Midterm Review Questions
(Answers are to be available on eClass on Feb 1, 2021)

Chapter 2 - Understanding Financial Statements
This activity contains 11 questions.

1. Which of the following statements is most correct?
   - The balance sheet statement summarizes how much the firm owns as well as owes for a typical operating period.
   - The income statement summarizes the net income produced by the corporation at a specified reporting date.
   - The cash flow statement summarizes how the corporation generated cash during the operating period.
   - None of the above.

2. Which of the following statements is most correct?
   - Working capital measures the company's ability to repay current liabilities using only current assets.
   - The days sales outstanding (DSO) represents the average length of time that the firm must wait after making a sale before receiving cash.
   - The lower debt ratio, the greater the protection afforded creditors in the event of liquidation.
   - All of the above.

3. Which of the following statements is most correct?
   - A decline in inventory turnover ratio suggests that the firm's liquidity position is improving.
   - The profit margin on sales is calculated by dividing net operating income by sales.
   - When a corporation buys back its own stock, this is called Treasury Stock. The firm's cash and equity are both reduced.
   - None of the above.

4. Which of the following statements is most correct?
   - Generally, firms with high profit margins have high asset turnover ratios.
   - Having a high current ratio and a high quick ratio is always a good indication a firm is managing its liquidity position well.
   - Knowing that return on assets (ROA) measures the firm's effective utilization of assets without considering how these assets are financed, two firms with the same EBIT must have the same ROA.
   - One way to improve the current ratio is to use cash to pay off current liabilities.

The following data apply to the next six problems. Consider Fisher & Company's financial data as follows: (unit: millions of dollars except ratio figures):

• Cash and marketable securities	$100
• Fixed assets	$280
• Sales	$1,200
• Net income	$358
• Inventory	$180
• Current ratio	3.2
• Average collection period	45 days
• Average common equity	$500

5. Find Fischer's accounts receivable.
   - $147.95
   - $127.65
   - $225.78
   - $290.45

6. Calculate the amount of current assets.

- $223
- $248
- $280
- $428

7. Determine the amount of current liabilities.
   - $156
   - $134
   - $244
   - $334

8. Determine the amount of total assets.
   - $528
   - $428
   - $328
   - $708

9. Calculate the amount of the long-term debt.
   - $134
   - $500
   - $74
   - $208

10. Calculate the profit margin.
    - 20%
    - 30%
    - 35%
    - 40%

Chapter 3 - Time Value of Money and Economic Equivalence

This activity contains 20 questions.

1. Consider the following two transactions:

   Option 1: Receive $5,000 one year from now.

   Option 2: Receive $6,000 three years from now.

   If your interest rate is 6% per year, which option is more economically attractive?
   - Option 1 by $250 in terms of present worth
   - Option 2 by $320 in terms of present worth
   - Option 2 by $1,000
   - Option 1 by $382 in terms of equivalent value at end of year 3

2. What is the future worth of $3,000 after five years at 8% interest?
   - $4,408
   - $4,081
   - $4,200
   - $3,240

3. Receiving $1,000 at the end of each year for next five years is equivalent to what lump sum payment at the end of three years at an interest rate of 10%?
   - $5,000
   - $5,550
   - $5,046
   - $6,105

4. You purchased a share of stock at $40 and held it for 10 years. If the current price of the stock is $92, then what is the average annual rate of return on your investment?
   - 6.5%

- 13.0%
- 5.2%
- 8.70%

5. You just opened a mutual fund account where you contributed $10,000. If the mutual fund grows at an annual rate of 8%, how long do you need to wait to see the value of the mutual fund doubled?

- about 9 years
- about 8 years
- about 10 years
- about 12 years

6. You are planning to make three deposits in your savings account over next five years which earns 6% interest, how much would you have at the end of 5 years? The first deposit ($1,000) is made now (n = 0), the second deposit ($2,000) at the end of year 2, and the third deposit ($1,500) at the end of year 4.

- $4,770
- $5,310
- $5,628
- $5,850

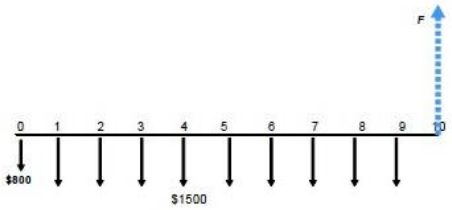
7. If you invest $2,000 today in a savings account at an interest rate of 12%, compounded annually, how much principal and interest would you accumulate in 7 years?

- $4,242
- $4,422
- $2,300
- $1,400

8. Two banks offer different interest rates on your deposit of $10,000 over 3 years. Bank A offers an 8% interest compounded annually and Bank B offers an 8.5% simple annual interest. Which of the following statements is true?

- With Bank B you earn $150 more interest than with Bank A.
- You earn the same amount of interest over 3 years.
- With Bank B, the total balance at the end of year 3 would be $12,773.
- With Bank A, you earn $47 more than with Bank B.

9. If you make the following series of deposits at an interest rate of 10%, compounded annually, what would be the total balance at the end of 10 years?



- F = $22,256
- F = $24,481
- F = $24,881
- F = $25,981

10. You are planning to borrow $100,000 on a 10-year, 6%, with 10 annual payments. What fraction of the payment made at the end of the second year will represent repayment of principal?

- 41.81%
- 40.81%
- 45.88%
- 59.19%

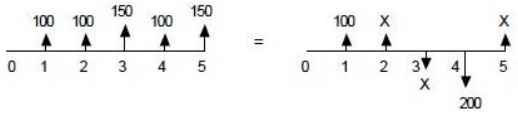
11. If $400 is deposited in a savings account at the beginning of each of 15 years (there are a total of 15 deposits) and the account draws interest at 8% per year compounded annually, the value of the account at the end of 15 years will be most nearly

- $11,730
- $13,100
- $12,130
- $12,668

11. How many years will it take for an investment to double if the interest rate is 8% compounded annually?

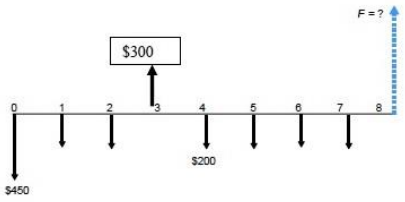
- $7.5 < N \leq 8.5$ years
- $8.5 < N \leq 9.5$ years
- $9.5 < N \leq 10.5$ years
- $10.5 < N \leq 11.5$ years

12. What value of X makes these two cash flows equivalent at an interest rate of 10%?



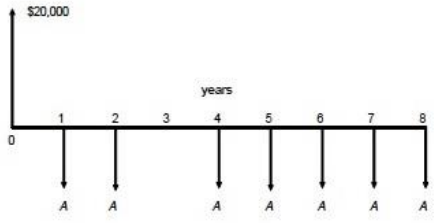
- $645
- $715
- $744
- $812

13. If you make the following series of deposits and withdrawal at an interest rate of 10%, compounded annually, what would be the total balance at the end of 8 years?



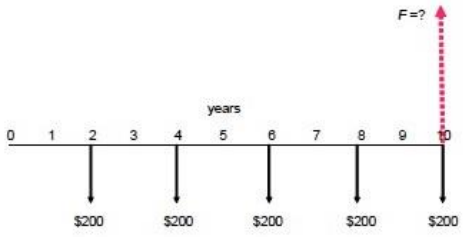
- $2,247
- $2,862
- $3,052
- $3,252

14. If you borrow $20,000 at an interest rate of 10%, compounded annually, with the repayment schedule as follows, what is the amount A?



- $2,857
- $3,752
- $3,345
- $4,364

15. Compute the value of F in the following cash flow diagram. Assume i = 10%, compounded annually.



- $1,220
- $1,320
- $1,517
- $1,488

16. Consider the two payment options offered by a state lottery.
    Option 1 -- Cash Payment: $167 million now
    Option 2 -- Installment Plan: Receive $10.57 million a year for 25 years, where the first payment occurs at the end of first year.
    What interest rate are these two options economically equivalent?
    - 3.90%
    - 4.5%
    - 6.3%
    - 1.86%

17. As a plant manager, you need to plan on budgeting cash reserve to replace one of the expensive industrial equipment costing $200,000 at the end of eight years from now. This reserve account is expected to earn 6% interest. How much must the plant manager set aside each year to meet the future needs?
    - $26,500
    - $25,000
    - $16,626

18. You are considering replacing an industrial equipment to save energy cost. The anticipated energy savings during the first year is $30,000 and a 5% further savings each year over the previous year thereafter due to ever-increasing fuel cost. What is the maximum amount that you are willing to pay for the equipment at an interest rate of 10%? Assume that the equipment will be used for next 10 years and it has no salvage value.
    - $223,194
    - $218,674
    - $567,184
    - $578,908

19. How much do you need to deposit now in a savings account that earns an 8% annual interest, if you want to withdraw the annual series as shown below?

End of Year (n)	Amount of Deposit	Amount of Withdrawal
0	***P***	
1		$1,000
2		$1,250
3		$1,500
4		$1,750
5		$2,000

- $7,500
- $7,500
- $6,230
- $4,933

Chapter 4 - Understanding Money and Its Management
This activity contains 20 questions.

1. You have been offered a credit card by a department store that charges interest at 1.8% per month, compounded monthly. What is the effective annual interest rate for this credit card?
    - 21.60%
    - 22.34%
    - 23.87%
    - 18.00%

2. Under the continuous compounding principle, which of the following expressions would allow you to determine the nominal interest rate(r) when the effective annual interest rate is known to be 12%?
    - r = e^1.12
    - r = e^0.12
    - r = Loge(1.12)
    - r = Loge(0.12)

3. Which of the following banks offers you a better interest deal for your deposit?
    Bank A: 8.5%, compounded quarterly
    Bank B: 8.3%, compounded continuously
    - Bank A
    - Bank B
    - Indifferent
    - Not sufficient information to decide.

4. Consider the following bank advertisement appearing in a local newspaper: "Open a Decatur National Bank Certificate of Deposit (CD), and you get a guaranteed rate of return (effective annual yield) of 8.87%." If there are 365 compounding periods per year, what is the nominal interest rate (annual percentage rate) for this CD?
    - 8.00%
    - 8.23%
    - 8.50%
    - 8.87%

5. To raise money for your business, you need to borrow $20,000 from a local bank. If the bank asks you repay the loan in five equal annual installments of $5548.19, determine the bank's annual interest rate on this loan transaction.
    - 11%
    - 11.5%
    - 12%
    - 27.74%

6. What is the future worth of an equal quarterly payment series of $2,500 for 10 years, if the interest rate is 9%, compounded monthly?
    - F = $158,653
    - F = $151,930
    - F = $154,718
    - F = $160,058

7. Susan wishes to make equal end-of-quarterly deposits to her savings account so that at the end of 15 years she would like to have $500,000 in the account. If the account earns 8% interest compounded quarterly, how much should she deposit at the end of each quarter?
    - A = $4,184
    - A = $4,384
    - A = $4,584
    - A = $4,784

8. A series of equal semi-annual payments of $1,000 for 3 years is equivalent to what present amount at an interest rate of 12%, compounded annually? (All answers are rounded to nearest dollars.)
    - $4,944
    - $4,804
    - $4,500
    - $5,401

9. At what rate of interest quarterly, compounded quarterly, will an investment double in 5 years?
    - 14.87%
    - 3.72%
    - 3.53%
    - 14.11%

10. A series of equal quarterly deposits of $1000 extends over a period of 3 years. What is the future worth of this quarterly deposit series at 9% interest, compounded monthly?
    - $13,160
    - $12,590
    - $13,615
    - $13,112

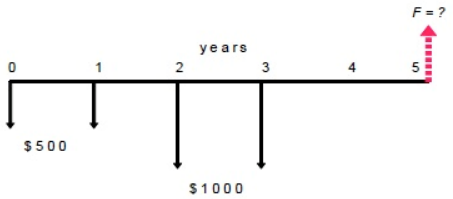
11. A series of equal quarterly receipts of $1000 extends over a period of 5 years. What is the present worth of this quarterly payment series at 8% interest, compounded continuously?
    - $16,351
    - $16,320
    - $15,971
    - $18,345

12. How many years will it take for an investment to double if the interest rate is 9%, compounded quarterly?
    - $7.5 < N \leq 8.5$ years
    - $8.5 < N \leq 9.5$ years
    - $9.5 < N \leq 10$ years
    - $10 < N \leq 11$ years

13. You want to save $200,000 five years from now. What equal quarterly deposits have to be made in a savings account at 9% interest, compounded monthly?
    - $7,655
    - $7,955
    - $8,015
    - $8,215

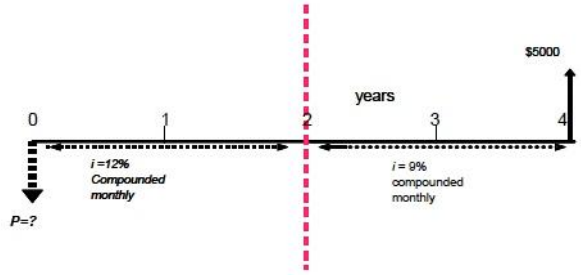
14. If you borrow $24,000 over 48 months at 8% interest, compounded continuously. Determine the required monthly payment to retire the loan.
    - $489.55
    - $553.45
    - $566.22
    - $586.36

15. Compute the value of F, if the interest rate is 8%, compounded quarterly.



- $3,840
- $3,870
- $3,900
- $3,930

16. Find the value of P.



- $2,965
- $3,355
- $3,110
- $3,292

17. You are considering purchasing a piece of industrial equipment that costs $30,000. You decide to make a down payment in the amount of $5,000 and to borrow the remainder from a local bank at an interest rate of 9%, compounded monthly. The loan is to be paid off in 36 monthly installments. What is the amount of the monthly payment?
    - $954
    - $833
    - $795
    - $694

18. John secured a home improvement loan from a local bank in the amount of $10,000 at an interest rate of 9%, compounded monthly. He agreed to pay back the loan in 60 equal monthly installments. Immediately after the 24th payment, John decides to pay off the remainder of the loan in a lump sum. What will be the size of this payment?
    - P = $7,473
    - P = $6,000
    - P = $6,528
    - P = $7,710

19. Compute the lump sum amount required at the end of year 4 to repay an amount of $20,000 borrowed today at an interest rate of 12%, compounded monthly.
    - $20,812
    - $27,812
    - $31,470
    - $32,244

20. You borrowed $1,000 at 8%, compounded annually. The loan was repaid according to the following schedule.

n	Repayment Amount
1	$100
2	$300
3	$500
4	*X*

Find X, the amount that is required to pay off the loan at the end of year 4.

- $108
- $298
- $345
- $460

Chapter 5 - Analysis of Independent Projects
This activity contains 26 questions.

1. An investment project costs $90,000. It is expected to have an annual net cash flow of $30,000 for five years. What is the project's payback period?
    - 2 years
    - 3 years
    - 4 years
    - 5 years

2. Which of the following statements is incorrect?
    - If two investors are considering the same project, the payback period will be longer for the investor with the higher MARR.
    - If you were to consider the cost of funds in a payback period calculation, you would have to wait longer to break even as you increase the interest rate.
    - Considering the cost of funds in a payback calculation is equivalent to finding the time period when the project balance becomes zero.
    - The simplicity of the payback period method is one of its most appealing qualities even though it fails to measure project profitability.

3. Find the net present worth of the following cash flow series at an interest rate of 10%.

End of Period	Cash Flow
0	-$100
1	-200
2	300
3	400
4	500

    - $890
    - $608
    - $550
    - $668

4. Which of the following investment options would maximize your future wealth at the end of five years if you plan to invest $500 today?
    - 12%, compounded annually
    - 11.75%, compounded semiannually
    - 11.5%, compounded quarterly
    - 11.25%, compounded monthly

5. What is the future worth in year 10 for the cash flow series with $5000 at n = 0, $10,000 at n = 3 years, and $8000 at n = 5 years if the interest rate is 12% per year?
    - $16,657
    - $51,735
    - $71,435
    - $40,533

6. You invested $100,000 in a project and received $40,000 at n = 1 year, $40,000 at n = 2 years, and $30,000 at n = 3 years. For some reason, you need to terminate the project at the end of year 3. If your interest rate is 10%, what is the project balance at the time of termination?
    - gain of $10,000
    - loss of $8039
    - loss of $10,700
    - just break even

7. The following table contains a summary of how a project's balance is expected to change over its five-year service life at 10% interest.

End of Period	Project Balance
0	-$1,000
1	-1,500
2	600
3	900
4	1,500
5	2,000

Which of the following statements is incorrect?
    - The required additional investment at the end of period 1 is $500.
    - The net present worth of the project at 10% interest is $1242.
    - The net future of the project at 10% interest is $2000.
    - Within two years, the company will recover all its investments and the cost of funds (interest) from the project.

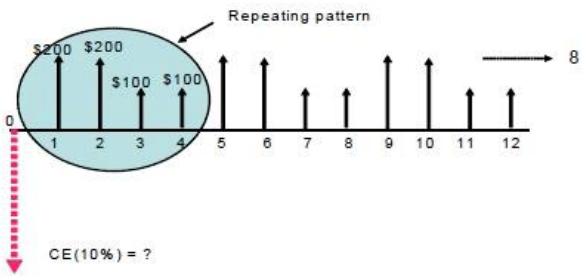
8. Consider the project balances at i = 15% over five years for a certain investment project:

End of Period	Project Balance
0	-$75,000
1	-$61,850
2	-$43,788
3	$5,404

Which of the following statements is correct?
    - The project is not profitable at i = 15%.
    - The conventional payback period is 2.9 years.
    - The cash flow in period 3 is $55,000.
    - The NPW of the project is $3553.

9. What is the capitalized equivalent amount, at 10% annual interest, for a series of annual receipts of $400 for the first 10 years, which will increase to $500 per year after 10 years, and which will remain constant thereafter?
    - $4621
    - $4386
    - $4452
    - $9854

10. Find the capitalized equivalent worth for the project cash flow series at an interest rate of 10%.



- CE(10%) = $1476
- CE(10%) = $1548
- CE(10%) = $1500
- CE(10%) = $1753

11. J&M Corporation purchased a vibratory finishing machine for $20,000 in year 0. The useful life of the machine is 10 years, at the end of which, the machine is estimated to have a zero salvage value. The machine generates net annual revenues of $6000. The annual operating and maintenance expenses are estimated to be $1000. If J&M's MARR is 15%, how many years does it take before this machine becomes profitable?
    - three years < n ⩽ four years
    - four years < n ⩽ five years
    - five years < n ⩽ six years
    - six years < n ⩽ seven years

12. Alpha Company is planning to invest in a machine, the use of which will result in the following:
    a) Annual revenues of $10,000 in the first year and increases of $5000 each year, up to year 9. From year 10, the revenues will remain constant ($52,000) for an indefinite period.
    b) The machine is to be overhauled every 10 years. The expense for each overhaul is $40,000.

    If Alpha expects a present worth of at least $100,000 at a MARR of 10% for this project, what is the maximum investment that Alpha should be prepared to make?
    - $250,148
    - $674,697
    - $350,100
    - $509,600

13. Find the annual equivalent worth for the following infinite cash flow series at an interest rate of 10%:

n	Net Cash Flow
0	0
1 -- 10	$400
11 -- ∞	$500

(a) $461.20 (b) $438.60
(c) $445.20 (d) $985.40

    - $461.20
    - $438.60
    - $445.20
    - $985.40

14. A local county is considering purchasing some dump trucks for the trash pickups. Each truck will cost $55,000 and have an operating and maintenance cost that starts at $18,000 during the first year and increases by $3000 per year thereafter. Assume the salvage value is $12,000 at the end of five years and the interest rate is 10%. The equivalent annual cost of owning and operating each truck over a five-year planning horizon is most nearly
    - $35,974

- $32,600
- $6956
- $37,939

15. You purchased a CNC machine for $18,000. It is expected to have a useful life of 10 years and a salvage value of $3000. At i = 15%, what is the annual capital cost of owning this machine?
    - $3900
    - $2990
    - $3740
    - $3440

16. Consider a piece of manufacturing equipment with an installed cost of $100K. The equipment is expected to generate $30K of annual energy savings during its first year of operation. The value of these annual savings is expected to increase by 3% per year because of increased fuel costs. Assume that the equipment has a service life of five years (or 3000 operating hours per year) with no appreciable salvage value. Determine the equivalent dollar savings per each operating hour at i = 14%.
    - $1.300 per hour
    - $1.765 per hour
    - $0.827 per hour
    - $0.568 per hour

17. The owner of a workshop is planning to purchase a special machine for $50,000. The annual operating cost (including fuel, labour, power, etc.) is expected to be $8000 per year. If the machine has a useful life of 12 years, what is the minimum required annual equivalent revenue needed to break even with an 8% annual interest rate? Assume that the machine would have an estimated market value of $5000 at the end of its useful life.
    - $5972
    - $6372
    - $8000
    - $14,371

18. If you purchase a stock for $100 now, what would be the rate of return on your investment if the stock were worth $337.50 at the end of three years?
    - 75.80%
    - 25%
    - 33.75%
    - 50%

19. You are considering an open-pit mining operation. The cash flow pattern is somewhat unusual since you must purchase a piece of specialized mining equipment, operate for two years, and restore the sites to their original condition after completion of mining. You estimate the net cash flows to be as follows:

n	Cash Flows
0	-$1,600,000
1	1,500,000
2	1,500,000
3	-700,000

What is the approximate rate of return of this investment?
    - 25%
    - 38%
    - 42%
    - 62%

20. Find the rate of return for the following infinite cash flow series.

Year	Cash Flow
0	-$15,459
1	3,000
2	3,000
⋮	⋮

- 15%
- 515.30%
- 19.41%
- 17.83%

21. Which of the following statements is most accurate with respect to internal rate of return?
    - If a cash flow series starts with an investment (a negative cash flow), there will always be a rate of return internal to the project.
    - The internal rate of return is the interest rate earned on its total investment.
    - The higher the expected cash flows, the higher the IRR will be.
    - The project with a longer service life tends to have a higher IRR, if everything else remains the same.

22. You are considering purchasing a new injection moulding machine. This machine will have an estimated service life of 10 years with a negligible after-tax salvage value. Its annual net after-tax operating cash flows are estimated to be $60,000. To expect a 15% rate of return on investment, what would be the maximum amount that should be spent on purchasing the injection moulding machine?
    - $301,120
    - $234,645
    - $600,000
    - $126,450

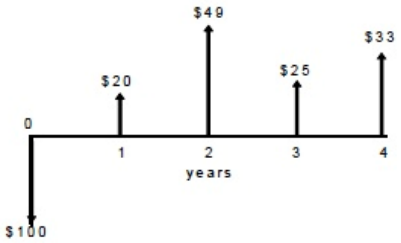
23. Consider the investment project with the following net cash flow series:

Year	Net Cash Flow
0	-$1,500
1	$X
2	$650
3	$X

What would be the value of X if the project's IRR is 10%?

- $425
- $1045
- $580
- $635

24. Consider the following cash flow series. Assume that the firm's MARR is 10%.



Which of the following statements is incorrect?

- The project's net future worth is zero.
- The project's net present worth is zero.
- The project's IRR is zero.
- The project's annual equivalent is zero.

25. Consider the cash flow series for an investment project:

Period (*n*)	Cash Flow
0	$ (3,200.00)
1	$ 20,000.00
2	$ (20,000.00)

Which of the following statements is incorrect?

- This is a mixed investment.
- This project has two rates of return.
- This project would be acceptable at MARR < 100%.
- The return on invested capital (true rate of return) at MARR = 30% is 44.23%.

26. A new investment project is proposed. The required initial investment is $50,000 and the expected salvage value is $10,000 at the end of three years. A 15% return on investment is desired. What should be the minimum annual net cash flows over three years?

Year	Cash Flow
0	-$50,000
1	X
2	X
3	$X + $10,000

- $13,334
- $21,900
- $17,520
- $19,020