184.60$

Down payment:  $(0.10)(21,833) = 2,183.30$

Total cost:  $\$53,184.60 + 2,183.30 = \$55,367.90$

c. Annual cost:  $400 + (12)(295.47) = \$3945.64.$

d. Average annual cost:  $3945.64 + \frac{2183.30}{15} = \$4091.19.$