

MCR 3UI Ch 8 Self-Test

p. 536

a) 9% simple
 $A = P(1 + rt)$
 $= 850(1 + 0.09(6))$
 $= 850(1.54)$
 $= \$1309$
 $I = A - P$
 $= 1309 - 850$
 $= \$459$

b) 8.4% comp semi
 $A = P(1 + i)^n$
 $= 5460(1 + \frac{0.084}{2})^{13 \times 2}$
 $= 5460(1.042)^{26}$
 $= 15913.046$
 $= \$15913.05$
 $I = 15913.05 - 5460$
 $= \$10453.05$

c) \$230 monthly; 4.8% comp. monthly
 $i = \frac{0.048}{12}$
 $= 0.004$
 $n = 6.5 \times 12$
 $= 78$
 $a = 230$
 $r = 1.004$
 $S_{78} = \frac{230(1.004^{78} - 1)}{0.004}$
 $= \$21005.02$
 $I = 21005.02 - (230 \times 78)$
 $= 21005.02 - 17940$
 $= \$3065.02$

2. Loan #1

a) 1 3796
 2 3942 > 146
 3 4088 > 146
 \therefore simple

Loan #2

2 977.53 $\rightarrow \frac{1036.18}{977.53} = 1.05999$
 3 1036.18
 4 1098.35 $\frac{1098.35}{1036.18} = 1.05999$
 \therefore compound

d) FU in 10 years

#1	#2
$A = P(1 + rt)$	$A = 870(1 + 0.06)^{10}$
$= 3650(1 + 0.04(10))$	$= 1558.037$
$= \$5110$	$= \$1558.04$

b) $r = \frac{I}{Pt}$
 $= \frac{146}{3650(1)}$
 $= 0.04$
 $= 4.00\% / a$

$r = 6.00\% / a$

c) $P = \frac{977.53}{(1.06)^2}$
 $= 869.998$
 $= \$870$

c) $P = 3650$

3. $A = 25000$
 $P = ?$
 $i = \frac{0.092}{4}$
 $n = 8 \times 4$
 $= 32$

$P = \frac{25000}{(1 + \frac{0.092}{4})^{32}}$
 $= 12075.906$
 $= \$12075.91$

4. 250/month; 4.8% comp. monthly
 $i = \frac{0.048}{12}$
 $= 0.004$
 $n = 6.5 \times 12$
 $= 78$
 $a = 250$
 $r = 1.004$

$S_{78} = \frac{250(1.004^{78} - 1)}{0.004}$
 $= 22831.546$
 $= \$22831.55$

5. if lump sum
 $A = P(1 + \frac{0.0588}{12})^{12}$
 $= 1.06041083P$

if annuity
 $S_n = \frac{a}{i}(1.0049^{12} - 1)$
 $= \frac{a}{0.0049}(1.0588 - 1)$
 $= 1.027395a$

after 1 year

vs
 $A = P(1 + \frac{0.06}{1})^1$
 $= 1.06P$

vs
 $S_n = \frac{a(1.06^1 - 1)}{0.06}$
 $= 1a$

\therefore Simone should choose 5.88% compounded monthly.