FIN 360: PRINCIPLES OF FINANCIAL MANAGEMENT
TIME VALUE OF MONEY
CRITICAL THINKING & CONCEPTUAL QUESTIONS

1. Why is a dollar to be received one year from now worth *less* than a dollar today? Why is a dollar in hand worth *more* than a dollar to be received in one year?
2. Discuss how time value of money concepts are necessary for the 5 broad "real-world applications" we've talked about in class and in the lecture notes.
3. Explain in words and with an equation the relationship between present and future values.
4. Describe what "compounding" and "discounting" mean. Give an example of an application of each.
5. Explain how an investment of $100 in the stock market pays compound returns.
6. Describe what a "present value interest factor" is and how it is obtained.
7. Describe what a "future value interest factor" is and how it is obtained.
8. Given what you know about the formula for present value interest factors, fill in the missing values in the table below:

Present Value Interest Factor Table				
Years	1%	2%	3%	4%
1	0.990099	0.980392	0.970874	0.961538
2	0.980296	0.961169		0.924556
3	0.97059		0.915142	0.888996

9. Given what you know about future value interest factors, fill in the missing value in the table below:

Future Value Interest Factor Table				
Years	1%	2%	3%	4%
1	1.01000		1.030000	1.040000
2	1.02010	1.040400	1.060900	1.081600
3	1.030301	1.061208	1.092727	

10. Using the tables above, determine the present value of $100 received in 2 years, discounted at 3%. Determine the future value of $100 after 3 years assuming 3% interest. Confirm both calculations in your calculator.
11. You have two friends (Luke and Kylo) who *each* stand to inherit $10,000 in exactly 1 year. Both friends, however, need money now. They promise to give you $10,000 when their inheritance check clears in exactly one year, if you give them some money today. Luke is organized, trustworthy, and reliable. Kylo is disorganized and not always dependable.

a. Would you give more money to Luke or Kylo *today* and why? Why not give them each the same amount?
b. To whom will you assign the higher discount rate and why?
c. If you consider giving money to Luke and Kylo today an "investment", which of your "investments" should offer a greater rate of return?
d. Explain how questions (b) and (c) above are related.

12. You identify two small firms with the same SIC code (Republic Inc. and Empire Inc.) who *each* will realize a cash flow of $10,000 in exactly 1 year. Both firms, however, need money now. They promise to give you $10,000 when their cash flows are realized in exactly one year if you give them some money today. Republic has a low equity multiplier, a high cash coverage ratio, and a high current ratio. Empire has a high debt to equity ratio, a low cash coverage ratio, and a low current ratio.
    a. Would you give more money to Republic or Empire *today* and why? Why not give them each the same amount?
    b. To which firm will you assign the higher discount rate and why?
    c. If you consider giving money to Republic and Empire today an "investment", which of your "investments" should offer a greater rate of return?
    d. Explain how questions (b) and (c) above are related.

13. Describe what happens to the difference between simple interest and compound interest as we increase the number of periods t that we hold an investment.

14. Explain how a present value can be in the future. Explain how a future value can be in the past.

15. When computing present and future values in our calculator, the results are often presented with a negative sign. Explain why this negative sign appears, and why the results of our computation aren't "actually" negative.

16. Lotteries often give winners the option of taking either a "lump sum" or a series of payments over several years. For example, if you win $1 million, you can either take all $ 1 million now, or receive $100,000 for the next ten years. Assuming no taxes, which would you choose and why?

17. **The Rule of 72** is a simple formula that tells you an *estimate* of how many years it takes you to double your money given a set interest rate. The formula is simple:

$$\frac{72}{r}$$

Where r is the interest rate (i.e., 3 if 3% or 5 if 5%). Using the Rule of 72, if your interest rate is 10%, about how many years will it take you to turn a $500 investment into a $1000? How many years *exactly* will it take?

18. By rearranging the Rule of 72, show how we can find an estimate of the average annual rate of return we would need to achieve if we want a $3,000 investment to double to $6,000 in 12 years. Is this annual rate of return realistic? Do you think doubling your $3,000 investment in 12 years is possible?