

4A4B

p.1

Name: Key

Show all work for full credit.

1. Find the net monthly cash flow. (1 month = 4 weeks, 1 year = 2 semesters)

Use:

12 mos = 1 yr  
50  
2 sem = 12 mos  
50 1 sem = 6 months

Income	Expenses
Job \$700 per week	Rent \$750 per month
Loan \$5000 per semester	Groceries \$65 per week
	Tuition and Fees \$2750 per semester
	Miscellaneous \$150 per week

  

$\frac{\$700}{\text{wk}} \cdot \frac{4 \text{ wk}}{1 \text{ mo}} = \frac{\$2800}{\text{mo}}$

$\frac{\$5000}{\text{sem}} \cdot \frac{1 \text{ sem}}{6 \text{ mos}} \approx \frac{\$833.33}{\text{mo}}$

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$I_T = \frac{\$2800}{\text{mo}} + \frac{\$833.33}{\text{mo}}$

$I_T = \frac{\$3633.33}{\text{mo}}$

$\frac{\$65}{\text{wk}} \cdot \frac{4 \text{ wk}}{1 \text{ mo}} = \frac{\$260}{\text{mo}}$

$\frac{\$2750}{\text{sem}} \cdot \frac{1 \text{ sem}}{6 \text{ mos}} \approx \frac{\$458.33}{\text{mo}}$

$\frac{\$150}{\text{wk}} \cdot \frac{4 \text{ wk}}{1 \text{ mo}} = \frac{\$600}{\text{mo}}$

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$E_T = \frac{\$750}{\text{mo}} + \frac{\$458.33}{\text{mo}} + \frac{\$260}{\text{mo}} + \frac{\$600}{\text{mo}}$

$E_T = \frac{\$2068.33}{\text{mo}}$

$MCF = I_T - E_T = \frac{\$3633.33}{\text{mo}} - \frac{\$2068.33}{\text{mo}} = \frac{\$1565}{\text{mo}}$  (positive! 😊)

2. Tom is 45 and pays \$2142 on his mortgage each month while his total take-home pay is \$5950 per month. The national average, for those aged 35 - 64, on housing costs is 35% of income. What percent of Tom's income does he spend on housing? How does Tom's housing cost compare to the national average?

$$\frac{\$2142/\text{mo}}{\$5950/\text{mo}} = 0.36 = 36\%$$

⊛ Tom's housing cost is slightly higher than the national average.

3. You drive an average of 400 miles per week in a car that gets 26 miles per gallon. With gasoline priced at \$2.45 per gallon, how much would you save each week if you had a car that got 37 miles per gallon?

implies both  $\frac{37 \text{ mil}}{1 \text{ gal}} \cdot \frac{1 \text{ gal}}{37 \text{ mil}} = 1$

4A & 4B

$$\frac{400 \text{ miles}}{\text{wk}} \cdot \frac{1 \text{ gallon}}{26 \text{ miles}} \cdot \frac{\$2.45}{1 \text{ gal}} = \frac{15.38...}{\text{wk}} \cdot \frac{\$2.45}{1} \approx \$37.69/\text{wk}$$

$$\frac{400 \text{ miles}}{\text{wk}} \cdot \frac{1 \text{ gal}}{37 \text{ mil}} \cdot \frac{\$2.45}{1 \text{ gal}} = \frac{10.81...}{\text{wk}} \cdot \frac{\$2.45}{1} \approx \$26.49/\text{wk}$$

37.69  
- 26.49  
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11.20

So \$11.20/wk would be saved.

4. Determine the accumulated balance: \$1500 invested at an APR of 3.6%, compounded quarterly for 7 years.  $Y=7$

4 quarters a year  $\rightarrow n=4$

APR = 0.036

$$A = 1500 \left(1 + \frac{0.036}{4}\right)^{4(7)}$$

$$A = 1500 (1.009)^{28}$$

$$A = 1500 (1.285...)$$

$A \approx 1927.72$

So there would be \$1927.72 in the account after 7 years.

5. Suppose that you want to have \$7200 to put toward a down payment on a house in 5 years. How much will you need to deposit now if you can obtain an APR of 5.4%, compounded semiannually? Assume that no additional deposits are to be made to the account.

semi annually mean twice a year so  $n=2$

unknown

$$A = P \left(1 + \frac{\text{APR}}{n}\right)^{nY}$$

$Y=5$

$$\frac{7200}{1.30528...} = \frac{(1.30528...)P}{1.30528...}$$

$$P = 5516.048...$$

So

$$7200 = P \left(1 + \frac{0.054}{2}\right)^{2(5)}$$

$$7200 = P (1.027)^{10}$$

$$7200 = P (1.30528...)$$

$P \approx 5516.05$

So \$5516.05 would be the needed principal needed to be initially deposited at the beginning of the 5 year period