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### ADL- Math Scenario

#### Goal:

Buy a place in the next 3 years and I want to ensure you have enough for a minimum down-payment of 15%.

#### Data:

Total cost \$ 800.000

The housing market has stagnated, no variation in 3 years.

I have 80,000 already saved.

I make enough to add 10,000\$ each year = \$ 30,000

#### Assumptions:

Q1. How much is the initial payment?

Cost (\$)	%
800,000	100
x	15

$$x = \frac{(15 * 800,000)}{100}$$

$$x = 120000$$

A1. The minimum payment is \$ 120,000.

Q2. How much I need to complete for the minimum down-payment of 15%

Savings = 80,000

Make = 30,000

Total = 110,000

A2. In 3 years, I already have \$ 110,000. This means that I need = 120,000 - 110,00 = 10,000 to complete a minimum down-payment of 15%

#### Part 1- Your Solution and Part 2- Visual Representations

My solution will be to Invest in the Stock

By using the data from [https://www.1stock1.com/1stock1\\_766.htm](https://www.1stock1.com/1stock1_766.htm). For declines, I consider this past year (2022). For expected growths, I calculated the average annual growth from 2017-2021. And finally, I use the EAG for calculating growth in the stocks.

Table 1. S&amp;P/TSX Composite Index (Canada) Yearly Returns

## S&amp;P/TSX Composite Index (Canada) Yearly Returns

Year	Beginning Price	Ending Price	Gain or Loss	Percent Gain or Loss
1988	3160.05	3389.99	229.94	7.28%
1989	3389.99	3969.79	579.80	17.10%
1990	3969.79	3256.75	-713.04	-17.96%
1991	3256.75	3512.36	255.61	7.85%
1992	3512.36	3350.44	-161.92	-4.61%
1993	3350.44	4321.43	970.99	28.98%
1994	4321.43	4213.61	-107.82	-2.50%
1995	4213.61	4713.54	499.93	11.86%
1996	4713.54	5927.03	1213.49	25.74%
1997	5927.03	6699.44	772.41	13.03%
1998	6699.44	6485.94	-213.50	-3.19%
1999	6485.94	8413.75	1927.81	29.72%
2000	8413.75	8933.68	519.93	6.18%
2001	8933.68	7688.41	-1245.27	-13.94%
2002	7688.41	6614.54	-1073.87	-13.97%
2003	6614.54	8220.89	1606.35	24.29%
2004	8220.89	9246.65	1025.76	12.48%
2005	9246.65	11272.26	2025.61	21.91%
2006	11272.26	12908.39	1636.13	14.51%
2007	12908.39	13833.06	924.67	7.16%
2008	13833.06	8987.70	-4845.36	-35.03%
2009	8987.70	11746.11	2758.41	30.69%
2010	11746.11	13443.22	1697.11	14.45%
2011	13443.22	11955.09	-1488.13	-11.07%
2012	11955.09	12433.53	478.44	4.00%
2013	12433.53	13621.55	1188.02	9.55%
2014	13621.55	14632.44	1010.89	7.42%
2015	14632.44	13009.95	-1622.49	-11.09%
2016	13009.95	15287.59	2277.64	17.51%
2017	15287.59	16209.13	921.54	6.03%
2018	16209.13	14322.86	-1886.27	-11.64%
2019	14322.86	17063.43	2740.57	19.13%
2020	17063.43	17433.36	369.93	2.17%
2021	17433.36	21222.84	3789.48	21.74%
2022	21222.84	19384.97	-1837.87	-8.66%

Calculations do not reflect any dividends paid or any stock splits from original stock. Taxes and commissions are not factored into calculations. Data is property of Istock1 and written permission.

As you can see on the Table 1, the % gain or loss for 2022 was – 8,66%

For the before years, I calculated the average of the % gain or loss since 2017 to 2021 as the next chart:

year	%
2017	6.03
2018	-11.64
2019	19.13
2020	2.17
2021	21.74
	7.486

How much I will have if I invest in an average stock:

Cost (\$)	%
800,000	100
x	7.486

$$x = (7.486 * 800,000) / 100$$

$$x = 5,988 \text{ each year}$$

In 3 years if I continue investing at that average rate of 7.48, I will gain \$ 17,964.

Therefore, If I already have  $110,000 + 17,964 = 127,964$ .

### Part 3- Justification

By investing in the stock after three years I would have an income of \$127,964, which is \$7,964 more than the target amount of \$120,000.

With the application of this option the money I currently have saved plus my annual income would allow me to meet the goal and even have an additional amount. However, this option is a lot of chance, and risk as the rates depend on the stock markets which are generally not fixed and depend on a number of variables that are not under my control.

On the other hand, applying the other two options does not meet the objective.

1. In option 1: Year 3.5% annual non-redeemable GIC.

year			total
1	80,000	10,000	90,000
2	90,000	10,000	100,000
3	100,000	10,000	110,000

With this option I would need \$ 10,000 or one year more to complete the minimum down-payment of 15%.

2. In option 2: 3 year 4.2% non-redeemable GIC (4.2% annual return per year)

Cost (\$)	%
800,000	100
x	3.5

$$x = (3.5 * 800,000) / 100$$

$$x = 2800$$

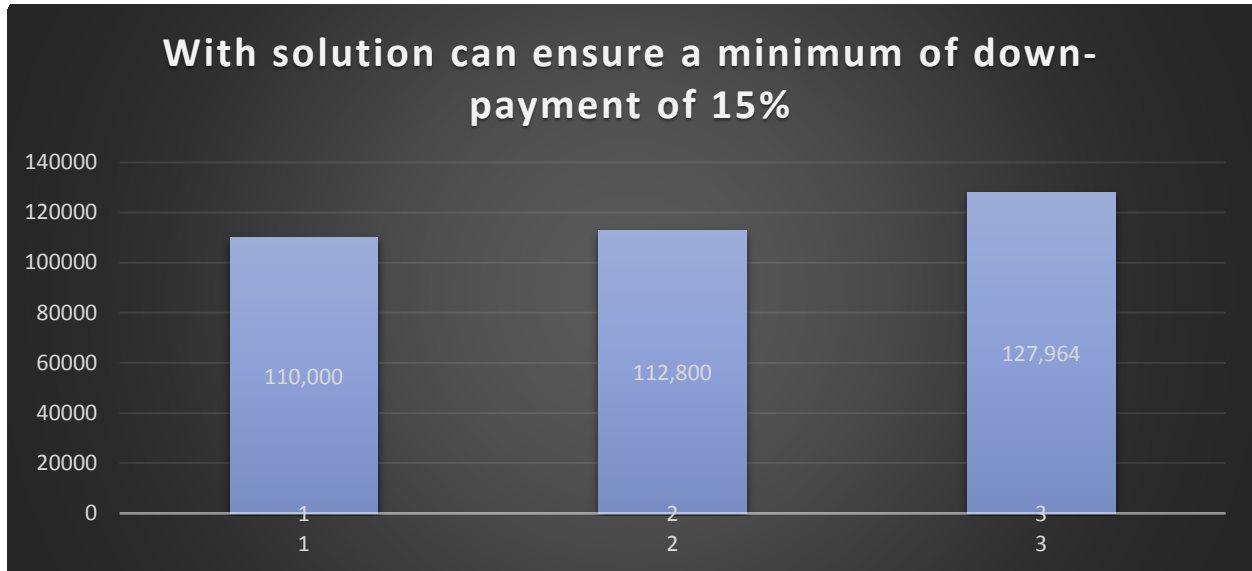
year			total
1	80,000	12,800	92,800
2	92,800	10,000	102,800
3	102,800	10,000	112,800

With this option I would need \$ 7,200 to complete the minimum down-payment of 15%.

Therefore, the best option for me is number 3 by investing in the stock.

This is summarized in the next graph 1.

Graph 1.



Note. By Mantilla, A (2023)

#### Part 5- Core Competency Reflection

Core competency	Reflection with the topic
<p>I can get new ideas in areas in which I have an interest and build my skills to make them work.</p> <p>I generate new ideas as I pursue my interest. I deliberately learn a lot about something by doing research, talking to others, or practicing, so that I can generate new ideas about it.</p> <p>I build the skills I need to make my ideas work, and I usually succeed, even if it takes a few tries.</p>	<p>Investing money is a topic that interested me, so I feel that this new idea given by my instructor helped me to build my own new ideas and do some research and find solutions in order to make it work it.</p>
<p>Questioning and investigating</p> <p>Students learn to engage in inquiry when they identify and investigate questions, challenges, key issues, or problematic situations in their studies, lives, and communities and in the media. They develop and refine questions; create and carry out plans; gather, interpret, and synthesize information and evidence; and reflect to draw reasoned</p>	<p>With this work I had the opportunity to investigate the questions posed and find a solution to answer them. Also to be able to systematize information and show it through evidence in reasonable conclusions.</p>

<p>conclusions. Critical thinking activities may focus on one part of the process, such as questioning, and reach a simple conclusion, while others may involve more complex inquiry requiring extensive thought and reflection.</p>	
<p><b>Determining common purposes</b></p> <p>Students develop shared understandings of information, issues, situations, and problems in pursuit of common purposes and goals. They honour various group processes and proactively support movement forward, including refocusing on intended goals as needed. They revise plans according to mutual deliberations and strive for consensus. As co-members of a group, students see one another as valuable resources, commit to impact and collective success, assess group results and processes, and share in the recognition of achievements.</p>	<p>Through this activity I had the opportunity to share information and knowledge with my classmates to achieve a common goal, to present a report.</p>