

**Part A: You are to track Steph's monthly cash flow. You are to answer a series of questions. Please answer the questions in the given space provided.**

1. [1 point] Steph's salary is \$86,000 a year. This is her gross yearly salary; her salary before taxes is deducted. What is her gross monthly income? *Steph's monthly income before tax*

$$\frac{86,000}{12} \quad \downarrow \text{means before tax deduction} \quad \$ 7166.67$$

2. [1 point] Suppose 25% of her salary is taken out for taxes. How much tax does Steph pay each month? *Steph's tax paid monthly*

$$7166.67 \cdot 0.25 \quad \$ 1791.67$$

3. [1 point] Compute Steph's monthly take-home pay. This is her net pay; the actual amount available to Steph from her paycheck. *Steph's net pay*

$$\begin{array}{r} 7166.67 \text{ gross income} \\ - 1791.67 \text{ tax} \\ \hline \end{array} \quad \$ 5375$$

Steph decides it's time to buy a house. Buying a house depends on many factors such as interest rates, length of the loan, down-payment, your credit worthiness, etc. Typically your monthly mortgage payment accounts for 30% of your gross monthly income. We have two scenarios to consider:

She finds a house for \$321,000. Steph can afford a down-payment of \$35,000.

4. [1 point] What is the size of the mortgage she needs to obtain from the bank to purchase her house?

$$\begin{array}{r} 321,000 \text{ house cost} \\ - 35,000 \text{ down payment} \\ \hline \end{array} \quad \$ 286,000$$

- Scenario 1:

- a. [1 point] If Steph has good credit, she will be able to finance the mortgage amount at 3.5%, compounded monthly for 30 years. How much will her monthly mortgage payment be?

Use PV formula

$$286000 = R \frac{1 - \left(1 + \frac{0.035}{12}\right)^{-12 \cdot 30}}{\left(\frac{0.035}{12}\right)} \quad \$ 1284.27$$

Intersect in calculator  $\Rightarrow y_1$

- b. [1 point] The bank also offers a different scenario: finance the mortgage amount at 2.875%, compounded monthly for 15 years. How much will her monthly mortgage payment be?

$$286000 = R \frac{1 - \left(1 + \frac{0.02875}{12}\right)^{-12 \cdot 15}}{\left(\frac{0.02875}{12}\right)} \quad \$ 1957.92$$

Intersect in calculator with  $y_1$  and  $y_2$

Scenario 2:

- c. [1 point] If Steph does not have good credit, she will be able to finance the mortgage amount at 4.75%, compounded monthly for 30 years. How much will her monthly mortgage payment be?

$$286000 = R \frac{1 - (1 + \frac{0.0475}{12})^{-12 \cdot 30}}{(\frac{0.0475}{12})} \quad \$ \underline{1491.91}$$

- d. [1 point] The bank offers a different scenario where she finances the mortgage amount at 4.375%, compounded monthly for 15 years. How much will her monthly mortgage payment be?

$$286000 = R \frac{1 - (1 + \frac{0.04375}{12})^{-12 \cdot 15}}{(\frac{0.04375}{12})} \quad \$ \underline{2169.65}$$

5. Steph does have good credit, so she decides to go with Scenario 1a. How much will her monthly mortgage payment be?

\* see work on #4 Scenario 1a \*

$$\$ \underline{1284.27}$$

← monthly mortgage

6. [½ point] Property taxes are \$7800 a year. The bank will spread this amount over 12 months and include it into your monthly mortgage payment. This is called ESCROW. How much is Steph's escrow payment?

$$\frac{7800}{12}$$

$$\$ \underline{650}$$

7. [½ point] Now that Steph has bought a home, she will need to protect it. Steph purchases homeowner's insurance, which is a yearly charge of \$382. She budgets for monthly payments. How much is her monthly homeowner's payment?

$$\frac{382}{12}$$

$$\$ \underline{31.83}$$

8. [½ point] Water, electricity, trash pickup, and natural gas are other expenses that cost additional money each month. Steph spends \$68 per month for water and \$25 per month for trash, \$75 per month for electricity, and \$62 per month for natural gas. How much does she spend total for these utilities?

$$\$ \underline{230.00} \text{ monthly}$$

9. Steph's cell phone bill is \$72 a month.

10. TV service and internet costs \$85 a month.

11. [1 point] A general rule for savings is you should save at least 8% of your take-home income. Steph decides to save 5% of her take-home income. How much is she putting towards her savings each month?

$$0.05 (5375) \quad \$ \underline{268.75}$$

net pay  $\rightarrow$  see #3

12. [1 point] Another rule of thumb is you should have at least 3 months worth of your take-home income in your savings in case you lose your job or an emergency occurs. How much is 3 months worth of her take-home income?

$$3 \text{ months worth of take-home income: } \$ \underline{16,125.00}$$
$$3(5375)$$

13. Let's not forget about food. After a month of tracking her food spending, she finds she spends \$120 on restaurants and \$275 on groceries.

14. [1 point] Steph borrows \$12,500 to buy a car and have it paid off in 4 years. Since she has good credit, she finances the car at 1.9%. What is her monthly car payment?

$$12500 = R \frac{(1 - (1 + \frac{0.019}{12})^{-12 \cdot 4})}{(\frac{0.019}{12})} \quad \$ \underline{270.64}$$

15. [½ point] Now that Steph has a car, she will have to purchase car insurance. Steph buys a policy that costs \$900 per year. She pays her insurance bill monthly. What is her monthly car insurance payment?

$$\frac{900}{12} \quad \$ \underline{75.00}$$

16. No one can drive a car without purchasing gas. After tracking a month's worth of spending, Steph finds she spends \$165 a month in gas.

17. Steph finds she spends \$60 a month on new clothes and \$140 a month on entertainment.

18. Steph also has some credit debt. She currently spends \$195 per month on her credit cards.

19. After graduating from college, Steph started paying back her student loans. Her monthly student loan payment is \$230 per month.



20. Fill in Steph's *monthly* budget flow chart. Make sure your income available after expenses is the same as (or close to)

[5 points]

\$1222.51

## Monthly Budget Flow Chart

Income	
Job	86,000
<b>Total Income</b>	<b>86,000</b>

Gross  
a year

Monthly Net Income: \$5375.00 Net

Home Expenses	
Mortgage <i>see #5, #4, 1a</i>	1284.27
Escrow <i>see #6</i>	650.00
Homeowner's Insurance <i>see #7</i>	31.83
Electricity	75.00
Gas/Oil <i>see #8</i>	62.00
Water	68.00
Trash	25.00
Phone <i>see #9</i>	72.00
Cable/Internet <i>see #10</i>	85.00
<b>Total Home Expenses</b>	<b>2353.10</b>

Transportation	
Car Payment <i>see #14</i>	270.64
Car Insurance <i>see #15</i>	75.00
Fuel <i>see #16</i>	165.00
<b>Total Transportation</b>	<b>510.64</b>

Monthly Budget Summary	
Total Income	5375.00
Total Expenses	4152.49
<b>Net</b>	<b>\$1222.51</b>

✓  
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Daily Living	
Groceries <i>see #13</i>	275.00
Clothing <i>see #17</i>	60.00
Dining/Eating out <i>see #13</i>	120.00
Entertainment <i>see #17</i>	140.00
<b>Total Living Expenses</b>	<b>595.00</b>

Savings	
Transfer to Savings <i>see #11</i>	268.75
<b>Total Savings</b>	<b>268.75</b>

\*ignore #12

Obligations	
School Loans <i>see #19</i>	230.00
Credit Cards <i>see #18</i>	195.00
<b>Total Obligations</b>	<b>425.00</b>