

Life on a Budget

You are a financial advisor from the firm of Math for Life, Inc. A client who fits one of the demographics below has hired you. Your job is to create a monthly budget spreadsheet for your client, accompanied by a pie chart and a one-page written summary of your spending recommendations.

The following is data from the American Community Surveys conducted in 2014 and 2016. These are the mean earnings for people who fall into each race, gender, and education demographic. If there is a blank space, it is because there is not a statistically significant population in that demographic.

Education Level	White Male	Black Male	Asian Male	Hispanic Male	White Female	Black Female	Asian Female	Hispanic Female
Some high school (no degree)	\$ 33,724	\$ 27,384	\$ 27,792	\$ 28,577	\$ 17,825	\$ 20,231	\$ 20,373	\$ 17,940
Associate Degree (2 yr college)	\$ 55,602	\$ 40,924	\$ 46,087	\$ 46,837	\$ 37,750	\$ 34,852	\$ 38,498	\$ 34,757
Bachelor's Degree (4 yr college)	\$ 80,698	\$ 63,271	\$ 73,836	\$ 61,584	\$ 49,632	\$ 46,729	\$ 59,815	\$ 45,677
Professional Degree (PhD, JD, MBA)	\$ 164,853		\$ 174,377	\$ 141,594	\$ 115,512	\$ 68,936	\$ 116,691	

How could someone reading this data mistakenly create a stereotype about these demographics of people? How does your understanding of data analysis help you avoid doing this?

Circle the income in the above table based on the gender, race and education level you were given. The average salary in Boston is 34% higher than the national average, so increase your earnings by this amount. (Before you get too excited, consider that the cost of living here is 61% above the national average.)

Write your client's *actual* (increased) salary here (show work below):

8th Grade Math
Project

you are:_____

date:_____

The deadlines:

• Thursday, 10/18

Read over entire assignment.

Choose a client.

Learn about tax brackets.

Learn how to use Google Sheets.

Start on worksheet #1 (share with Liz); ~~finish for homework~~.

• Friday, 10/19

Work on worksheet #2 - link to numbers from #1.

Read over monthly expense sheets; start to look for an apartment and car - try padmapper.com or craigslist.org (print it out when you find one).

• Monday, 10/22

Work on worksheet #3 - link to numbers from worksheet #2.

• Tuesday, 10/23:

Finish all worksheets (#1-3). Insert pie chart into #3.

Write your spending recommendations to your client in the form of a business letter (share with Liz).

Print out all 3 worksheets.

Peer evaluation of letter and budget.

Debrief about what you learned.

Homework: revise your business letter based on peer and teacher feedback - email Liz when completed.

8th Grade Math
Project

you are:_____

date:_____

The rubric:

Time Management Did you meet all deadlines for this project?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements
Project requirements Does your budget consider the essential needs of your client? Did you write a professional-looking and sounding business letter?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements
MP.2 Reasons abstractly and quantitatively Are you flexible in the way that you solve problems, depending on what the situation calls for?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements
MP.3 Constructs viable arguments and critiques the reasoning of others Are your strategies are based on sound reasoning? Do you engage in an analytical dialogue with others about problem-solving?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements
MP.4 Uses appropriate tools strategically Do you understand when to measure versus calculate? When can calculators and computers be a tool rather than a crutch?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements
MP.5 Attends to precision Do you check over your work to see if your answers seem reasonable? Do you pay attention to details?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements
MP.8 Communicates understanding effectively by showing work and explaining thinking verbally, visually and numerically Are you able to demonstrate your understanding in different ways?	4 Demonstrating Mastery	3 Developing Mastery	2 Meeting Minimum Requirements	1 Not Meeting Minimum Requirements

CASH MANAGEMENT: TAXES – Worksheet #1

Now that you know your client's gross income, you must figure out how much of that will go to state and federal taxes, social security, etc. Let's start with taxes.

In the U.S., income is taxed in brackets. The more money you make, the higher percentage tax you pay, but only on a certain part of your money. Also, you pay different taxes whether you are single or married, and if you have kids! We are going to assume that your client is single and childless, in their late twenties.

2018 Income Tax Brackets

Rate	Individuals	Married Filing Jointly
10%	Up to \$9,525	Up to \$19,050
12%	\$9,526 to \$38,700	\$19,051 to \$77,400
22%	\$38,701 to \$82,500	\$77,401 to \$165,000
24%	\$82,501 to \$157,500	\$165,001 to \$315,000
32%	\$157,501 to \$200,000	\$315,001 to \$400,000
35%	\$200,001 to \$500,000	\$400,001 to \$600,000
37%	over \$500,000	over \$600,000

* Note that any money made over \$500,000 is taxed at 37%. There are no higher brackets! That's why some people think that the "super-rich" should pay more taxes - there should be more, higher tax brackets for millionaires.

You can think of each tax bracket above as a different pot. We will do an example assuming you were making \$50,000 per year together.



10 % pot



12% pot



22% pot

But that's not all! You also pay MA state tax – lucky for you, it's a flat income tax of 5.1%!
Now that you have read this, start on worksheet #1.

CASH MANAGEMENT: WITHHOLDINGS – Worksheet #2

In addition to your taxes, you must pay 6.2% of your income to Social Security and 1.45% to Medicare. (Your employer pays the other half of these.) Make sure you link to your taxes from sheet #1 to start this sheet.

On this worksheet, you will calculate your net income – how much you actually take home! You will then link this amount to the monthly income at the top of sheet #3.

CASH MANAGEMENT: MONTHLY EXPENSES – Worksheet #3

* details of expenses are below. Ideally you end up with no leftover money at the end of the month – it is all allocated somewhere!

CASH MANAGEMENT ANALYSIS: PIE CHART

Now use the percents you computed to make a pie chart of your expenses. Can you group any of the above categories together? Try to limit your pie chart to seven categories. Insert your pie chart into worksheet #3.

CASH MANAGEMENT ANALYSIS: BUDGET EXPLANATION

You should write up an explanation about the choices / sacrifices you made in order to stay in your budget. This explanation should be about 1 page in length, in the format of a business letter, and written professionally, from the perspective of a financial advisor to a client.

HELPFUL HINTS ABOUT EACH BUDGET CATEGORY

1. RENT:

Renting a home means that you don't have to pay for maintenance, but you can't make any money back (you can't sell your home). A good rule of thumb is to spend no more than 1/3 of your income on rent. Use Padmapper.com or Craigslist to find an apartment in a Boston area neighborhood/town that is suitable for your client. It is okay to have roommates. Print out the ad!

2. UTILITIES: ELECTRICITY, HEAT, WATER: Figure \$150 / month.

3. TELEPHONE, INTERNET, CABLE: Figure \$100 / month. Add \$50 if you want HD. Less (\$50) if you can live without cable.

4A. CAR LOANS

Your car payment really depends on the type of car you own. You may choose not to own a car, or maybe you need a car for work. Car payments can range anywhere from \$0 if you own an old / used car to \$500+ / month if you own a luxury automobile. You can research cars online (Elias, don't go too crazy).

4B. MBTA, UBER, etc.

If you choose not to own a car, you will need to get a T pass to ride the bus or subway to work. This may also affect where you choose to live. You should also figure some money for taxis or Uber, since the T may not go everywhere you want to go.

5. CAR INSURANCE

Choose from the following options:

- A. \$80 / month for an old or very inexpensive car
- B. \$150 / month for a mid-priced newish car
- C. \$200 / month for a luxury car

6. CAR MAINTENANCE (gas, oil, parking, etc)

Depends on how often you drive your car. Figure \$200 / month if you drive a long distance each day, less than \$50 / month if you drive a very short distance or drive infrequently. Figure \$50 / month extra maintenance if you have an old car.

7. FOOD

Choose from the following options:

- A. Shop at Costco - \$200 per month
- B. Shop at Stop & Shop - \$250 per month
- C. Shop at Whole Foods - \$400 per month

If you like to eat out (or don't like to cook), add on an additional \$10 - \$50 per meal eaten out each month (depends how fancy it is), and subtract a bit from your grocery bill.

8. CLOTHING

Are you a shopaholic? This amount can vary a lot depending on the person, season, etc. Plan on around \$100 / month, more if you like to splurge (and can afford to).

9. HOME FURNISHINGS

When you first get a new apartment, you need lots of new furniture! Plan for \$100 or more in this area.

10. OTHER

Are there other expenses you foresee? Video games, concerts, spa visits? List them here, and explain them in your budget analysis.

11-13. SAVINGS

It is wise to save at least 10 – 15% of your monthly income for emergencies (short term) and future (long-term) expenses. Will you buy a home in the future? Send your future child to private school? Maybe you want to go back to school to get more education? If you have the money, it's a good idea to set it aside now. Also, do you want to contribute to charity?