

Math in My Life Project

By ???
MTH105
Fall 2020



Description

I get a job at a daycare and when I am hired I am paid \$12.50 an hour. After working there for a year, my bosses are really happy with my performance and tell me that they are going to give me a 4% raise.

Concept Overview

To find my new hourly wage, I need multiply the original amount of \$12.50 by the decimal form of 4%. I then need to add this 4% of \$12.50 to \$12.50. I will then have my new hourly wage.

Concept #1: Percent Increase



How I found my new hourly wage.....

Application

To find 4% of \$12.50, I will multiply 12.50 by 0.04.

So, $12.50(0.04) = 0.5$

Then, I need to add 0.5 to 12.50 which gives me \$13.

Implication

This means that after a 4% raise, my hourly wage will increase from \$12.50 to \$13. While the increase is “only” by 50 cents, that could make expenses way easier with just a simple increase in hourly pay. I should pay attention to how/if it affects my taxes, since Oregon has a personal income tax.



Concept #2: Annuity



Description

I have a friend who has always dreamed of buying an old farmhouse and fixing it up, but says he would never be able to do it. I encourage him that if he starts saving now he can get his fixer upper in retirement. We find a retirement fund with a 9% interest rate compounded monthly. My friend plans to have \$50,000 in 30 years if he deposits \$50 into this account monthly.

Concept Overview

To find out if he will have \$50,000 in 30 years, I help him use the savings annuity formula. The formula is $P_N = \frac{d((1+r/k)^{(N*k)}-1)}{(r/k)}$. P_N represents the ending amount, d represents the deposit amount, r is the annual interest rate written as a decimal, k represents the number of compounding periods per year, N represents the number of years.

Will my friend be able to get the farmhouse?

Application

In this case, the formula would look like this:

$$50,000 = d * ((1 + 0.09/12)^{(30 * 12)} - 1) / (0.09/12)$$

Then, after we simplified the formula to an answer we solved this:

$$50,000 = d * 1830.743483 \text{ (divide both sides by } 1830.743483 \text{)}$$

The answer we got is 27.31130847 which we then rounded to the nearest whole dollar which is \$27.

Implication

My friend would need to deposit \$27 every month for 30 years in order to get \$50,000 for the old farmhouse. This is almost half of what he thought he needed to deposit each month. However, he can always deposit \$50 instead of \$27 if he wants to get to his goal quicker.

Concept #3: Presenting Data

Physical Touch	Physical Touch
Word of Affirmation	Physical Touch
Quality Time	Acts of Service
Gifts	Acts of Service
Quality Time	Acts of Service
Word of Affirmation	Quality Time
Quality Time	Quality Time
Quality Time	Physical Touch
Quality Time	Physical Touch
Quality Time	Gifts
Word of Affirmation	Physical Touch
Acts of Service	Quality Time
Physical Touch	Word of Affirmation
Word of Affirmation	Word of Affirmation
Quality Time	
Quality Time	
Word of Affirmation	
Acts of Service	
Quality Time	
Physical Touch	

I was curious about what the most popular love language was after a conversation with my friends so I surveyed what people's primary love language is.

The raw data can be seen to the left.

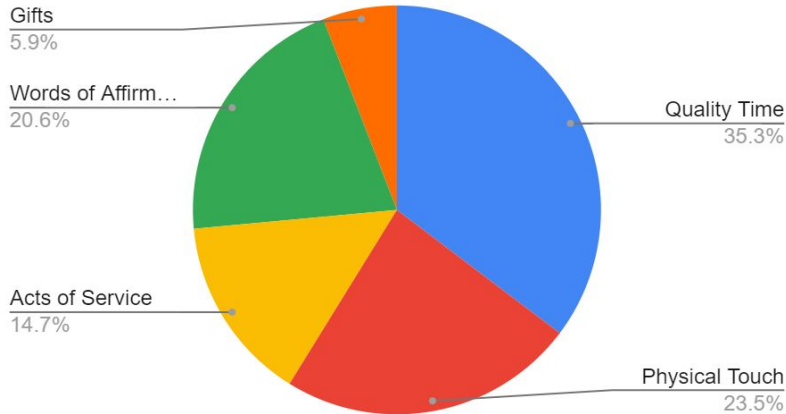
The question was phrased as "[The Five Love Languages] are acts of service, gift-giving, physical touch, quality time, and words of affirmation. Please take this quiz to find out your love language or answer if you already know."

After looking over this data ,I chose a pie chart because I wanted to see the percentage of responses that were a certain example and visually see the most frequent response. Pie charts are good for part to whole relationships. .

What is the most popular love language?

Quality Time is the most popular love language.
12 out of 34 people chose this as their response.

Love Languages



Response	Frequency
Quality Time	12
Physical touch	8
Acts of service	5
Words of affirm.	7
Gifts	2