

Quantitative Literacy and Co-Construction in a High School Math Course, by Mark Russo, **Appendix A.**

Budget Simulation Assignment

For this assignment, you will create a budget simulation for yourself for your 20s (22 – 29). In particular, your budget should have the following components:

- Income
- Spouse's Income (if applicable)
- Taxes
- Mortgage/Rent
- Loans
- Insurance (car, health, life)
- Car payments (if applicable)
- Other expenses
- Charitable contributions
- Retirement savings
- College savings
- Savings

Along the way, we will have smaller assignments that will help to prepare you for your final project.

Day 1. Today, you will create an outline for your budget.

1. Create a spreadsheet with the following columns: age, income, spouse's income, and total salary. Enter ages 22 through 29 under the age column.
2. Perform some research on your dream job. Find out the average starting salary for this job, and plug that into your income column for age 22.
3. Let's assume that you get a 3% raise per year. How can you figure out what your salary will be when you turn 23? You can use a calculator to do this, but I would like you to plug in an equation and then drag it down. If you need some help, think of how you would do the math on the calculator, except instead of plugging in the salary on your calculator, just click on the correct cell. Then, drag this down so you have your salary for every year of your 20s.

4. I know this is projecting quite a bit, but this is just a simulation. Do you plan on getting married? If so, how old will you be? Now, to get even more creative, think through an ideal job for your spouse. Then, repeat steps 2 and 3 for your spouse, and enter his or her salary for age $x - 29$ (where x indicates your age when you get married)
5. Now, type in an equation to determine your total salary. You may want to color code this column, but that is up to you.

Day 2. Today, you will look into taxes, loans, and your mortgage/rent.

1. Visit <http://www.bankrate.com/finance/taxes/tax-brackets.aspx> to find out the tax brackets for 2013 (we will use these, even though they may change before you turn 22). Create a column for taxes, and calculate your total taxes for each year in your 20s. This is slightly challenging to do, so let me give you an example. Let's say that you and your spouse make 175,000 together. You will be charged 10% on your first 17,850, 15% up until 72,500, 25% up to 146,400, and then 28% beyond. The mathematics here will be as follows: $.10(17850) + .15(\text{the difference between } 72500 \text{ and } 17850) + .25(\text{the difference between } 146400 \text{ and } 72500) + .28(\text{the difference between } 175,000 \text{ and } 146400)$. If you need help, please ask me or consult <http://www.moneycrashers.com/calculate-federal-income-tax-brackets-rate-tables/>. Once again, please use excel to do this, rather than an online or personal calculator (note: this is a drastically oversimplified version of your tax liability. In reality, children, loans, charitable contributions, and mortgage payments all reduce the taxes you have to pay. If you want to make your budget more realistic, please ask me for help, but this is optional)
2. Once again, visit amortizationtable.org and determine your monthly payment. Please add this to your budget (convert to yearly)
3. Let's assume, for the sake of argument, that you eventually want to buy a house. Most people cannot buy a house right away, because they need to save up some money for a down payment. Let's assume that you want to rent for the first five years (22–26), and then you want to buy when you're 27.
 - a. Create a column entitled mortgage/rent.

- b. Do some research on apartments/condos/houses for rent in an area of your choosing (you can use craigslist for this, among other websites). Determine the type of apartment you want, and determine the monthly rent. Add this to your budget (convert)
- c. Do the same research for houses (you may have to use a different website – njmls.com works well for NJ). Find an area that you want to live, a type of house that you want, and then calculate your monthly mortgage payment. You can use <http://www.zillow.com/mortgage-calculator/> to calculate your monthly payment. Note: many people get a 30-year mortgage, and for argument's sake, assume a 5% interest rate. Now, to figure out your mortgage amount, you will need to subtract the price of the house from whatever you think you can pay up front (down payment). You can always go back and change this later, but make a prediction about how much money you will be able to save from your first five years of working. Then, the difference between the house price and your down payment will be your mortgage amount. Please calculate your monthly payments, and add this to your spreadsheet (convert) (note: the calculator on Zillow.com includes taxes and home insurance)
- d. In addition to your rent/mortgage, you will have to pay utilities and the cable bill. These vary so much from month to month and house to house, so just for argument's sake, assume \$250 a month for all utilities and \$125 a month for phone, cable and internet (if you want these things). Please add these to your spreadsheet (convert)

Day 3. Today, you will look at insurance, car payments, other expenses and charitable contributions.

1. You will more than likely need a car. You can either buy new, buy used or lease a car.
 - a. If you want to buy a car, do research on the price. It is possible that you might not have enough money when you are 22, so maybe you use your old car until you turn 24 or 25. If so, put a 0 in car payments for age 22, 23, etc., and then put the lump sum payment in car payments for whatever year you will buy the car. Then, you can put 0 in all years after that.

- b. Perhaps you want to lease. If so, do some research on the car you're interested in, and calculate your monthly payment (you can use <http://www.edmunds.com/calculators/car-lease.html>, for example). Make sure you convert. Cars are often leased for three years, so at the end of those three years you will have the option to lease a new car, or buy out the rest of the lease on your current car. If you choose to buy out your lease, you should include a lump sum (assume 50% is the residual value of your car) in that final year, and then 0 subsequently. Alternatively, you can continue leasing a new car.
2. Calculate your monthly car insurance. You will probably have to Google something to the effect of (what is average monthly car insurance payment for 22 year old female in New Jersey). Make sure you convert.
3. It would probably be good if you received health insurance from your job. If this is not the case, then you will have some challenging, potentially expensive work to do. For the sake of this project, let's assume that you have coverage from your employer.
4. Now, include additional expense columns (per year, remember), for things like cell phone, gas, groceries (if it helps, I spend about \$125 a week for a family of 5, and I spent around \$100 for just me and my wife), charitable contributions, etc. If you plan on having a baby(ies), you may want a baby column as well. You might also want to consider an emergency expenses column, a gift column, an entertainment column, etc. These will all be estimates, but remember, you want yearly (not monthly) estimates.

Day 4. Today, you will look at savings for kids' college and your own retirement

1. Do you plan on having kids? If so, how many? You might want to consider starting a college fund. Look at <http://www.archimedes.com/vanguard/csp.phtml>. I would just put the child's current age at 0, choose a price for the college you think you might want to send your child to, put \$0 as your planned contribution, and finally, I would put the % of cost at 33%. The reason I say this is because you may want to spit up your kid's college costs between your savings, the amount you can pay at the time, and then loans. This is just a suggestion. Find out the amount you must save per month, and then convert this to

yearly. Do the same for all of your children, and combine these totals into a column for college savings.

2. Calculate your yearly retirement savings (<http://finance.yahoo.com/calculator/retirement/ret02/> is a good website). Play around with this website for a bit. Notice how much the numbers change if you are aged 35 as opposed to 25 (It is a really good idea to start saving as soon as you can). Also notice the number of years of post-retirement income. Basically, this is asking you to predict how long you will live after retirement. Please add this amount to your spreadsheet.
3. Now, you can create an expenses column. Please use an equation to calculate this (you may want to color code. This is up to you).
4. Finally, create a savings column (again, use an equation)

Day 5. Today is the day you have to finish your project. Now that you have your savings, you need to go back and see whether you have saved enough to get a down payment for your house, buy a car, etc. Once you have finalized and cleaned up your budget, find three cells underneath your budget and describe, in words, the following:

1. What do you plan on doing with your savings? Please be specific. Your discussion should relate to some of the other items in your budget, such as mortgage, car, etc.
2. Describe, in detail, something you learned from this assignment. Please be specific.
3. What questions did this project raise? What would you like to know more about? Please be specific.