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1. Explain what amortization is and how a down payment and loan duration impact it.

Amortization is the process that your loan principle decreases over the life of your loan. With each loan payment that you make, a portion of your payment is applied towards reducing your principal balance and the other portion of your payment is applied towards paying the interest on the loan. An example of amortization is the conventional mortgages which has equal payments over 15, 20 or 30 years based on a fixed interest rate, allowing amortization of the loan. With large principal, during early stages of repayment is applied mainly to interest and little reductions principal, as the amount owed decreases, monthly payments are contributing mainly to the remaining balance.

Loan Duration: The amortization period on a mortgage is the total length of time it will take you to pay off your mortgage. If your down payment is less than 20 percent of the purchase price of your home, the longest amortization period allowed is 25 years. Some people choose a longer amortization period because it lowers their mortgage payments: the longer the amortization, the lower the mortgage payments. However, the longer it takes you to pay back the mortgage principal to the lender, the more interest you will pay.

Example: The table below shows how much interest you would have to pay on a \$200,000 mortgage, depending on the monthly payment and amortization period chosen: The longer the amortization period, the lower the down payment, the higher the interest payment and the higher the total payment

	Amortization Period	Monthly Payment	Total Interest Payments	Total Payments
	10 years	\$2,213.02	\$65,562	\$265,562
	15 years	\$1,679.77	\$102,358	\$302,358
	20 years	\$1,424.38	\$141,850	\$341,850
	25 years	\$1,279.51	\$183,885	\$383,885

*Assuming monthly payments on a \$200,000 mortgage, $r = 6\%$

Down Payment: The higher the down payment, the lower the interest rate or cost of the loan because higher percentage of the loan principal is being paid up front reducing credit risk for the lender lesser the amortization of your loan.

The effects of amortization is it reduces credit risk of loan or bond, in cases that you repay the total principal amount at maturity the credit risk depends entirely on it. By amortization or paying off the principal over time, it reduces this risk.

2. What is the importance of health insurance and disability insurance in personal financial planning?

Health Insurance

- Health insurance is a form of protection to alleviate the financial burdens individuals suffer from illness or injury, including both medical expense insurance and disability income insurance.
- Health insurance reduces the financial burden through dividing losses among many individuals
- You pay the insurance company a specified premium, and the company guarantees you some degree of financial protection
- Medical expense insurance and disability income insurance are an important part of your financial planning because it deals with your family's economic security and unexpected health expense is an expensive expense and can cause problems financially
- Risk management should be the basic of your financial plan
- You may be healthy now, but sudden or serious illness (cancer, diabetes, appendicitis) or a traumatic event (ski accident, car crash) can leave you with skyrocket high medical bills.
- The inability to pay high medical bills, one of the most common reasons people file for personal bankruptcy, can ruin your credit history and set you back for years.
- The law requires insurers to cover annual checkups and preventive care that means you're more likely to stay healthy and catch health problems early, when they're easier and less expensive to treat

Disability Income Insurance

- It provides regular cash income you lose as the result of an accident or illness
- Sources of disability income insurance include the employer, social security, worker's compensation, unions or private insurance
- People are more likely to lose their incomes due to disability than death
- If you are at your working age, it is very important to protect your income
- You need to plan how much income you will have if you become disabled, duration of benefits, waiting period, and if it covers illness and accidents, in case of unexpected events

3. What is life insurance? What is its purpose and principle?

Life Insurance

- **Economic viewpoint:** insurance is a system for reducing financial risk by transferring it from a policy owner to an insurer
- **Social viewpoint:** the collective bearing of losses through contributions by all members of a group to pay for losses suffered by some group members.
- **Business viewpoint:** insurance achieves the sharing of risk by transferring risks from individuals and businesses to financial institutions specializing in risk. The insurer is not in fact paying for the loss. The insurer writes the claim check, but is actually transferring funds from individuals who as part of a pool, paid premiums that created the fund from which the claims are paid.

Purpose

- It helps protect the people who depend on you for financial support by replacing some or all your lost income when you die
- Pay off home mortgage or other debts at the same time of death
- Provide lump-sum payments through an endowment to children when they reach a specific age
- Provide an education or income for children
- Uncovered medical expenses and funeral costs
- Make charitable bequests after death
- Provide a retirement income
- Accumulate savings
- Establish a regular income for survivors
- Set up an estate plan
- Make estate and death tax payments
- Provide liquidity at the time of death

Principle

- **Risk Management:** a process of dealing with the risk of loss of life
- **Indemnity:** the person who suffers a financial loss is placed in the same financial position after the loss as before the loss occurred
- **Risk Pooling:** group sharing of losses, people transfer the economic risk of loss to an insurance company
 - **Law of large numbers:** the increase in size of insured population will cause the actual loss experience to be more accurate to the expected probability.
- **Life Insurance products** are created by calculating the relationships of mortality, interest and expense
 - **Mortality rates** project the cost of covering death claims as they occur
 - **Interest earnings** reflect the income the company expects from the investment of premiums over time that will be added to the reserves, held aside to pay future claims
 - **Expense** include the cost of creating, offering, and maintaining the product to pay all promised benefits
 - **Determining the Premium**

4. Bob and Mary Martin are both 35 years old. Although they graduated from college almost 15 years ago, they have never developed a diversified investment program. What extra money they had been invested in high-tech stocks that did quite well until the last five years. Then, with the economic downturn, they encountered major losses. How could asset allocation have reduced the dollar amounts of the Martin's losses?

- Stocks have high correlation with the market, which means it has market risk that can affect the market value of stocks, bonds, mutual funds, etc. This reflects the systematic risk by factors such as economic crisis, increasing interest rates, changes in consumer purchasing power, and etc. which can't be diversified in investment portfolio
- Asset Allocation is the process of spreading your assets among several different types of investments to lessen risk/ diversification through investing in different asset classes
- Investing all extra in high-tech stocks, with high growth and high correlation with market, is a very risky choice
- They can diversify into investing in stocks issued by large, medium, or small companies or foreign stocks/ bonds/ cash/ pension funds/ mutual funds/ insurance companies
- One loss in investment is usually offset by gains from other types of investments
- The potential return on any investment should be directly related to the risk that individual holds
- To determine the appropriate asset allocation for Bob and Mary Martin requires analysis of these factors
- At age 35, approaching the older sector, Bob and Martin needs to be more conservative because they do not have time to recover, therefore, they should diversify into investing in government or high ratings bonds or very safe corporate stocks and mutual funds
- $100-35=65\%$ of your assets can be allocated in growth-oriented investments and the remaining 35% should be kept in conservative investments
- Even if you prefer investing in stocks, you may try get a diversified portfolio in investing in many types of stocks with as little correlation as possible to gain from diversification in case of a downturn in economy