

Finance Workbook

(Version 1.0)

Tony Bell

Dr. Yong Joo Kang

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Module 1: Understanding the Financial Statements

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/dv4F5j2f38s>

1-1A – Calculating Operating Cash Flows:

Stranger Company has Sales Revenues of \$30,000. The company's total operating expenses are \$21,000 (including depreciation of \$3,000). The company has an interest expense of \$1,000. The company's tax rate is 25 percent.

Required:

What is the company's Operating Cash Flow (OCF)?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/1cNULnVenhl>

1-1B – Calculating Operating Cash Flows:

Friendly Company has Sales Revenues of \$80,000. The company's total operating expenses are \$55,000 (including depreciation of \$5,000). The company has an interest expense of \$3,000. The company's tax rate is 30 percent.

Required:

What is the company's Operating Cash Flow (OCF)?

Members-only Video Walkthrough:

<https://youtu.be/VhTlVl-qEyo>

1-2A – Net Capital Spending

A comparative balance sheet for Sleepy Company is shown below.

Sleepy Company Balance Sheet December 31		
	2029	2028
Current assets	\$ 50,000	\$ 60,000
Net fixed assets	<u>200,000</u>	<u>180,000</u>
Total assets	<u>\$ 250,000</u>	<u>\$ 240,000</u>
Current liabilities	\$ 20,000	\$ 25,000
Long term debt	65,000	70,000
Equity	<u>165,000</u>	<u>145,000</u>
Total liabilities and shareholders' equity	<u>\$ 250,000</u>	<u>\$ 240,000</u>

A review of the company's income statement shows depreciation for 2029 of \$30,000.

Required:

What was net capital spending for 2029?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/OjAA75F7Ra4>

1-2B – Net Capital Spending

A comparative balance sheet for Bashful Company is shown below.

Bashful Company Balance Sheet July 31		
	2029	2028
Current assets	\$ 400,000	\$ 300,000
Net fixed assets	<u>1,800,000</u>	<u>1,850,000</u>
Total assets	<u>\$ 2,200,000</u>	<u>\$ 2,150,000</u>
Current liabilities	\$ 120,000	\$ 150,000
Long term debt	1,600,000	1,500,000
Equity	<u>480,000</u>	<u>500,000</u>
Total liabilities and shareholders' equity	<u>\$ 2,200,000</u>	<u>\$ 2,150,000</u>

A review of the company's income statement shows depreciation for 2029 of \$200,000.

Required:

What was net capital spending for 2029?

Members-only Video Walkthrough:

<https://youtu.be/rsqPJFvVIn0>

1-3A – Net Working Capital

A comparative balance sheet for Ignite Company is shown below.

Ignite Company Balance Sheet December 31		
	2029	2028
Current assets	\$ 15,000	\$ 20,000
Net fixed assets	<u>125,000</u>	<u>100,000</u>
Total assets	<u>\$ 140,000</u>	<u>\$ 120,000</u>
Current liabilities	\$ 10,000	\$ 12,000
Long term debt	90,000	80,000
Equity	<u>40,000</u>	<u>28,000</u>
Total liabilities and shareholders' equity	<u>\$ 140,000</u>	<u>\$ 120,000</u>

Required:

What was the change in Net Working Capital for 2029?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/A5nANx21cdo>

1-3B – Net Working Capital

A comparative balance sheet for Spark Company is shown below.

Spark Company Balance Sheet December 31		
	2029	2028
Current assets	\$ 650,000	\$ 620,000
Net fixed assets	<u>3,600,000</u>	<u>2,800,000</u>
Total assets	<u>\$ 4,250,000</u>	<u>\$ 3,420,000</u>
Current liabilities	\$ 240,000	\$ 200,000
Long term debt	2,100,000	1,800,000
Equity	<u>1,910,000</u>	<u>2,250,000</u>
Total liabilities and shareholders' equity	<u>\$ 4,250,000</u>	<u>\$ 4,250,000</u>

Required:

What was the change in Net Working Capital for 2029?

Members-only Video Walkthrough:

<https://youtu.be/Up1w2mQaN-k>

1-4A – Cash Flow

Below are the financial statements of Squirrel Co.

Squirrel Co. Income Statement For the Year Ended November 30	
	<u>2029</u>
Sales, net	\$3,600,000
Cost of goods sold	1,850,000
Selling and admin expenses	1,300,000
Depreciation	<u>100,000</u>
EBIT	\$350,000
Interest	<u>50,000</u>
EBT	\$300,000
Income taxes	<u>85,000</u>
Net income	<u>\$215,000</u>
Dividends	\$110,000
Addition to retained earnings	105,000

Squirrel Co. Balance Sheet November 30		
	<u>2029</u>	<u>2028</u>
Total current assets	785,000	503,000
Net fixed assets	<u>600,000</u>	<u>550,000</u>
Total assets	<u>\$1,385,000</u>	<u>\$1,053,000</u>
Total current liabilities	387,000	235,000
Long-term debt	<u>610,000</u>	<u>575,000</u>
Total liabilities	997,000	810,000
Common shares	60,000	50,000
Paid in surplus	130,000	100,000
Retained earnings	<u>198,000</u>	<u>93,000</u>
Total shareholders' equity	<u>388,000</u>	<u>243,000</u>
Total liabilities and shareholders' equity	<u>\$1,385,000</u>	<u>\$1,053,000</u>

Required:

- a.) Compute the 2029 operating cash flow (OCF).
- b.) Compute the net capital spending for 2029.
- c.) Compute the change in net working capital for 2029.
- d.) Compute the cash flow to creditors in 2029.
- e.) Compute the cash flow to stockholders for 2029.
- f.) Show how OCF, Net Capital Spending and Change in Net Working Capital (Your answers for a-c above) are related to Cash flow to Creditors and Cash Flow to Stockholders (Your answers for d-e above).

FREE VIDEO WALKTHROUGH: <https://youtu.be/DhTfBJTOEIM>

1-4B – Cash Flow

Below are the financial statements of Moose Co.

Moose Co. Income Statement For the Year Ended December 31	
	<u>2029</u>
Sales, net	\$1,050,000
Cost of goods sold	650,000
Selling and admin expenses	200,000
Depreciation	<u>50,000</u>
EBIT	\$250,000
Interest	<u>25,000</u>
EBT	\$225,000
Income taxes	<u>65,000</u>
Net income	<u>\$160,000</u>
Dividends	\$40,000
Addition to retained earnings	120,000

Moose Co. Balance Sheet December 31		
	<u>2029</u>	<u>2028</u>
Total current assets	300,000	200,000
Net fixed assets	<u>720,000</u>	<u>700,000</u>
Total assets	<u>\$1,020,000</u>	<u>\$900,000</u>
Total current liabilities	165,000	100,000
Long-term debt	<u>320,000</u>	<u>400,000</u>
Total liabilities	485,000	500,000
Common shares	25,000	20,000
Paid in surplus	40,000	30,000
Retained earnings	<u>470,000</u>	<u>350,000</u>
Total shareholders' equity	<u>535,000</u>	<u>400,000</u>
Total liabilities and shareholders' equity	<u>\$1,020,000</u>	<u>\$900,000</u>

Required:

- a.) Compute the 2029 operating cash flow (OCF).
- b.) Compute the net capital spending for 2029.
- c.) Compute the change in net working capital for 2029.
- d.) Compute the cash flow to creditors in 2029.
- e.) Compute the cash flow to stockholders for 2029.
- f.) Show how OCF, Net Capital Spending and Change in Net Working Capital (Your answers for a-c above) are related to Cash flow to Creditors and Cash Flow to Stockholders (Your answers for d-e above).

Members-only Video Walkthrough: <https://youtu.be/7PijoVXXOB4>

1-5A – Average vs Marginal Tax Rates

Consider the following personal tax brackets:

Tax Bracket	Tax Rate
\$0 to \$50,000	20.00%
\$50,000.01 to \$100,000	28.00%
\$100,000.01 to \$150,000	37.00%
\$150,000.01 to \$200,000	45.00%
More than \$200,000	53.00%

Assume a person governed by these tax brackets earns \$175,000 this year.

Required:

- How much tax will they owe?
- What is their average tax rate?
- What is their marginal tax rate?
- Which rate, the average or marginal rate, is more appropriate to use when doing project analysis? Why?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/4SWeSB4XNQQ>

1-5B – Average vs Marginal Tax Rates

Consider the following personal tax brackets:

Tax Bracket	Tax Rate
\$0 to \$40,000	10.00%
\$40,000.01 to \$80,000	17.00%
\$80,000.01 to \$120,000	26.00%
\$120,000.01 to \$150,000	36.00%
More than \$150,000	48.00%

Assume a person governed by these tax brackets earns \$100,000 this year.

Required:

- a) How much tax will they owe?
- b) What is their average tax rate?
- c) What is their marginal tax rate?
- d) Which rate, the average or marginal rate, is more appropriate to use when doing project analysis? Why?

Members-only Video Walkthrough:

<https://youtu.be/yqHGtGbFkd0>

1-6A – Sources and Uses of Cash

Consider the following balance sheet accounts:

		2029	2028
#1	Inventory	\$800,000	\$700,000
#2	Accounts receivable	120,000	90,000
#3	Accounts payable	55,000	80,000
#4	Mortgage payable	1,200,000	1,000,000
#5	Common shares	30,000	20,000

For each item above, identify if the change in account balance represents a “source of cash” or a “use of cash”.

Members-only Video Walkthrough:

<https://youtu.be/dY9YxSPsD7A>

1-6B – Sources and Uses of Cash

Consider the following balance sheet accounts:

		2029	2028
#1	Notes receivable	\$80,000	\$100,000
#2	Inventory	40,000	65,000
#3	Wages payable	15,000	10,000
#4	Bank loan payable	50,000	70,000
#5	Preferred shares	500,000	300,000

For each item above, identify if the change in account balance represents a “source of cash” or a “use of cash”.

Members-only Video Walkthrough:

<https://youtu.be/Fvwrcj99XUs>

1-7A – Common Size Income Statement

Below is the 2029 income statement of Smith Co.:

Smith Co.	
Income Statement	
For the Year Ended December 31	
	<u>2029</u>
Sales, net	\$1,500,000
Cost of goods sold	<u>850,000</u>
Gross profit	650,000
Selling and admin expenses	300,000
Depreciation	<u>30,000</u>
EBIT	\$320,000
Interest	<u>75,000</u>
EBT	\$245,000
Income taxes	<u>50,000</u>
Net income	<u><u>\$195,000</u></u>
Dividends	\$90,000
Addition to retained earnings	105,000

Required:

- a.) Prepare the company's common-sized income statement.
- b.) The company's largest competitor has gross profit of \$2,500,000 (it is a much larger company than Smith Co.) and a gross profit percentage of 40%. Is Smith Co's gross profit percentage better or worse? Explain?

Members-only Video Walkthrough:

https://youtu.be/MV9_HXnzxI4

1-7B – Common Size Income Statement

Below is the 2029 income statement of Jake Co.:

Jake Co. Income Statement For the Year Ended December 31	
	<u>2029</u>
Sales, net	\$4,800,000
Cost of goods sold	<u>2,900,000</u>
Gross profit	1,900,000
Selling and admin expenses	800,000
Depreciation	<u>250,000</u>
EBIT	\$850,000
Interest	<u>100,000</u>
EBT	\$750,000
Income taxes	<u>200,000</u>
Net income	<u><u>\$550,000</u></u>
Dividends	\$200,000
Addition to retained earnings	350,000

Required:

- a.) Prepare the company's common-sized income statement.
- b.) The company's largest competitor had net income of \$4,000,000 (it's a much larger company than Jake Co.). Its net income as a percentage of sales was 15%. Was this ratio better or worse for Jake Co.? Explain?

Members-only Video Walkthrough:

<https://youtu.be/gRrhYzs1erY>

1-8A – Common Size Balance Sheet

Harpreet Gill is concerned about his company's financial position. He has obtained the balance sheet of his largest competitor, Hossain Inc. and notes that the company is over ten times larger than his, so it is making the numbers difficult to compare.

Below is condensed financial information from Hossain Inc. and Gill Inc.:

Hossain Inc. and Gill Inc.		
Balance Sheets		
As at August 31, 2029		
	Hossain	Gill
Current assets	\$1,000,000	\$75,000
Long-term assets	<u>3,000,000</u>	<u>175,000</u>
Total assets	<u>\$4,000,000</u>	<u>\$250,000</u>
Current liabilities	\$500,000	\$60,000
Long-term liabilities	<u>1,500,000</u>	<u>120,000</u>
Total liabilities	2,000,000	180,000
Shareholders' equity	<u>2,000,000</u>	<u>70,000</u>
Total liabilities and shareholders' equity	<u>\$4,000,000</u>	<u>\$250,000</u>

Required:

- Prepare common sized balance sheets for the competitors.
- Comment on any findings that you believe should be notable for Gill.

Members-only Video Walkthrough:

<https://youtu.be/3NRrYF6VVhg>

1-8B – Common Size Balance Sheet

Siracusa Inc. and Arment Co. are competing technology retailers.

Below is condensed financial information for the companies:

Siracusa Inc. and Arment Inc.		
Balance Sheets		
As at December 31, 2029		
	Siracusa	Arment
Current assets	\$225,000	\$50,000
Long-term assets	<u>775,000</u>	<u>250,000</u>
Total assets	<u>\$1,000,000</u>	<u>\$300,000</u>
Current liabilities	\$200,000	\$20,000
Long-term liabilities	<u>450,000</u>	<u>100,000</u>
Total liabilities	650,000	120,000
Shareholders' equity	<u>350,000</u>	<u>180,000</u>
Total liabilities and shareholders' equity	<u>\$1,000,000</u>	<u>\$300,000</u>

Required:

- a.) Prepare common sized balance sheets for the competitors.
- b.) Comment on any findings that you believe should be notable for Arment.

Members-only Video Walkthrough:

<https://youtu.be/6zJQJiKZ5eM>

1-9A – Computing Common Financial Ratios

Below is condensed information from the balance sheet and income statement of Joon Enterprises as at December 31, 2029 and for the year then ended (all numbers are in millions):

Balance Sheet			
Assets		Liabilities and SE	
Cash	\$2,000	Accounts payable	\$100
Accounts receivable	300	Notes payable	400
Inventory	1,200	Other current liabs	<u>1,000</u>
Prepaid insurance	<u>100</u>	Total current liabs	1,500
Total current assets	3,600	Long-term debt	1,800
Net Fixed Assets	<u>4,100</u>	S.E.	<u>4,400</u>
Total Assets	<u>\$7,700</u>	Total L and SE	<u>\$7,700</u>

Income Statement	
Sales	\$4,000
Cost of Goods Sold	(2,200)
Expenses	(1,200)
Depreciation	<u>(100)</u>
EBIT	500
Interest expense	<u>(50)</u>
Taxable income	450
Taxes	<u>(125)</u>
Net income	<u>\$325</u>
EPS	2.17
Dividends per share	0.90

Additional info:

Market price = \$45.00 per share
Shares Outstanding = 150 million

Required:

The CFO has acquired a list of key ratios for the company's "Big Name Competitor" and would like to know how Joon Enterprises compares. Compute the ratios below, and comment on the relative Liquidity, Financial Leverage, Turnover, Profitability and Market Value of Joon Enterprises.

Note – this table is very small – I've provided a much larger version of this table on the next page:

Common Ratios			
Liquidity Ratios		Our Company	Competitor
Current ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$		1.32 times
Quick Ratio	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$		0.78 times
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$		0.41 times
Interval Measure	$\frac{\text{Current Assets}}{\text{Average Daily Operating Costs}}$		303.1 days
NWC to Total Assets Ratio	$\frac{\text{Net Working Capital}}{\text{Total Assets}}$		0.09
Leverage Ratios		Our Company	Competitor
Total Debt Ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$		75.19%
Debt/Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$		3.03 times
Equity Multiplier	$\frac{\text{Total Assets}}{\text{Total Equity}}$		4.03
Long-term Debt Ratio	$\frac{\text{Long Term Debt}}{\text{Long Term Debt} + \text{Total Equity}}$		65.22%
Interest Coverage Ratio	$\frac{\text{EBIT}}{\text{Interest}}$		25.33 times
Cash Coverage Ratio	$\frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$		28.00 times
Turnover Ratios		Our Company	Competitor
Inventory Turnover	$\frac{\text{COGS}}{\text{Inventory}}$		1.95 times
Days' Sales in Inventory	$\frac{365 \text{ Days}}{\text{Inventory Turnover}}$		187.18 days
Receivables Turnover	$\frac{\text{Sales}}{\text{Accounts Receivables}}$		8.00 times
Days' Sales in Receivables	$\frac{365 \text{ Days}}{\text{Receivables Turnover}}$		45.63 days
NWC Turnover	$\frac{\text{Sales}}{\text{NWC}}$		6.67 times
Fixed Asset Turnover	$\frac{\text{Sales}}{\text{Net Fixed Assets}}$		1.00 times
Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$		0.62
Capital Intensity Ratio	$\frac{\text{Total Assets}}{\text{Sales}}$		1.61
Profitability Ratios		Our Company	Competitor
Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$		17.81%
Return on Assets	$\frac{\text{Net Income}}{\text{Total Assets}}$		11.05%
Return on Equity	$\frac{\text{Net Income}}{\text{Total Equity}}$		44.53%
Market Value Ratios		Our Company	Competitor
Price-Earnings ratio	$\frac{\text{Market Price per Share}}{\text{Earnings Per Share}}$		15.79
Market-to-Book Ratio	$\frac{\text{Market Price per Share}}{\text{Book Value per Share}}$		7.03
DuPont Identity		Our Company	Competitor
DuPont Identity	$\text{ROE} = \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Equity Multiplier}$		17.81% x 0.62 x 4.03 = 44.53%

FREE VIDEO WALKTHROUGH: https://youtu.be/YqF8_phpLAA

1-9A Fillable Table - Common Ratios

Liquidity Ratios			
	<i>Our Company</i>	<i>Competitor</i>	
Current ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$		1.32 times
Quick Ratio	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$		0.78 times
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$		0.41 times
Interval Measure	$\frac{\text{Current Assets}}{\text{Average Daily Operating Costs}}$		303.1 days
NWC to Total Assets Ratio	$\frac{\text{Net Working Capital}}{\text{Total Assets}}$		0.09
Leverage Ratios			
	<i>Our Company</i>	<i>Competitor</i>	
Total Debt Ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$		75.19%
Debt/Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$		3.03 times
Equity Multiplier	$\frac{\text{Total Assets}}{\text{Total Equity}}$		4.03
Long-term Debt Ratio	$\frac{\text{Long Term Debt}}{\text{Long Term Debt} + \text{Total Equity}}$		65.22%
Interest Coverage Ratio	$\frac{\text{EBIT}}{\text{Interest}}$		25.33 times
Cash Coverage Ratio	$\frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$		28.00 times
Turnover Ratios			
	<i>Our Company</i>	<i>Competitor</i>	
Inventory Turnover	$\frac{\text{COGS}}{\text{Inventory}}$		1.95 times
Days' Sales in Inventory	$\frac{365 \text{ Days}}{\text{Inventory Turnover}}$		187.18 days
Receivables Turnover	$\frac{\text{Sales}}{\text{Accounts Receivables}}$		8.00 times
Days' Sales in Receivables	$\frac{365 \text{ Days}}{\text{Receivables Turnover}}$		45.63 days
NWC Turnover	$\frac{\text{Sales}}{\text{NWC}}$		6.67 times
Fixed Asset Turnover	$\frac{\text{Sales}}{\text{Net Fixed Assets}}$		1.00 times
Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$		0.62
Capital Intensity Ratio	$\frac{\text{Total Assets}}{\text{Sales}}$		1.61
Profitability Ratios			
	<i>Our Company</i>	<i>Competitor</i>	
Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$		17.81%
Return on Assets	$\frac{\text{Net Income}}{\text{Total Assets}}$		11.05%
Return on Equity	$\frac{\text{Net Income}}{\text{Total Equity}}$		44.53%
Market Value Ratios			
	<i>Our Company</i>	<i>Competitor</i>	
Price-Earnings ratio	$\frac{\text{Market Price per Share}}{\text{Earnings Per Share}}$		15.79
Market-to-Book Ratio	$\frac{\text{Market Price per Share}}{\text{Book Value per Share}}$		7.03
DuPont Identity			
	<i>Our Company</i>	<i>Competitor</i>	
DuPont Identity	ROE = Profit Margin x Total Asset Turnover x Equity Multiplier		17.81% x 0.62 x 4.03 = 44.53%

1-9B – Computing Common Financial Ratios

Below is condensed information from the balance sheet and income statement of Fisk Company as at December 31, 2029 and for the year then ended (all numbers are in millions):

Balance Sheet			
Assets		Liabilities and SE	
Cash	\$20	Accounts payable	\$10
Accounts receivable	30	Notes payable	20
Inventory	100	Other current liabs	100
Prepaid insurance	10	Total current liabs	130
Total current assets	160	Long-term debt	100
Net Fixed Assets	200	S.E.	130
Total Assets	\$360	Total L and SE	\$360

Income Statement	
Sales	\$1,000
Cost of Goods Sold	(600)
Expenses	(225)
Depreciation	(50)
EBIT	125
Interest expense	(10)
Taxable income	115
Taxes	(35)
Net income	\$80
EPS	0.80
Dividends per share	0.25

Additional info:

Market price = \$7.00 per share
Shares Outstanding = 100 million

Required:

The CFO has acquired a list of key ratios for the company's "Key Competitor" and would like to know how Fisk Company compares. Compute the ratios below, and comment on the relative Liquidity, Financial Leverage, Turnover, Profitability and Market Value of Fisk Company.

Note – this table is very small – I've provided a much larger version of this table on the next page:

Common Ratios			
		Our Company	Competitor
Liquidity Ratios			
Current ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$		1.82 times
Quick Ratio	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$		1.00 times
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$		0.59 times
Interval Measure	$\frac{\text{Current Assets}}{\text{Average Daily Operating Costs}}$		230.9 days
NWC to Total Assets Ratio	$\frac{\text{Net Working Capital}}{\text{Total Assets}}$		0.24
Leverage Ratios			
Total Debt Ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$		76.27%
Debt/Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$		3.21 times
Equity Multiplier	$\frac{\text{Total Assets}}{\text{Total Equity}}$		4.21
Long-term Debt Ratio	$\frac{\text{Long Term Debt}}{\text{Long Term Debt} + \text{Total Equity}}$		66.67%
Interest Coverage Ratio	$\frac{\text{EBIT}}{\text{Interest}}$		9.00 times
Cash Coverage Ratio	$\frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$		11.00 times
Turnover Ratios			
Inventory Turnover	$\frac{\text{COGS}}{\text{Inventory}}$		2.07 times
Days' Sales in Inventory	$\frac{365 \text{ Days}}{\text{Inventory Turnover}}$		176.21 days
Receivables Turnover	$\frac{\text{Sales}}{\text{Accounts Receivables}}$		15.00 times
Days' Sales in Receivables	$\frac{365 \text{ Days}}{\text{Receivables Turnover}}$		24.33 days
NWC Turnover	$\frac{\text{Sales}}{\text{NWC}}$		4.29 times
Fixed Asset Turnover	$\frac{\text{Sales}}{\text{Net Fixed Assets}}$		2.14 times
Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$		1.02
Capital Intensity Ratio	$\frac{\text{Total Assets}}{\text{Sales}}$		0.98
Profitability Ratios			
Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$		10.83%
Return on Assets	$\frac{\text{Net Income}}{\text{Total Assets}}$		11.02%
Return on Equity	$\frac{\text{Net Income}}{\text{Total Equity}}$		46.43%
Market Value Ratios			
Price-Earnings ratio	$\frac{\text{Market Price per Share}}{\text{Earnings Per Share}}$		9.23 times
Market-to-Book Ratio	$\frac{\text{Market Price per Share}}{\text{Book Value per Share}}$		4.29 times
DuPont Identity			
DuPont Identity	$\text{ROE} = \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Equity Multiplier}$		10.83% x 1.02 x 4.21 = 46.43%

Members-only Video Walkthrough: https://youtu.be/LxaHkUVN_JA

1-9B Fillable Table - Common Ratios

Liquidity Ratios			
		Our Company	Competitor
Current ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$		1.82 times
Quick Ratio	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$		1.00 times
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$		0.59 times
Interval Measure	$\frac{\text{Current Assets}}{\text{Average Daily Operating Costs}}$		230.9 days
NWC to Total Assets Ratio	$\frac{\text{Net Working Capital}}{\text{Total Assets}}$		0.24
Leverage Ratios			
		Our Company	Competitor
Total Debt Ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$		76.27%
Debt/Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$		3.21 times
Equity Multiplier	$\frac{\text{Total Assets}}{\text{Total Equity}}$		4.21
Long-term Debt Ratio	$\frac{\text{Long Term Debt}}{\text{Long Term Debt} + \text{Total Equity}}$		66.67%
Interest Coverage Ratio	$\frac{\text{EBIT}}{\text{Interest}}$		9.00 times
Cash Coverage Ratio	$\frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$		11.00 times
Turnover Ratios			
		Our Company	Competitor
Inventory Turnover	$\frac{\text{COGS}}{\text{Inventory}}$		2.07 times
Days' Sales in Inventory	$\frac{365 \text{ Days}}{\text{Inventory Turnover}}$		176.21 days
Receivables Turnover	$\frac{\text{Sales}}{\text{Accounts Receivables}}$		15.00 times
Days' Sales in Receivables	$\frac{365 \text{ Days}}{\text{Receivables Turnover}}$		24.33 days
NWC Turnover	$\frac{\text{Sales}}{\text{NWC}}$		4.29 times
Fixed Asset Turnover	$\frac{\text{Sales}}{\text{Net Fixed Assets}}$		2.14 times
Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$		1.02
Capital Intensity Ratio	$\frac{\text{Total Assets}}{\text{Sales}}$		0.98
Profitability Ratios			
		Our Company	Competitor
Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$		10.83%
Return on Assets	$\frac{\text{Net Income}}{\text{Total Assets}}$		11.02%
Return on Equity	$\frac{\text{Net Income}}{\text{Total Equity}}$		46.43%
Market Value Ratios			
		Our Company	Competitor
Price-Earnings ratio	$\frac{\text{Market Price per Share}}{\text{Earnings Per Share}}$		9.23 times
Market-to-Book Ratio	$\frac{\text{Market Price per Share}}{\text{Book Value per Share}}$		4.29 times
DuPont Identity			
		Our Company	Competitor
DuPont Identity	ROE = Profit Margin x Total Asset Turnover x Equity Multiplier		10.83% x 1.02 x 4.21 = 46.43%

1-10A – DuPont Identity

The following information is known about Freya Company:

Freya Company – Selected Financial Ratios	
Equity multiplier	1.20
Total asset turnover	0.76
Profit margin	20.5%

Required:

Given the information above, calculate ROE.

Members-only Video Walkthrough:

<https://youtu.be/pKvWosdGZyl>

1-10B – DuPont Identity

The following information is known about Rosie Company:

Rosie Company – Selected Financial Ratios	
Equity multiplier	3.50
Total asset turnover	1.40
Profit margin	4.20%

Required:

Given the information above, calculate ROE.

Members-only Video Walkthrough:

https://youtu.be/2MzLd_Bj_c

1-11A – DuPont Identity

The following information is known about Vibhor Company:

Vibhor Company – Selected Financial Ratios	
Profit Margin	12.2%
Total asset turnover	0.35
ROE	13.5%

Required:

Given the information above, calculate the company’s Debt to Equity Ratio.

Members-only Video Walkthrough:

<https://youtu.be/4ScYojl8Xig>

1-11B – DuPont Identity

The following information is known about Lael Company:

Lael Company – Selected Financial Ratios	
Profit Margin	23.80%
Total asset turnover	1.15
ROE	161.0%

Required:

Given the information above, calculate the company’s Debt to Equity Ratio.

Members-only Video Walkthrough:

https://youtu.be/j_ZVK3lfdME

BONUS - Introductory Video: Why do professors talk about “Maximizing Shareholder Value”?:

<https://youtu.be/ihJiEeOuDV4>

Module 2: Projecting Financial Statements

FREE VIDEO WALKTHROUGH:

Intro Video: https://youtu.be/gxync_ch7cA

2-1A – Pro forma statements and EFN

Liam Company's financial statements are below:

Liam Company Income Statement	
Sales revenues	\$5,000
Costs and expenses	<u>4,500</u>
Income before taxes	500
Taxes (20%)	<u>100</u>
Net income	<u>\$400</u>

Liam Company Balance Sheet			
Assets		Liabilities and Equity	
Current assets	\$1,000	Current liabilities	\$500
Net fixed assets	<u>3,000</u>	Long term debt	2,600
		Equity	<u>900</u>
Total assets	<u>\$4,000</u>	Total liabilities and equity	<u>\$4,000</u>

Part a.)

Assuming sales are projected to increase by 20% and that *all items* on the income statement and balance sheet will also increase by 20%:

Required a.)

- I. Prepare pro-forma statements.
- II. Compute the amount of the dividend required to balance the statements if dividends are the plug variable.
- III. Do the pro-forma statements in Part I make sense if dividend payout was 30% and remains unchanged?

Part b.)

Instead of Part a.), assume:

- A 20% increase in sales
- A dividend payout ratio of 40%
- Costs, expenses, current assets and current liabilities and net fixed assets will vary directly with sales
- Long-term debt and equity will not vary directly with sales

Required b.)

- I. Prepare pro-forma statements.
- II. Compute the external financing needed.

FREE VIDEO WALKTHROUGH: <https://youtu.be/ir8SrSF2BPo>

2-1B – Pro forma statements and EFN

Gabriel Company's financial statements are below:

Gabriel Company Income Statement	
Sales revenues	\$8,000
Costs and expenses	<u>7,400</u>
Income before taxes	600
Taxes (15%)	<u>90</u>
Net income	<u>\$400</u>

Gabriel Company Balance Sheet			
Assets		Liabilities and Equity	
Current assets	\$2,000	Current liabilities	\$750
Net fixed assets	<u>10,000</u>	Long term debt	7,250
		Equity	<u>4,000</u>
Total assets	<u>\$12,000</u>	Total liabilities and equity	<u>\$12,000</u>

Part a.)

Assuming sales are projected to increase by 10% and that **all items** on the income statement and balance sheet will also increase by 10%:

Required a.)

- I. Prepare pro-forma statements.
- II. Compute the amount of the dividend required to balance the statements if dividends are the plug variable.
- III. Do the pro-forma statements in Part I make sense if dividend payout was 20% and remains unchanged?

Part b.)

Instead of Part a.), assume:

- A 10% increase in sales
- A dividend payout ratio of 60%
- Costs, expenses, current assets and current liabilities and net fixed assets will vary directly with sales
- Long-term debt and equity will not vary directly with sales

Required b.)

- I. Prepare pro-forma statements.
- II. Compute the external financing needed.

Members-only Video Walkthrough: https://youtu.be/SSiptiFU_WO

2-2A – EFN with excess production capacity

Fisher Company's financial statements are below:

Fisher Company Income Statement	
Sales revenues	\$7,500
Costs and expenses	<u>7,300</u>
Income before taxes	\$200
Taxes (30%)	<u>60</u>
Net income	<u>\$140</u>

Fisher Company Balance Sheet			
Assets		Liabilities and Equity	
Current assets	\$2,000	Current liabilities	\$1,500
Net fixed assets	<u>4,000</u>	Long term debt	2,500
		Equity	<u>2000</u>
Total assets	<u>\$6,000</u>	Total liabilities and equity	<u>\$6,000</u>

Additional information:

- The company expects a 40% sales growth next year
- The company will have a 25% dividend payout ratio next year
- All costs, current assets and current liabilities are expected to increase with sales

Required:

- a) Assuming the company is operating at 65% capacity usage for fixed assets, compute EFN.
- b) Assuming the company is operating at 95% capacity usage for fixed assets, compute EFN.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/jaCFLsjCtMQ>

2-2B – EFN with excess production capacity

Kady Company's financial statements are below:

Kady Company Income Statement	
Sales revenues	\$2,000
Costs and expenses	<u>1,900</u>
Income before taxes	\$100
Taxes (25%)	<u>25</u>
Net income	<u>\$75</u>

Kady Company Balance Sheet			
Assets		Liabilities and Equity	
Current assets	\$1,200	Current liabilities	\$900
Net fixed assets	<u>1,600</u>	Long term debt	1,500
		Equity	<u>400</u>
Total assets	<u>\$2,800</u>	Total liabilities and equity	<u>\$2,800</u>

Additional information:

- The company expects a 30% sales growth next year
- The company will have a 40% dividend payout ratio next year
- All costs, current assets and current liabilities are expected to increase with sales

Required:

- a) Assuming the company is operating at 50% capacity usage for fixed assets, compute EFN.
- b) Assuming the company is operating at 90% capacity usage for fixed assets, compute EFN.

Members-only Video Walkthrough: https://youtu.be/YpBtV_55TLU

2-3A – Internal and Sustainable Growth Rate

Maria Company's financial statements are below:

Maria Company Income Statement	
Sales revenues	\$3,000
Costs and expenses	<u>2,500</u>
Income before taxes	\$500
Taxes (30%)	<u>150</u>
Net income	<u>\$350</u>

Maria Company Balance Sheet			
Assets		Liabilities and Equity	
Current assets	\$200	Liabilities	\$1,000
Net fixed assets	<u>1,800</u>	Equity	<u>1,000</u>
Total assets	<u>\$2,000</u>	Total liabilities and equity	<u>\$2,000</u>

The company has a dividend payout ratio of 30%.

Required:

- Compute the company's internal growth rate.
- Compute the company's sustainable growth rate.

FREE VIDEO WALKTHROUGH:

https://youtu.be/9Nzi_oTc8C4

2-3B – Internal and Sustainable Growth Rate

Verdum Company's financial statements are below:

Verdum Company Income Statement	
Sales revenues	\$10,000
Costs and expenses	<u>8,500</u>
Income before taxes	\$1,500
Taxes (20%)	<u>300</u>
Net income	<u>\$1,200</u>

Verdum Company Balance Sheet			
Assets		Liabilities and Equity	
Current assets	\$2,000	Liabilities	\$6,800
Net fixed assets	<u>13,000</u>	Equity	<u>8,200</u>
Total assets	<u>\$15,000</u>	Total liabilities and equity	<u>\$15,000</u>

The company has a dividend payout ratio of 40%.

Required:

- Compute the company's internal growth rate.
- Compute the company's sustainable growth rate.

Members-only Video Walkthrough:

<https://youtu.be/j3A0Quammw>

2-4A – Calculating Sustainable Growth Rate

Calculate the sustainable growth rate given the following information:

Profit margin	10.0%
Capital intensity Ratio	0.85
Debt-equity ratio	3.20
Net income	\$30,000
Dividends	\$20,000

FREE VIDEO WALKTHROUGH:

<https://youtu.be/UiGugllulrA>

2-4B – Calculating Sustainable Growth Rate

Calculate the sustainable growth rate given the following information:

Profit margin	7.1%
Capital intensity Ratio	0.61
Debt-equity ratio	2.04
Net income	\$33,000
Dividends	\$6,000

Members-only Video Walkthrough:

https://youtu.be/_dxOoOrtaOA

2-5A – Calculating Sustainable Growth Rate

Calculate the sustainable growth rate given the following information:

Total asset turnover	2.1
Profit margin	12.50%
Equity multiplier	3.4
Payout ratio	75%

Members-only Video Walkthrough:

<https://youtu.be/Z60R1bX8urA>

2-5B – Calculating Sustainable Growth Rate

Calculate the sustainable growth rate given the following information:

Total asset turnover	4.5
Profit margin	5.50%
Equity multiplier	1.4
Payout ratio	20%

Members-only Video Walkthrough:

<https://youtu.be/Zclh4IldrC8>

Module 3: Annuities and the Time Value of Money

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/picfbAlh9pA>

3-1A – Future Value

You deposit \$5,000 into a high-yield savings account that pays 4% annual interest.

Required:

- a.) How much money will you have after 1 year?
- b.) How much money will you have if you leave the money in the account for 5 years?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/qrai0sAvpS8>

3-1B – Future Value

You deposit \$1,000 in an investment account that that pays 10% annual interest.

Required:

- a.) How much money will you have after 1 year?
- b.) How much money will you have if you leave the money in the account for 10 years?

Members-only Video Walkthrough:

<https://youtu.be/whVZjxzqU40>

3-2A – Rate of return

You lend your friend \$400 today and they promise to pay you back \$500 in one year from today.

Required:

- a.) If they pay you back as agreed, what is the rate of return?
- b.) Assume you lend them \$400 today and they pay back \$500 in four years from today, what is the rate of return?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/KVHI-L2cXLw>

3-2B – Rate of return

You lend a friend \$800 and they promise to pay you back \$840 after one year.

Required:

- a.) What is the rate of return?
- b.) Assuming after you lend them \$800, they take two years to pay you back the \$840 (and you don't charge them any extra interest or penalties), what is the rate of return.

Members-only Video Walkthrough:

<https://youtu.be/sr5SmSCbO8I>

3-3A – Present Value

Your grandfather makes you an offer: “I’ll give you \$100,000 today, or \$200,000 in 10 years.” Assume you wish to use a discount rate of 8%.

Required:

Are you better or worse off if you take the money today? By how much (in today’s dollars)?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/6xWyh4ilBP8>

3-3B – Present Value

Your grandmother makes you an offer: “I’ll give you \$1,000,000 today, or \$1,500,000 in 4 years.” Assume you wish to use a discount rate of 10%.

Required:

Are you better or worse off if you take the money today? By how much (in today’s dollars)?

Members-only Video Walkthrough:

https://youtu.be/OC_CxUnegMQ

3-4A – Number of Periods

You invest \$50,000 at an interest rate of 8%.

Required:

How long will it take for this investment to grow to \$75,000?

FREE VIDEO WALKTHROUGH:

https://youtu.be/i31V_GxIOWE

3-4B – Number of Periods

You invest \$150,000 at an interest rate of 4%.

Required:

How long will it take for this investment to grow to \$200,000?

Members-only Video Walkthrough:

<https://youtu.be/QDUlygWrArA>

3-5A – Multiple rate of return calculations

One of the most famous baseball cards is the T206 Honus Wagner card. A mint condition copy of the card was sold in 1933 for \$50 and was the most expensive baseball card in the world at that time. In 1991 a group including professional hockey legend Wayne Gretzky bought a mint condition copy of the famous card for \$451,000. Four years later, in 1995 they sold the card to a group led by Walmart for \$500,000. The same card sold to another collector in 2006 for \$2,600,000.

Required:

- a.) What was the rate of return on the card from 1933 to the sale in 1991?
- b.) What was the rate of return that the Wayne Gretzky group earned on the card?
- c.) What was the total rate of return on the card from 1933 to 2006?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/OdvLICXnpGU>

3-5B – Multiple rate of return calculations

The 1952 Topps Mickey Mantle is considered the “Holy Grail” of baseball cards. In 1985, Alan Rosen purchased a mint condition copy for \$1,000. In 1991 he sold it to Anthony Giordano for \$50,000. Giordano held the card until he sold it in 2022 for \$12,600,000.

Required:

- a.) What was the rate of return on the card from 1985 to the sale in 1991?
- b.) What was the rate of return that Anthony Giordano earned on the card?
- c.) What was the rate of return on the card from when Rosen purchased it in 1985 to when Giordano sold it in 2022?
- d.) In 1952 a pack of Topps baseball cards cost \$0.05. Assuming the Mantle card could be purchased for \$0.05, what was the rate of return on that card from its original 1952 price to the 2022 sale?

Members-only Video Walkthrough:

<https://youtu.be/fumN9p5P1BI>

3-6A – PV of Multiple Cash Flows

You have identified an investment opportunity with the following projected cash flows: End of Year 1 - \$10,000; End of Year 2 - \$15,000; End of Year 3 - \$9,000.

Required:

Assuming an 8% discount rate, compute the present value of these cash flows.

Members-only Video Walkthrough:

<https://youtu.be/xBAAa71pllq>

3-6B – PV of Multiple Cash Flows

You sign a 2-year contract promising you'll receive a \$25,000 signing bonus today, plus lump sum payments of \$100,000 at the end of Year 1, and \$150,000 at the end of Year 2.

Required:

Assuming an 11% discount rate, compute the present value of these cash flows.

Members-only Video Walkthrough:

<https://youtu.be/QDEoQ8z4MZM>

3-7A – FV of Multiple Cash Flows

You are saving for your daughter's college fund, and you'd like to have \$100,000 set aside by the time she turns 18. She is 15 years old today and you have already saved \$60,000. You plan to deposit an additional \$7,000 today, \$8,000 one year from now, and \$9,000 two years from now.

Required:

Assuming an interest rate of 5%, how much will you have saved by your daughter's 18th birthday?

Members-only Video Walkthrough:

https://youtu.be/RSY1_K-5-vA

3-7B – FV of Multiple Cash Flows

You turned 50 years old today and would like to retire on your 55th birthday. You have already saved \$250,000, and will deposit an additional \$50,000 today, \$60,000 one year from now, \$70,000 two years from now, \$75,000 three years from now, and \$80,000 four years from now.

Required:

Assuming an interest rate of 9%, how much will you have saved in total by your 55th birthday?

Members-only Video Walkthrough:

<https://youtu.be/9UoWZ8M0JB0>

3-8A – Present Value of an Annuity

You run a taxi company and are thinking of investing in all-electric vehicles. To change your fleet from gas-powered to electric would cost (net) \$1,000,000 today, but would produce annual savings of \$150,000 over the 10-year life of the cars. The company uses a discount rate of 6%.

Required:

Compute the present value to determine if this is a worthwhile investment.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/ycbjN1j8YU>

3-8B – Present Value of an Annuity

You have an investment opportunity that will cost \$500,000 today and will generate cash flows of \$80,000 annually for the next 7 years. The company uses 9% as its discount rate.

Required:

Compute the present value to determine if this is a worthwhile investment.

Members-only Video Walkthrough:

<https://youtu.be/nJzi92jsjq4>

3-9A – Effective Annual Rates

ABC Bank is a lender and is offering loans at a rate of 6.1% compounded monthly. Its competitor, XYZ Bank, offers 6.3% compounded annually.

Required:

Which bank would you rather borrow from? Why?

Members-only Video Walkthrough:

<https://youtu.be/CZ87ldLadEs>

3-9B – Effective Annual Rates

DEF Bank is willing to loan money charging 5.6% compounded quarterly. GHI Bank offers a similar loan, but charges 5.5% compounded monthly.

Required:

Which bank would you rather borrow from? Why?

Members-only Video Walkthrough:

<https://youtu.be/FMiCw7mOdbE>

3-10A - APR vs EAR

Loan Shark's "R" Us quotes a lending rate 0.1% interest per day (compounded daily). We know companies aren't allowed to quote loans this way, but they do it anyway to be misleading.

Required:

- a.) What is the effective annual rate (EAR) of this loan?
- b.) What is the annual percentage rate (APR) of the loan?
- c.) Which is better, the EAR or APR, why?
- d.) If one is better, why do we need to know about the other one?

Members-only Video Walkthrough:

<https://youtu.be/ZTnGOhHPXl0>

3-10B - APR vs EAR

Sharky's Loans quotes a lending rate 0.04% interest per day (compounded daily). We know companies aren't allowed to quote loans this way, but they do it anyway to be misleading.

Required:

- a.) What is the effective annual rate (EAR) of this loan?
- b.) What is the annual percentage rate (APR) of the loan?
- c.) Which is better, the EAR or APR, why?
- d.) If one is better, why do we need to know about the other one?

Members-only Video Walkthrough:

<https://youtu.be/NBrJ4LyqmZw>

3-11A – Calculating Payments

You decide to buy a new car. The car's cost is \$50,000, and you pay \$10,000 cash today, financing the rest with a car loan. The terms of the loan are 4.5% APR for 60 months (interest is compounded monthly).

Required:

- a.) What are the monthly payments?
- b.) What is the effective annual rate of the loan?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/mZUNbC3240k>

3-11B – Calculating Payments

You decide to buy a new truck. The truck's cost is \$80,000, and you put \$20,000 cash down, financing the rest with a car loan. The terms of the loan are 7.0% APR for 72 months (interest is compounded monthly).

Required:

- a.) What are the monthly payments?
- b.) What is the effective annual rate of the loan?

Members-only Video Walkthrough:

<https://youtu.be/pcGwTZo5-dQ>

3-12A – Calculating Rates of Payday Loans

Payday lending typically works in lump sum borrowing and repayment. A typical loan arrangement may involve a \$100 loan today and a \$120 repayment in two weeks (on payday).

Required:

- a.) What is the APR of the loan discussed above?
- b.) What is the Effective Annual Return (EAR) of the loan?

Members-only Video Walkthrough:

<https://youtu.be/c0CMRFCW83Y>

3-12B – Calculating Rates of Payday Loans

Payday lending typically works in lump sum borrowing and repayment. A typical loan arrangement may involve a \$70 loan today and a \$80 repayment in one week (on payday).

Required:

- a.) What is the APR of the loan discussed above?
- b.) What is the Effective Annual Return (EAR) of the loan?

Members-only Video Walkthrough:

<https://youtu.be/Y4BoG1B84k4>

3-13A – Perpetuities

You wish to start a scholarship that will award the winning student with \$2,000 each year. The scholarship will be awarded to a new student every year in perpetuity. The first scholarship will be awarded one year from now. The discount rate is 7%.

Required:

- a.) How much would you need to donate today to fund the scholarship?
- b.) Suppose you wished for the scholarship to commence 5 years from today. How much would you need to donate today to fund the scholarship?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/Yod422hHNdY>

3-13B – Present Value of a Perpetuities

You wish to start a scholarship that will award the winning student with \$5,000 each year. The scholarship will be awarded to a new student every year in perpetuity. The first scholarship will be awarded one year from now. The discount rate is 5%.

Required:

- a.) How much would you need to donate today to fund the scholarship?
- b.) Suppose you wished for the scholarship to commence 10 years from today. How much would you need to donate today to fund the scholarship?

Members-only Video Walkthrough:

<https://youtu.be/UOdlwf45OQ>

3-14A – Perpetuities

Investco. is selling a contract that pays \$1,000 monthly in perpetuity. The contract is priced at \$75,000.

Required:

Compute the monthly return, the APR, and the EAR of this investment.

Members-only Video Walkthrough:

<https://youtu.be/dsxyb7q13rU>

3-14B – Perpetuities

Smithco. is selling a contract that pays \$5,000 monthly in perpetuity. The contract is priced at \$600,000.

Required:

Compute the monthly return, the APR, and the EAR of this investment.

Members-only Video Walkthrough:

https://youtu.be/hxaiPS_1Kl4

3-15A – FV of an Annuity

Starting at the end of this year, you intend to make yearly contributions of \$3,000 to your retirement savings. The account earns 10% interest compounded annually.

Required:

- a.) Calculate the value of your retirement account in 25 years.
- b.) If you made the first deposit today (rather than at the end of the year) how valuable would your retirement account be in 25 years?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/3vRjbdx3qx0>

3-15B – FV of an Annuity

Starting at the end of this year, you will make annual deposits of \$5,000 into a retirement account. The account earns 8% interest compounded annually.

Required:

- a.) Calculate the value of your retirement account in 35 years.
- b.) If you made the first deposit today (rather than at the end of the year) how valuable would your retirement account be in 35 years?

Members-only Video Walkthrough:

https://youtu.be/42Sg9KGUR_Y

3-16A – PV of an Annuity

You won a \$50 million lump sum lottery prize. Knowing that you are not good with money, and are likely to waste it, you decide to buy an annuity which will pay \$100,000 per year for the next 40 years (starting one year from now). Your logic is that even if you blow the rest of the money, having a guaranteed \$100,000 per year would be sensible. The current interest rate is 4% annually.

Required:

How much money do you need to deposit into the annuity today to meet your annual requirement of \$100,000 over the next 40 years?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/P6Mlwcb9vRU>

3-16B – PV of an Annuity

You have just sold your small house in Vancouver, BC, Canada for \$2,700,000. You move to a cheaper real estate market spending \$500,000 on a condo and you pocket the rest.

You decide you want to be “set for life” and would like an annual salary of \$120,000 for the next 50 years. You wish to buy an annuity. You will use a 6% interest rate for calculations.

Required:

How much money do you need to deposit into the annuity today to meet your requirement?

Members-only Video Walkthrough:

<https://youtu.be/5MXCYI8R09I>

3-17A – Annuity Due

Your company finances a new piece of equipment with a price of \$250,000. The contract calls for monthly payments for the next 48 months starting today (it's an annuity due). The interest rate is 11.5% APR.

Required:

Calculate the monthly payment.

FREE VIDEO WALKTHROUGH:

https://youtu.be/p3DTV6ACQ_8

3-17B – Annuity Due

You wish to finance the purchase of a new truck. The value of the truck is \$45,000. You will make 72 monthly payments starting today (it's an annuity due). The APR is 7.0%.

Required:

Calculate the monthly payment.

Members-only Video Walkthrough:

<https://youtu.be/6vE-G6kChdg>

3-18A – Multiple Cash Flows

You are the agent for a pro athlete. She is a free agent and has been offered two contracts with similar quality teams, the cities are equally attractive to her - her decision will be purely financial.

The Los Angeles Contract

\$15,000 per month for the next 3 years.

The New York Contract

A \$100,000 signing bonus with \$11,000 per month over the next 3 years.

Required:

- a) Assuming a 6% interest rate compounded monthly, which offer should she take?
- b) What is the financial difference between the two offers?

Members-only Video Walkthrough:

<https://youtu.be/CuoqR57hN-0>

3-18B – Multiple Cash Flows

You recently completed your CFA and have received offers from two investment banks:

Bank 1

\$10,000 per month for the next 2 years.

Bank 2

A \$20,000 signing bonus and \$8,000 per month for the next 2 years.

Required:

- a) Assuming an 9% interest rate compounded monthly, which offer should you take?
- b) What is the financial difference between the two offers?

Members-only Video Walkthrough:

<https://youtu.be/cHJFeJajTVA>

3-19A – Calculating the Number of Payments

You would like to save up for a new sports car. You have the cash flow to save \$250 per month starting at the end of this month. Your investments are expected to return 8% interest compounded monthly. The sports car will cost \$43,000.

Required:

How many months will it take for you to reach your goal?

Members-only Video Walkthrough:

<https://youtu.be/pVQAxzp4aR8>

3-19B – Calculating the Number of Payments

You are planning to save for your child's college fund and can afford to save \$200 per month starting at the end of this month. You expect your investments to return 10% compounded monthly.

Required:

How many months will it take for you to save \$100,000?

Members-only Video Walkthrough:

<https://youtu.be/r7F1RLfi-7I>

3-20A – Discount Interest Loan

Your friend “Loan Shark Bill” agrees to lend you \$10,000 at 10% interest requiring payment at the end of the year. Bill says, “I don’t do traditional loans, I’ve been burned too many times. I require the interest to be paid immediately. For me to lend you this money, you’ll need to pay the \$1,000 interest right now ($\$10,000 \times 10\% = \$1,000$). Don’t have the \$1,000? That’s ok, I’ll just take it out of the \$10,000 I’m lending you, and I’ll give you \$9,000 – then you gotta pay back the \$10,000 in one year – got it?”

Required:

Calculate the interest rate of this loan.

Members-only Video Walkthrough:

<https://youtu.be/iTNclAfeJ30>

3-20B – Discount Interest Loan

Your friend “Loan Shark Sarah” agrees to lend you \$500 at 15% interest requiring payment at the end of the year. Sarah says, “I’ll make this deal better for you, so we don’t have to worry about interest at the end, I’ll just take it out now – it’s \$75 of interest, right? I’ll give you \$425 today, taking the \$75 in interest and at the end of the year, you pay me back the \$500. Sound good?”

Required:

Calculate the interest rate of this loan.

Members-only Video Walkthrough:

<https://youtu.be/1585fulq8n0>

3-21A – Present Value Calculations

Today is your 16th birthday. Your parents give you an annuity that will pay \$10,000 per year for 10 years, but the annuity does not begin until you turn 21, with the first payment coming at the end of that year. A discount rate of 8% compounded annually applies.

Required:

What is the value of the annuity on your 21st birthday? On your 18th birthday? Today?

Members-only Video Walkthrough:

<https://youtu.be/qoQFYOE1vI>

3-21B – Present Value Calculations

You own a 4-year annuity that is scheduled to make payments of \$2,000 every three months (16 payments in total). The payments will start seven years and three months from today. The discount rate is 10%, compounded quarterly:

Required:

What is the value of the annuity in 7 years? In 2 years? Today?

Members-only Video Walkthrough:

<https://youtu.be/BtF-q2byuJQ>

3-22A – Annuity with Variable Interest Rates

You have an annuity that is set to deliver payments of \$10,000 every six months for the next ten years, starting half a year from today. This means there will be 20 payments in total. For the initial three years, the interest rate is set at 8% compounded semiannually, while for the final seven years, the rate is 6% compounded semiannually.

Required:

What is the value of this annuity today?

Members-only Video Walkthrough:

<https://youtu.be/gc2538A5II0>

3-22B – Annuity with Variable Interest Rates

You have an annuity that will pay you \$500 each month for the next five years, with the first payment coming at the end of this month (totaling 60 payments). The interest rate for the first three years is 12% compounded monthly, and for the last two years, it's 7% compounded monthly.

Required:

What is the value of the annuity today?

Members-only Video Walkthrough:

<https://youtu.be/XP0aZgNNM6g>

3-23A – Computing APR and EAR

You are offered a one-year loan of \$50,000. According to the terms, you'll make monthly repayments of \$4,583.33 for the year. Your friend does some math: “\$4,583.33 per month means you’ll repay \$55,000 in total, so you’re borrowing \$50,000 and repaying \$55,000 – that’s \$5,000 of interest on a \$50,000 loan, so you’re paying a 10% interest rate.” – your friend is right about the amount: $\$4,583.33 \times 12 = \$55,000$, but you don’t think he’s right about the interest rate.

Required:

Calculate the Annual Percentage Rate (APR) and Effective Annual Rate (EAR) for this loan.

Members-only Video Walkthrough:

https://youtu.be/9HCwx_R15o8

3-23B – Computing APR and EAR

You are offered a one-year loan of \$10,000. According to the terms, you'll make monthly repayments of \$875 for the year. Your friend does some math: “\$875 per month means you’ll repay \$10,500 in total, so you’re borrowing \$10,000 and repaying \$10,500 – that’s \$500 of interest. Since you’re repaying \$500 and you borrowed \$10,000, that’s a 5% interest rate.” – your friend is right about the amount: $\$875 \times 12 = \$10,500$, but you don’t think she’s right about the interest rate.

Required:

Calculate the Annual Percentage Rate (APR) and Effective Annual Rate (EAR) for this loan.

Members-only Video Walkthrough:

<https://youtu.be/dYpeb4SAXWc>

3-24A – Loan Amortization Schedule

You borrow \$100,000 on a 10-year loan. The loan has a 9% annual interest rate and requires you to make equal annual payments.

Required:

Prepare an amortization schedule for the first three years of the loan.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/aqCE6nVhP5U>

3-24B – Loan Amortization Schedule

You borrow \$40,000 on a 5-year loan that carries an annual interest rate of 12%. The loan mandates equal yearly repayments.

Required:

Prepare an amortization schedule for the first three years of the loan.

Members-only Video Walkthrough:

<https://youtu.be/4PG0qW2I43Y>

Module 4: Bonds

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/MvoQytQtkbg>

4-1A – Bond Price over Time

You are considering buying a 10-year \$1,000 bond with a coupon rate of 9 percent and semi-annual coupons. Its yield to maturity is 8 percent.

Required:

- a) Calculate price of the bond today.
- b) Assuming no change in interest rates, calculate the price of the bond in 5 years.
- c) Assuming no change in interest rates, calculate the price of the bond in 9 years.
- d) Explain the movement in the bond price.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/9DeBOTcFzsM>

4-1B – Bond Price over Time

You are considering buying a 5-year \$1,000 bond with a coupon rate of 10 percent and semi-annual coupons. Its yield to maturity is 12 percent.

Required:

- a) Calculate price of the bond today.
- b) Assuming no change in interest rates, calculate the price of the bond in 2 years.
- c) Assuming no change in interest rates, calculate the price of the bond in 4 years.
- d) Explain the movement in the bond price.

Members-only Video Walkthrough:

<https://youtu.be/d4OShApWz6E>

4-2A – The impact of changing interest rates

You are considering two *nearly* identical bonds - Bond Short and Bond Long. Both have par values of \$1,000 and are both priced at par value of \$1,000. They both have the same coupon rate – 10%, and since both are priced at par value, the yield to maturity on both is also 10%. Both bonds pay interest semiannually. The key difference between the two bonds is the time to maturity: Bond Short matures in 5 years, while Bond Long matures in 20 years.

Required:

- a) If interest rates increase by 1%, what will be the change in the price of Bond Short? Bond Long? (State your answer both in dollars and in percentage terms.)
- b) Which bond is more impacted by a change in interest rates? Why?

FREE VIDEO WALKTHROUGH:

https://youtu.be/dNH1Diz_MtU

4-2B – The impact of changing interest rates

You are considering two *nearly* identical bonds, Bond Sooner, and Bond Later. Both have coupon rates of 5 percent, and both pay interest semiannually. The par value of both bonds is \$1,000 and they are both priced at par value (\$1,000) – because of this, we can infer the yield to maturity is the same as the coupon rate – 5%. The key difference between the bonds is that Bond Sooner has 2 years to maturity, and Bond Later has 10 years to maturity.

Required:

- a) If interest rates decrease by 1%, what will be the change in the price of Bond Sooner? Bond Later? (State your answer both in dollars and in percentage terms.)
- b) Which bond is more impacted by a change in interest rates? Why?

Members-only Video Walkthrough:

<https://youtu.be/IK-suIJbf0>

4-3A – Interest Rate Risk

You are considering two *nearly* identical bonds, Bond High, and Bond Low. Both have par value of \$1,000, both have 10 years to maturity, both pay interest semiannually, and both have a yield to maturity of 8 percent. The key difference between the bonds is their coupon rate. Bond High has a coupon rate of 12 percent; Bond Low has a coupon rate of 4 percent.

Required:

- a) Compute the price of each bond.
- b) If interest rates decrease by 1%, what will be the change in the price of Bond High? Bond Low? (State your answer both in dollars and in percentage terms.)
- c) Which bond is more impacted by a change in interest rates? Why?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/wMCJTjnXYxg>

4-3B – Interest Rate Risk

You are considering two *nearly* identical bonds, Bond Generous, and Bond Frugal. They both have a par value of \$1,000, both mature in 15 years, both pay interest semiannually, and both have a yield to maturity of 6 percent. They pay interest semiannually. However, Bond Generous has a higher coupon rate of 9 percent, while Bond Frugal has a coupon rate of 4 percent.

Required:

- a) Compute the price of each bond.
- b) If interest rates increase by 2%, what will be the change in the price of Bond Generous? Bond Frugal? (State your answer both in dollars and in percentage terms.)
- c) Which bond is more impacted by a change in interest rates? Why?

Members-only Video Walkthrough:

<https://youtu.be/zpnpHpT0YV8>

4-4A – Calculating Bond Yields

You buy one bond with a 5% coupon and 12 years to maturity. The bond has par value of \$1,000 and pays interest semiannually. You paid \$954.30 for the bond.

Required:

- a) Calculate the current yield.
- b) Calculate the yield to maturity.
- c) Calculate the effective annual yield.

Members-only Video Walkthrough:

<https://youtu.be/1gvyfwpb62l>

4-4B – Calculating Bond Yields

You buy one bond with an 8% coupon and 8 years to maturity. The bond has par value of \$1,000 and pays interest semiannually. You paid \$1125.60 for the bond.

Required:

- a) Calculate the current yield.
- b) Calculate the yield to maturity.
- c) Calculate the effective annual yield.

Members-only Video Walkthrough:

<https://youtu.be/Aq-ncWEUWgY>

4-5A – Zero Coupon Bond Calculations

Smith Construction wants to raise \$10,000,000 and is considering issuing 10-year zero-coupon bonds with a face value of \$1,000. The bonds would be priced to have an annual yield to maturity of 9 percent.

Required:

- a.) What is the issue price of these zero-coupon bonds? How many will be needed to raise \$10,000,000?
- b.) If the company instead issues 10-year annual coupon bonds at par (\$1,000) with a coupon rate of 9%, how many coupon bonds were needed to raise the \$10,000,000.
- c.) What will the final payment be if a coupon bond is issued? What about the zero-coupon bond?

Members-only Video Walkthrough:

<https://youtu.be/qxDxfdYctZ0>

4-5B – Zero Coupon Bond Calculations

Adanac Construction wants to raise \$2,000,000 and is considering issuing 20-year zero-coupon bonds with a face value of \$1,000. The bonds would be priced to have an annual yield to maturity of 6 percent.

Required:

- a.) What is the issue price of these zero-coupon bonds? How many will be needed to raise \$2,000,000?
- b.) If the company instead issues 20-year annual coupon bonds at par (\$1,000) with a coupon rate of 6%, how many coupon bonds were needed to raise the \$2,000,000.
- c.) What will the final payment be if a coupon bond is issued? What about the zero-coupon bond?

Members-only Video Walkthrough:

https://youtu.be/j_Se_G8tLVg

4-6A – Treasury Bond Calculations

The following are Treasury bond quotes. Treasury bonds have a face value of \$1,000 and make semi-annual coupon payments.

Maturity	Coupon	Ask	Asked Yield
5 years from today	???	89.030	3.6716
10 years from today	3.500	???	3.524
20 years from today	3.875	99.226	???

Required:

Fill in the missing information in the table above.

Members-only Video Walkthrough:

<https://youtu.be/ScXf2FRlgOE>

4-6B – Treasury Bond Calculations

The following are Treasury bond quotes. Treasury bonds have a face value of \$1,000 and make semi-annual coupon payments.

Maturity	Coupon	Ask	Asked Yield
5 years from today	???	99.960	2.200
10 years from today	2.300	???	2.220
30 years from today	1.800	89.100	???

Required:

Fill in the missing information in the table above.

Members-only Video Walkthrough:

<https://youtu.be/gaT6lwuQ3pQ>

4-7A – Corporate Bond Calculations

All bonds in the table below make semi-annual coupon payments and have face value of \$1,000.

Company	Coupon	Maturity	Price	Yield
Starshot Company	???	10 years from today	92.73	6.5
Ascendancy Inc.	7.50	15 years from today	???	7.2
Silverline Ventures	9.20	20 years from today	117.468	???

Required:

Calculate the amounts missing from the table.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/jnYXAQtC4jM>

4-7B – Corporate Bond Calculations

All bonds in the table below make semi-annual coupon payments and have face value of \$1,000.

Company	Coupon	Maturity	Price	Yield
Lighthouse Company	???	5 years from today	95.842	7.0
Pioneer Inc.	9.00	10 years from today	???	7.5
HyperDrive Ventures	12.00	25 years from today	129.643	???

Required:

Calculate the amounts missing from the table.

Members-only Video Walkthrough:

<https://youtu.be/E2Q0cIP57lQ>

4-8A – Approximate Real Rate of Interest vs Exact Real Rate of Interest

Assume United States Treasury Bills are currently paying 4.5% and the inflation rate is 3.8%.

Required:

- a.) What is the nominal rate?
- b.) What is the approximate real rate?
- c.) What is the exact real rate?

Members-only Video Walkthrough:

<https://youtu.be/J--h0Ayd2n0>

4-8B – Approximate Real Rate of Interest vs Exact Real Rate of Interest

Assume United States Treasury Bills are currently paying 4.2% and the inflation rate is 3.0%.

Required:

- a.) What is the nominal rate?
- b.) What is the approximate real rate?
- c.) What is the exact real rate?

Members-only Video Walkthrough:

<https://youtu.be/S0zLoPptOWU>

Module 5: The Dividend Discount Model

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/1TYRs38G5ZQ>

5-1A – Dividend Discount Model

Suppose Benson Industries has just paid a \$5 per share dividend, and it has announced that it plans to increase the dividend by 3 percent per year going forward. The company's equity cost of capital is 10 percent.

Required:

- a.) What is the price of the stock today?
- b.) What will the price be in 5 years?
- c.) What will the price be in 20 years?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/v79aUTNc3OU>

5-1B – Dividend Discount Model

Oakwood Solutions has just paid a \$10 per share dividend, and it has announced that it plans to increase the dividend by 5 percent per year going forward. The company's equity cost of capital is 12 percent.

Required:

- a.) What is the price of the stock today?
- b.) What will the price be in 2 years?
- c.) What will the price be in 10 years?

Members-only Video Walkthrough:

<https://youtu.be/Mb1bRSVXghM>

5-2A – Dividend Discount Model - Calculating the Required Return

Stratford Partners will pay a dividend of \$4 per share next year. The dividends are expected to increase by 5% per year going forward. The stock price today is \$50.

Required:

- a) Calculate the equity cost of capital.
- b) Calculate the dividend yield.

FREE VIDEO WALKTHROUGH:

https://youtu.be/xIG5_f_iFD0

5-2B – Dividend Discount Model - Calculating the Required Return

Ashford Innovations will pay a dividend of \$6 per share next year. The dividends are expected to increase by 3% per year going forward. The stock price today is \$80.

Required:

- a) Calculate the equity cost of capital.
- b) Calculate the dividend yield.

Members-only Video Walkthrough:

<https://youtu.be/la7ajxAfw6g>

5-3A – Stock Values

Westbrook Technologies is a mining operation that pays a constant dividend of \$15 per share. After 10 years, the company is expected to shut down and retire the mine. At that point, the company will stop paying the dividends (and stop operating). The required rate of return on the stock is 14%.

Required:

Calculate the price of the stock today?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/vxZOTORBe3w>

5-3B – Stock Values

Sterling Associates is a natural resource company that pays a constant dividend of \$22 per share. After 15 years, the company will cease operations and will stop paying the dividends. The required rate of return on the stock is 13%.

Required:

Calculate the price of the stock today?

Members-only Video Walkthrough:

<https://youtu.be/ffpdwAcDmx8>

5-4A – Voting for the Board of Directors

Evergreen Creations will soon be running an election for four seats on its board of directors. The company has 100,000 shares outstanding, and the share price is \$20 per share. Your preferred candidate, Susan Samson, is extremely unpopular and unlikely to win a seat.

Required:

Assuming you own no stock today, how much will it cost you to gain enough stock to “buy the seat” if the company uses straight voting (assuming no one else votes for your preferred candidate)? If the company uses cumulative voting?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/oIXANuWQQvg>

5-4B – Voting for the Board of Directors

Kingsley Ventures will soon be running an election for seven seats on its board of directors. The company has 2,000,000 shares outstanding, and the share price is \$10 per share. Your preferred candidate, John Jenkins, is extremely unpopular and unlikely to win a seat.

Required:

Assuming you own no stock today, how much will it cost you to gain enough stock to “buy the seat” if the company uses straight voting (assuming no one else votes for your preferred candidate)? If the company uses cumulative voting?

Members-only Video Walkthrough:

<https://youtu.be/hUKkYryJcD4>

5-5A – Using PE Ratio to Estimate the Stock Price

Cascade Dynamics has earnings per share of \$4.75. You notice the PE for comparable companies is 6.1.

Required:

Given this (limited) information, estimate the stock price.

Members-only Video Walkthrough:

<https://youtu.be/k03sHNTdVAE>

5-5B – Using PE Ratio to Estimate the Stock Price

Meadowbrook Holdings has earnings per share of \$11.00. You notice the PE for comparable companies is 4.6.

Required:

Given this (limited) information, estimate the stock price.

Members-only Video Walkthrough:

https://youtu.be/hKlaAWi_iPI

5-6A – Using PE Ratio to Estimate the Stock Price

Amberhill Solutions has the following data available relating to its stock price and earnings per share:

	Year 1	Year 2	Year 3
Stock Price	\$72.00	\$85.50	\$86.45
Earnings per Share	4.00	4.50	4.75

In year 4, EPS is expected to grow by 10%.

Required:

If we project the PE ratio for year 4 to be the average of years 1, 2 and 3, compute the expected stock price at the end of year 4.

Members-only Video Walkthrough:

<https://youtu.be/al15fMqyr9k>

5-6B – Using PE Ratio to Estimate the Stock Price

Riverstone Industries has the following data available relating to its stock price and earnings per share:

	Year 1	Year 2	Year 3
Stock Price	\$25.20	\$30.80	\$30.48
Earnings per Share	2.10	2.20	2.40

In year 4, EPS is expected to grow by 5%.

Required:

If we project the PE ratio for year 4 to be the average of years 1, 2 and 3, compute the expected stock price at the end of year 4.

Members-only Video Walkthrough:

<https://youtu.be/udIIVmSAOgU>

5-7A – Uneven dividends

Barrington Enterprises is a focused-on growth. The company is not expected to pay dividends for the next 10 years. At the end of year 11 the company will pay a \$10 dividend (per share) and from there it will increase the dividend by 4% per year. The equity cost of capital is 17%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/YAcE7rnGhU0>

5-7B – Uneven dividends

Prestwick Systems is a high-growth company in a competitive industry. The company is not expected to pay dividends for the next 5 years. At the end of year 6 the company will pay a \$15 dividend (per share) and from there it will increase the dividend by 3% per year. The equity cost of capital is 9%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/bglhhZebH0I>

5-8A – Uneven dividends

Orion Global has announced an unusual dividend schedule. One year from now it will pay a \$10 dividend. Two years from now it will pay an \$8 dividend. Three years from now it will pay a \$5 dividend. From there, it promises to grow dividends by 6% annually in perpetuity.

Investors expect a rate of return on this stock to be 9%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/nVPMV4rBkAg>

5-8B – Uneven dividends

Redwood Alliance has announced its upcoming dividend schedule. One year from now it will pay a \$12 dividend. Two years from now it will pay an \$8 dividend. Three years from now it will pay a \$4 dividend. From there, it promises to grow dividends by 4% annually in perpetuity.

Investors expect a rate of return on this stock to be 12%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/rgZ8xCG2-lg>

5-9A – Supernormal Growth

Ravenswood Ltd. recently paid a \$2 dividend per share. Dividends are expected to grow by 50% per year for the next two years and then by 20% per year for the two following years. Following that, dividends are expected to grow at 5% per year in perpetuity.

Investors expect a rate of return on this stock to be 12%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/WMc2zTuq2II>

5-9B – Supernormal Growth

Newbridge Strategies recently paid a \$4 dividend per share. Dividends are expected to grow by 30% per year for the next three years and then by 10% during the following year (1 year). Following that, dividends are expected to grow at 3% per year in perpetuity.

Investors expect a rate of return on this stock to be 12%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/8iXUbYrhczc>

5-10A – Negative Growth

Marlowe Technologies just paid a dividend of \$15. Management expects to reduce the dividend by 6% per year indefinitely. Investors expect a rate of return on this stock to be 7%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/QS6mOVZnPtY>

5-10B – Negative Growth

Ainsworth Group just paid a dividend of \$8. Management expects to reduce the dividend by 5% per year indefinitely. Investors expect a rate of return on this stock to be 11%.

Required:

Calculate the current share price.

Members-only Video Walkthrough:

<https://youtu.be/mmtbL6Cq2TY>

Module 6: Payback Period, IRR and Net Present Value

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/GrE7zUANdzs>

6-1A – Payback and discounted payback

Horizon Strategies Inc. is considering a project with the following cash flows:

Year	Cash Flow
0 (Today)	-60,000
1	20,000
2	30,000
3	15,000
4	8,000
5	4,000

Required:

- a.) Compute the payback period.
- b.) Assuming a 10% discount rate, compute the discounted payback for the project.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/NAbHY5AYH8o>

6-1B – Payback and discounted payback

Ascend Enterprises is considering a project with the following cash flows:

Year	Cash Flow
0 (Today)	-50,000
1	4,000
2	6,000
3	15,000
4	20,000
5	80,000

Required:

- a.) Compute the payback period.
- b.) Assuming a 10% discount rate, compute the discounted payback for the project.

Members-only Video Walkthrough:

<https://youtu.be/A9wUA80gXck>

6-2A – Average Accounting Return (AAR)

Apex Solutions is debating whether to invest in a new piece of equipment with an initial cost of \$2,000,000. The equipment has a residual value of zero and would be depreciated on a straight-line basis over its five-year useful life. The equipment is expected to generate profits (net income after taxes and depreciation) as follows:

Year	Net Income
Year 1	\$20,000
Year 2	40,000
Year 3	60,000
Year 4	50,000
Year 5	30,000

Required:

Based on the information above, compute the AAR.

Members-only Video Walkthrough: <https://youtu.be/LzQe1YGqNHU>

6-2B – Average Accounting Return (AAR)

Innovatech Enterprises is debating whether to build a new factory with an initial cost of \$11,000,000. The factory has a residual value of zero and would be depreciated on a straight-line basis over its ten-year useful life. The factory is expected to generate profits (net income after taxes and depreciation) as follows:

Year	Net Income
Year 1	\$500,000
Year 2	600,000
Year 3	800,000
Year 4	800,000
Year 5	900,000
Year 6	1,000,000
Year 7	1,100,000
Year 8	1,000,000
Year 9	900,000
Year 10	600,000

Required:

Based on the information above, compute the AAR.

Members-only Video Walkthrough: <https://youtu.be/JFCz6wmd62w>

6-3A – Internal Rate of Return (IRR) and Net Present Value (NPV)

Global Vision Partners has a potential investment with an initial cost of \$500,000 and the following projected cash flows:

Year	Cash Flow
Year 1	120,000
Year 2	160,000
Year 3	200,000
Year 4	180,000

Required:

- Assume the required return is 6%, compute net present value.
- Assume the required return is 20%, compute net present value.
- Calculate the IRR.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/kD16z9biuSs>

6-3B – Internal Rate of Return (IRR) and Net Present Value (NPV)

Quest West Solutions has a potential investment with an initial cost of \$2,200,000 and the following projected cash flows:

Year	Cash Flow
Year 1	800,000
Year 2	960,000
Year 3	1,100,000

Required:

- Assume the required return is 4%, compute net present value.
- Assume the required return is 22%, compute net present value.
- Calculate the IRR.

Members-only Video Walkthrough:

<https://youtu.be/unbx59U6Txo>

6-4A – Internal Rate of Return (IRR) and Net Present Value (NPV)

Pinnacle Company is considering a project that will cost \$50,000 today it expects will provide cash flows of \$10,000 per year for the next 8 years.

Required:

- a.) Calculate the net present value assuming a required rate of return of 6%.
- b.) Calculate the net present value assuming a required rate of return of 30%.
- c.) Calculate the internal rate of return.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/pDcXh3dBjil>

6-4B – Internal Rate of Return (IRR) and Net Present Value (NPV)

Momentum Management is considering a project that will cost \$200,000 today it expects will provide cash flows of \$50,000 per year for the next 6 years.

Required:

- a.) Calculate the net present value assuming a required rate of return of 9%.
- b.) Calculate the net present value assuming a required rate of return of 25%.
- c.) Calculate the internal rate of return.

Members-only Video Walkthrough:

<https://youtu.be/RtoMifhO4ho>

6-5A – Crossover Rate

Evolve Management is debating between projects – the company does not have the capacity to do both and must choose the best option (or neither). Cash flows for the projects are laid out in the table below:

Year	Project X	Project Y
0	-\$340,000	-\$340,000
1	200,000	160,000
2	175,000	170,000
3	155,000	210,000

Required:

- a.) Compute the IRR of each project.
- b.) Compute the NPV of each project assuming a discount rate of 10%.
- c.) Calculate the crossover rate (the discount rate where you'd be indifferent as to which project should be selected).
- d.) If the interest rate increased above your answer in part c.), which project would you prefer? Why?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/6BoGKUm6Df0>

6-5B – Crossover Rate

Milestone Consulting is debating between two projects – the company does not have the capacity to do both and must choose the best option (or neither). Cash flows for the projects are laid out in the table below:

Year	Project 1	Project 2
0	-\$100,000	-\$100,000
1	20,000	80,000
2	40,000	30,000
3	75,000	20,000

Required:

- a.) Compute the IRR of each project.
- b.) Compute the NPV of each project assuming a discount rate of 12%.
- c.) Calculate the crossover rate (the discount rate where you'd be indifferent as to which project should be selected).
- d.) If the interest rate increased above your answer in part c.), which project would you prefer? Why?

Members-only Video Walkthrough:

<https://youtu.be/gSH1CABwKgs>

6-6A – IRR, NPV and Crossover Rate

Elevate Enterprises is debating between investing in two separate projects, both have an initial cost of \$75,000. The company does not have the capacity to do both and must choose the best option (or neither if NPV or IRR is negative). Cash flows for the projects are laid out in the table below:

Year	Project A	Project B
1	40,000	10,000
2	30,000	20,000
3	20,000	30,000
4	10,000	45,000

Required:

- a.) Calculate the IRR of both projects. Which should be prioritized?
- b.) Assuming a 9% required rate of return, calculate the NPV of each project.
- c.) Calculate the discount rate where you'd be indifferent as to which project should be selected.
(i.e., the crossover rate)
- d.) Assuming you can only select ONE project:
 - i.) Calculate the range of discount rates where you'd recommend choosing Project A.
 - ii.) Calculate the range of discount rates where you'd recommend choosing Project B.
 - iii.) Calculate the range of discount rates where you'd reject both projects.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/B2WqW2lOJeE>

6-6B – IRR, NPV and Crossover Rate

Thrive Business Solutions is debating between investing in two separate projects, both have an initial cost of \$900,000. The company does not have the capacity to do both and must choose the best option (or neither if NPV or IRR is negative). Cash flows for the projects are laid out in the table below:

Year	Project Y	Project Z
1	500,000	200,000
2	400,000	400,000
3	300,000	700,000

Required:

- a.) Calculate the IRR of both projects. Which should be prioritized?
- b.) Assuming a 10% required rate of return, calculate the NPV of each project.
- c.) Calculate the discount rate where you'd be indifferent as to which project should be selected.
(i.e., the crossover rate)
- d.) Assuming you can only select ONE project:
 - i.) Calculate the range of discount rates where you'd recommend choosing Project Y.
 - ii.) Calculate the range of discount rates where you'd recommend choosing Project Z.
 - iii.) Calculate the range of discount rates where you'd reject both projects.

Members-only Video Walkthrough:

<https://youtu.be/42f27Hb4bbI>

6-7A – Profitability Index (PI)

Pathway Partners is debating between investing in two separate projects – the company does not have the capacity to do both and must choose the best option (or neither). Cash flows for the projects are laid out in the table below:

Year	Project A	Project B
0	-\$200,000	-\$50,000
1	90,000	30,000
2	84,000	20,000
3	82,000	15,000

Required:

- a.) Assuming a 10% required rate of return and the company uses the profitability index to guide its decisions, which project should be prioritized?
- b.) Assuming a 10% required rate of return, calculate the NPV of each project. Based on NPV, which project should be prioritized?
- c.) Why are the answers different?

Members-only Video Walkthrough:

<https://youtu.be/YGCj2F0NL0U>

6-7B – Profitability Index (PI)

Evolve Management is debating between investing in two separate projects – the company does not have the capacity to do both and must choose the best option (or neither). Cash flows for the projects are laid out in the table below:

Year	Project X	Project Y
0	-\$20,000	-\$100,000
1	11,000	60,000
2	9,000	40,000
3	7,000	32,000

Required:

- a.) Assuming a 12% required rate of return and the company uses the profitability index to guide its decisions, which project should be prioritized?
- b.) Assuming a 12% required rate of return, calculate the NPV of each project. Based on NPV, which project should be prioritized?
- c.) Why are the answers for different?

Members-only Video Walkthrough:

<https://youtu.be/iAaXABE7vDI>

6-8A – Comprehensive Calculations

Vertex Business is debating between two projects – the company does not have the capacity to do both and must choose the best option (or neither). The company's required rate of return is 19%. Cash flows for the projects are laid out in the table below:

Year	Project 1	Project 2
0	-\$700,000	-\$240,000
1	90,000	110,000
2	180,000	100,000
3	190,000	80,000
4	800,000	70,000

Required:

- a.) Compute the payback period of each project. Which is better?
- b.) Compute the NPV of each project. Which is better?
- c.) Compute the profitability index of each project. Which is better?
- d.) Compute the IRR of each project. Which is better?
- e.) Based on your answers above, which project would you choose? Why?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/cxTUsN2bFZI>

6-8B – Comprehensive Calculations

Horizons Business is debating between two projects – the company does not have the capacity to do both and must choose the best option (or neither). The company's required rate of return is 10%. Cash flows for the projects are laid out in the table below:

Year	Project A	Project B
0	-\$100,000	-\$200,000
1	60,000	20,000
2	35,000	40,000
3	25,000	50,000
4	10,000	210,000

Required:

- a.) Compute the payback period of each project. Which is better?
- b.) Compute the NPV of each project. Which is better?
- c.) Compute the profitability index of each project. Which is better?
- d.) Compute the IRR of each project. Which is better?
- e.) Based on your answers above, which project would you choose? Why?

Members-only Video Walkthrough:

https://youtu.be/k_NUGF93Krw

Module 7: Project Analysis

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/5c8BCe5HloE>

7-1A – Calculating Operating Cash Flow

Consider a potential project with the following information:

Sales	\$200,000
Costs	120,000
Depreciation	30,000

The company's tax rate is 20%.

Required:

- Prepare a pro forma income statement.
- Calculate Operating Cash Flow.
- Calculate the depreciation tax shield.
- Using the depreciation tax shield, recalculate Operating Cash Flow.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/N-Vb31RSz0U>

7-1B – Calculating Operating Cash Flow

Consider a potential project with the following information:

Sales	\$1,500,000
Costs	950,000
Depreciation	200,000

The company's tax rate is 25%.

Required:

- Prepare a pro forma income statement.
- Calculate Operating Cash Flow.
- Calculate the depreciation tax shield.
- Using the depreciation tax shield, recalculate Operating Cash Flow.

Members-only Video Walkthrough:

<https://youtu.be/5JG0jM7Z3bw>

7-2A – Salvage Value

You purchase an asset for \$150,000 that will be depreciated straight-line to a value of zero over its five-year useful life. The asset will be used in a four-year project, and at the end of the project is expected to be sold for \$50,000. The company's relevant tax rate is 30%.

Required:

What is the after-tax cash flow from selling this asset?

Members-only Video Walkthrough:

https://youtu.be/QWKS_E_2O33k

7-2B – Salvage Value

You purchase an asset for \$500,000 that will be depreciated straight-line to a value of zero over its eight-year useful life. The asset will be used in a six-year project, and at the end of the project is expected to be sold for \$150,000. The company's relevant tax rate is 20%.

Required:

What is the after-tax cash flow from selling this asset?

Members-only Video Walkthrough:

<https://youtu.be/30LL9gLTl8M>

7-3A – Calculating OCF and NPV

Your company is considering a 4-year project that involves the purchase of a fixed asset for \$2,000,000. The company will use straight-line depreciation and will depreciate the asset to zero over the next four years, and the company does not expect to be able to sell the asset once the project is complete. The project will generate annual sales of \$1,400,000, and will have annual costs of \$750,000. The company's tax rate is 20%.

Required:

- a) Compute the OCF for the project.
- b) If the required rate of return for the project is 9%, what is the NPV?
- c) Assume the project requires an initial investment in net working capital of \$200,000 and the fixed asset can be sold for \$250,000 at the end of the project. Compute cash flows for each year of the project and compute the NPV.

FREE VIDEO WALKTHROUGH:

https://youtu.be/_pdMX3q5LzU

7-3B – Calculating OCF and NPV

Your company is considering a 3-year project that involves the purchase of a fixed asset for \$3,000,000. The company will use straight-line depreciation and will depreciate the asset to zero over the next three years, and the company does not expect to be able to sell the asset once the project is complete. The project will generate annual sales of \$2,000,000, and will have annual costs of \$800,000. The company's tax rate is 15%.

Required:

- a) Compute the OCF for the project.
- b) If the required rate of return for the project is 11%, what is the NPV?
- c) Assume the project requires an initial investment in net working capital of \$350,000 and the fixed asset can be sold for \$200,000 at the end of the project. Compute cash flows for each year of the project and compute the NPV.

Members-only Video Walkthrough:

https://youtu.be/0kaK_WeoJss

7-4A – Calculating Project NPV

Ace Company is contemplating purchasing a new project where it speeds up production to save costs with a new efficient piece of equipment. The cost of the equipment is \$75,000. The cost will be depreciated to zero on a straight-line basis over the project's five-year life. At the end of 5-years the asset will be sold for \$10,000 cash. The asset will save the company \$20,000 per year in operating costs and will require an initial increase in working capital of \$5,000. The discount rate for the project is 9% and the tax rate is 20%.

Required:

Compute the NPV of this asset.

Members-only Video Walkthrough:

<https://youtu.be/8CokDpdVVXE>

7-4B – Calculating Project NPV

Queen Company is contemplating purchasing a new efficient asset to support a cost-cutting project at the firm. The cost of the asset is \$450,000. The cost will be depreciated to zero on a straight-line basis over the project's four-year life. At the end of 4-years the asset will be sold for \$100,000 cash. The asset will save the company \$140,000 per year in operating costs and will require an initial increase in working capital of \$50,000. The discount rate for the project is 12% and the tax rate is 25%.

Required:

Compute the NPV of this asset.

Members-only Video Walkthrough:

https://youtu.be/PB_wILz9m1A

7-5A – Calculating Project NPV of a project that reduces costs

Your company is considering purchasing a new piece of equipment that will significantly increase efficiency and reduce costs. The equipment will cost \$400,000, it will be depreciated using the straight-line method to zero over its 4-year useful life. The equipment will be sold for \$20,000 at the end of 4 years. The reason for the purchase is the equipment will reduce other costs by \$130,000 per year and will reduce working capital needs by \$40,000. The company's tax rate is 20% and the company's required rate of return is 10% on this project.

Required:

- a.) Should the project be accepted?
- b.) If the annual savings was \$80,000, would we accept the project?
- c.) At what level of savings would we be indifferent as to whether or not the project would be accepted?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/7mVu3kWSVTo>

7-5B – Calculating Project NPV of a project that reduces costs

Your company is considering purchasing a new piece of equipment that will significantly increase efficiency and reduce costs. The equipment will cost \$750,000, it will be depreciated using the straight-line method to zero over its 5-year useful life. The equipment will be sold for \$50,000 at the end of 5 years. The reason for the purchase is the equipment will reduce other costs by \$200,000 per year and will reduce working capital needs by \$70,000. The company's tax rate is 25% and the company's required rate of return is 12% on this project.

Required:

- a.) Should the project be accepted?
- b.) If the annual savings was \$275,000, would we accept the project?
- c.) At what level of savings would we be indifferent as to whether or not the project would be accepted?

Members-only Video Walkthrough:

<https://youtu.be/snNWZnHidqk>

7-6A – Evaluating Projects of with Different Lengths

You are replacing some broken equipment and are deciding between these two machines:

	Machine A	Machine B
Fixed Asset Cost	\$420,000	\$650,000
Annual Operating Costs (pretax)	160,000	150,000
Depreciation Method	Straight-line to Zero	Straight-line to Zero
Useful Life	3 years	5 years
Salvage Value	25,000	40,000
Tax Rate	20%	20%
Discount Rate	10%	10%

Required:

- a.) Compute the Net Present Value of each machine.
- b.) Compute the equivalent annual cost for both machines.
- c.) Which machine is the better value? Why?

Members-only Video Walkthrough:

<https://youtu.be/kKNDoTq1Rk>

7-6B – Evaluating Projects of with Different Lengths

You are replacing some broken equipment and are deciding between these two machines:

	Machine X	Machine Y
Fixed Asset Cost	\$2,000,000	\$1,500,000
Annual Operating Costs (pretax)	500,000	450,000
Depreciation Method	Straight-line to zero	Straight-line to zero
Useful Life	5 years	3 years
Salvage Value	200,000	60,000
Tax Rate	25%	25%
Discount Rate	12%	12%

Required:

- a.) Compute the Net Present Value of each machine.
- b.) Compute the equivalent annual cost for both machines.
- c.) Which machine is the better value? Why?

Members-only Video Walkthrough:

https://youtu.be/RSbm_vGC5XU

7-7A – Bid Price

Digico Gaming has put out a request for proposal (RFP) asking for a company to supply it with 500,000 USB ports annually over the next 4 years – the USB ports are for use in their handheld gaming system. Your company makes USB ports, and the CFO has asked you to prepare a bid on the RFP. Winning this bid will require significant capital investments for your company as there are some custom elements to the RFP – your company will need to invest \$2,100,000 in fixed assets and you'll need to increase working capital by \$300,000. The fixed asset investment will be depreciated over the four-year life of the project down to zero. The assets will have salvage value of \$250,000. Your fixed production costs for this project will be \$400,000 per year and variable costs will be \$1.00 per unit. Your company's required rate of return for this project is 10% and the relevant tax rate is 20%.

Required:

Compute an appropriate bid price.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/AQYNuA4lvdc>

7-7B – Bid Price

TractorCo has put out a request for proposal (RFP) asking for a company to supply it with 100,000 fasteners annually over the next 5 years – they are unsatisfied with their current supplier and are looking for a new one, hence the request for bids. Your company can make these types of fasteners and the CFO has asked you to prepare a bid. Winning this bid will require significant capital investments for your company as there are some custom elements to the RFP – your company will need to invest \$500,000 in fixed assets and you'll need to increase working capital by \$120,000. The fixed asset investment will be depreciated over the five-year life of the project down to zero. The assets will have salvage value of \$20,000. Your fixed production costs for this project will be \$90,000 per year and variable costs will be \$0.40 per unit. Your company's required rate of return for this project is 14% and the relevant tax rate is 25%.

Required:

Compute an appropriate bid price.

Members-only Video Walkthrough:

<https://youtu.be/IJ4QbIM1Q9A>

Module 8: Breakeven Point and Sensitivity Analysis

FREE VIDEO WALKTHROUGH:

Intro Video: https://youtu.be/_iIM6331INI

8-1A – Break-even points

Scott's Knives makes one product: Steak Knives. The variable materials cost per knife is \$8.00. The variable labour cost per knife is \$4.00. The selling price per knife is \$30.00. The company's annual fixed costs are \$500,000 and annual depreciation is \$150,000.

Required:

- a.) Compute the accounting break-even point.
- b.) Compute the cash-basis break-even point.

Members-only Video Walkthrough:

<https://youtu.be/Mlqtxyj7VY>

8-1B – Break-even points

Ike's Bikes makes a fixed gear bicycle. The variable materials cost per unit is \$140.00. The variable labour cost per unit is \$60.00. The selling price per unit is \$500.00. The company's annual fixed costs are \$100,000 and annual depreciation is \$20,000.

Required:

- a.) Compute the accounting break-even point.
- b.) Compute the cash-basis break-even point.

Members-only Video Walkthrough:

<https://youtu.be/perpWkBL2o>

8-2A – Break-even points

Triton Manufacturing is considering a project with the following projections:

Selling Price	\$80 per unit
Variable costs	\$50 per unit
Fixed Costs	\$60,000
Initial investment	\$200,000
Project's life	5 years

Assume the company wishes to use straight line depreciation for this project, and assume taxes are to be ignored. The required rate of return is 10%.

Required:

- a.) Calculate the accounting break-even point.
- b.) Calculate the cash break-even point.
- c.) Calculate the financial break-even point.
- d.) At the financial break-even point, calculate the degree of operating leverage.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/eH-KSYb-IGo>

8-2B – Break-even points

Infinity Designs is considering a project with the following projections:

Selling Price	\$2,000 per unit
Variable costs	\$1,600 per unit
Fixed Costs	\$20,000
Initial investment	\$100,000
Project's life	4 years

Assume the company wishes to use straight line depreciation for this project, and assume taxes are to be ignored. The required rate of return is 12%.

Required:

- a.) Calculate the accounting break-even point.
- b.) Calculate the cash break-even point.
- c.) Calculate the financial break-even point.
- d.) At the financial break-even point, calculate the degree of operating leverage.

Members-only Video Walkthrough:

<https://youtu.be/pttwA5ctyMg>

8-3A – Degree of Operating Leverage

Fusion Industries has the following information:

Units Sold	30,000
Selling Price	\$20/unit
Variable costs	\$13/unit
Fixed Costs	\$100,000
Depreciation	\$10,000

Required:

- a.) Assuming NO TAXES, Prepare a pro forma income statement.
- b.) Compute operating cash flows.
- c.) Compute the degree of operating leverage.
- d.) If unit sales are expected to rise to 36,000 units next year, what will the percentage change in operating cash flow be? Will next year's operating leverage be higher or lower? Why?

Members-only Video Walkthrough:

<https://youtu.be/HpYzaejimmk>

8-3B – Degree of Operating Leverage

Echo Solutions has the following information:

Units Sold	40,000
Selling Price	\$100 per unit
Variable costs	\$60 per unit
Fixed Costs	\$1,000,000
Depreciation	\$200,000

Required:

- a.) Assuming NO TAXES, Prepare a pro forma income statement.
- b.) Compute operating cash flows.
- c.) Compute the degree of operating leverage.
- d.) If unit sales are expected to fall to 38,000 units next year, what will the percentage change in operating cash flow be? Will next year's operating leverage be higher or lower? Why?

Members-only Video Walkthrough:

<https://youtu.be/sRulhhzkgpWI>

8-4A – Scenario Analysis

Horizon Creations is considering a new project. Details of the project are below:

Initial Project Cost	\$300,000
Annual Sales in units	10,000
Sales price per unit	\$60
Variable cost per unit	\$20
Fixed costs per year	\$80,000
Project length	3 years
Required rate of return	10%
Tax rate	25%

Depreciation is straight-line to zero over the life of the project and there is expected to be no salvage value.

Required:

- a.) Prepare a proforma income statement based on the projections above and compute the expected NPV of the project. This will be the “base-case” scenario.
- b.) Assume that the following variables are accurate to within 10%: annual sales in units, price per unit, variable cost per unit and fixed costs. Prepare proforma income statements and compute the NPV of a worst-case scenario and a best-case scenario.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/96-Hlni1t4U>

8-4B – Scenario Analysis

Smiles Inc. is considering a new project. Details of the project are below:

Initial Project Cost	\$4,000,000
Annual Sales in units	80,000
Sales price per unit	\$85
Variable cost per unit	\$40
Fixed costs per year	\$700,000
Project length	4 years
Required rate of return	15%
Tax rate	30%

Depreciation is straight-line to zero over the life of the project and there is expected to be no salvage value.

Required:

- a.) Prepare a proforma income statement based on the projections above and compute the expected NPV of the project. This will be the “base-case” scenario.
- b.) Assume that the following variables are accurate to within 10%: annual sales in units, price per unit, variable cost per unit and fixed costs. Prepare proforma income statements and compute the NPV of a worst-case scenario and a best-case scenario.

Members-only Video Walkthrough:

<https://youtu.be/dLljFsOaN0w>

8-5A – Sensitivity Analysis

Stanley Company is considering a new project. Details are below:

Initial Project Cost	\$3,000,000
Annual Sales in units	100,000
Sales price per unit	\$40
Variable cost per unit	\$15
Fixed costs per year	\$600,000
Project length	3 years
Required rate of return	12%
Tax rate	20%

Depreciation is straight-line to zero over the life of the project and there is expected to be no salvage value.

Required:

- a.) Prepare a proforma income statement based on the projections above and compute the expected NPV of the project. This will be the “base-case” scenario.
- b.) Perform a sensitivity analysis - compare the base case NPV calculated in part a.) with the NPV when unit sales are decreased by 10%.

Members-only Video Walkthrough:

<https://youtu.be/F6YUmzMdrB4>

8-5B – Sensitivity Analysis

Jordan Company is considering a new project. Details are below:

Initial Project Cost	\$800,000
Annual Sales in units	20,000
Sales price per unit	\$100
Variable cost per unit	\$30
Fixed costs per year	\$700,000
Project length	4 years
Required rate of return	15%
Tax rate	30%

Depreciation is straight-line to zero over the life of the project and there is expected to be no salvage value.

Required:

- a.) Prepare a proforma income statement based on the projections above and compute the expected NPV of the project. This will be the “base-case” scenario.
 - a.) Perform a sensitivity analysis:
 - i. Annual Unit Sales – compare the base case NPV calculated in part a.) with the NPV when unit sales (only unit sales) are increased by 10%.
 - ii. Fixed costs - compare the base case NPV calculated in part a.) with the NPV when fixed costs (only fixed costs) are increased by 10%.
 - iii. Is the estimated NPV more sensitive to changes in unit sales or fixed costs?

Members-only Video Walkthrough:

<https://youtu.be/CCjuJU-vWxc>

Module 9: Calculating Historic Returns and Variances

FREE VIDEO WALKTHROUGH:

Intro Video: https://youtu.be/8HCr9_AnDhc

9-1A – Stock Returns

You purchase one share of XYZ Company's stock for \$50. After one year, the stock price is \$54, and the company has paid you a \$1 dividend.

Required:

- a) Calculate the percentage total return.
- b) Calculate the dividend yield.
- c) Calculate the capital gains yield.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/ZtuMrLiC44g>

9-1B – Stock Returns

You purchase one share of ABC Company's stock for \$100. After one year, the stock price is \$85, and the company has paid you a \$3 dividend.

Required:

- a) Calculate the percentage total return.
- b) Calculate the dividend yield.
- c) Calculate the capital gains yield.

Members-only Video Walkthrough:

<https://youtu.be/J9gbExZvQ9A>

9-2A – Bond Returns

One year ago, you purchased a 5-year 10% coupon bond. You paid \$1,020 for the bond and it had a face value of \$1,000. The bonds make annual coupon payments. Today, you sell the bond at a time when the required return on the bonds is 9%.

Required:

- a.) Calculate the investment yield.
- b.) Calculate the coupon yield.
- c.) Calculate the total return on the bond.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/UHOROVdKS6o>

9-2B – Bond Returns

One year ago, you purchased a 5-year 5% coupon bond, paying \$960 for the bond with face value of \$1,000. The bonds make annual coupon payments. Today, you sell the bond at a time when the required return on the bonds is 5.5%.

Required:

- a.) Calculate the investment yield.
- b.) Calculate the coupon yield.
- c.) Calculate the total return on the bond.

Members-only Video Walkthrough:

<https://youtu.be/4qPILkkufnM>

9-3A – Variance Calculations

The percentage returns of XYZ Company's stock over the last 5 years are shown in the table below:

Year 1	20%
Year 2	-8%
Year 3	17%
Year 4	14%
Year 5	-3%

During that time the average T-Bill rate has been 4.2%.

Required:

- a) Calculate the arithmetic average return of the stock.
- b) What is the risk premium of the stock?
- c) What is the variance of returns over this period?
- d) What is the standard deviation?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/-zKh0t7W37g>

9-3B – Return Calculations

The percentage returns of ABC Company's stock over the last 4 years are shown in the table below:

Year 1	-7%
Year 2	12%
Year 3	28%
Year 4	3%

During that time the average T-Bill rate has been 5.0%.

Required:

- a) Calculate the arithmetic average return of the stock.
- b) What is the risk premium of the stock?
- c) What is the variance of returns over this period?
- d) What is the standard deviation?

Members-only Video Walkthrough:

<https://youtu.be/OM0Ex6x1uZw>

9-4A – Calculating Arithmetic and Geometric Returns

Consider the stock below:

Year	Stock price	Dividend
1	\$50.00	-
2	\$52.00	\$1.00
3	\$48.50	\$1.25
4	\$61.75	\$1.25
5	\$65.00	\$1.40

Required:

- Calculate the arithmetic average return of the stock.
- Calculate the geometric average return of the stock.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/SEnCMtO14dE>

9-4B – Calculating Arithmetic and Geometric Returns

Consider the stock below:

Year	Stock price	Dividend
1	\$120.00	-
2	\$125.00	\$2.50
3	\$126.00	\$2.00
4	\$110.00	\$1.00
5	\$140.00	\$1.50

Required:

- Calculate the arithmetic average return of the stock.
- Calculate the geometric average return of the stock.

Members-only Video Walkthrough:

<https://youtu.be/BzUPq2L0Ouw>

9-5A – Blume’s Formula

Over the last 50 years, a stock has had an arithmetic return of 14% and a geometric return of 9.5%.

Required:

Use Blume’s formula to estimate annual future returns over the next:

- a) 3 years
- b) 15 years
- c) 45 years

Members-only Video Walkthrough:

<https://youtu.be/sQTSsXrJtZU>

9-5B – Blume’s Formula

Over the last 30 years, a stock has had an arithmetic return of 10.5% and a geometric return of 6.2%.

Required:

Use Blume’s formula to estimate annual future returns over the next:

- a) 2 years
- b) 10 years
- c) 25 years

Members-only Video Walkthrough:

<https://youtu.be/DWPyqaf2QAU>

Module 10: CAPM and Expected Future Returns

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/i23VP0AP8gY>

10-1A – Expected Returns

Company	# of Shares Owned	Price per Share	Expected Return
D	800	\$20	6%
E	100	\$90	8%
F	300	\$50	12%

Required:

Compute the expected percentage return of the portfolio above.

Members-only Video Walkthrough:

<https://youtu.be/gXcbVh2hFow>

10-1B – Expected Returns

Company	# of Shares Owned	Price per Share	Expected Return
A	1000	\$25	10%
B	7500	\$10	9%
C	1500	\$100	13%

Required:

Compute the expected percentage return of the portfolio above.

Members-only Video Walkthrough:

<https://youtu.be/09IHbAdqK7A>

10-2A – Expected Returns and Deviations

Below is information about two stocks and various possible economic situations:

Economic Situation	Probability of Economic Situation	Rate of Return	
		Stock X	Stock Y
Bust (Recession)	20%	10%	-20%
Normal	70%	15%	20%
Boom	10%	20%	55%

Required:

- Compute the expected returns for the individual stocks.
- Compute the standard deviations for the returns of the individual stocks.
- Assume your portfolio is weighted 70% to Stock X and 30% to Stock Y, compute the expected return and standard deviation of the portfolio.
- Assume a risk-free rate of 2.5%, for a portfolio weighted 70% to Stock X and 30% to Stock Y, what is the expected risk premium of the portfolio?

FREE VIDEO WALKTHROUGH: <https://youtu.be/JBC0hDboyao>

10-2B – Expected Returns and Deviations

Below is information about two stocks and various possible economic situations:

Economic Situation	Probability of Economic Situation	Rate of Return	
		Stock A	Stock B
Bust (Recession)	25%	10%	-25%
Normal	55%	20%	30%
Boom	20%	36%	80%

Required:

- Compute the expected returns for the individual stocks.
- Compute the standard deviations for the returns of the individual stocks.
- Assume your portfolio is weighted 60% to Stock A and 40% to Stock B, compute the expected return and standard deviation of the portfolio.
- Assume a risk-free rate of 3.5%, for a portfolio weighted 60% to Stock A and 40% to Stock B, what is the expected risk premium of the portfolio?

Members-only Video Walkthrough: <https://youtu.be/7aT8k19vQxY>

10-3A – Portfolio Betas

Key elements of your portfolio are summarized below:

	Stock W	Stock X	Stock Y	Stock Z
Weight in portfolio	10%	20%	30%	40%
Beta	1.3	1.1	0.9	0.5

Required:

Calculate the portfolio beta.

Members-only Video Walkthrough:

<https://youtu.be/v07uCt10XZI>

10-3B – Portfolio Betas

Key elements of your portfolio are summarized below:

	Stock A	Stock B	Stock C	Stock D
Weight in portfolio	25%	35%	10%	30%
Beta	0.8	1.0	1.2	1.45

Required:

Calculate the portfolio beta.

Members-only Video Walkthrough:

<https://youtu.be/GowXASMYWKQ>

10-4A – Expected Returns

A portfolio of stocks is shown below:

	Stock #1	Stock #2	Stock #3
Beta	1.3	1.1	0.8
Expected Market Return	12.0%	12.0%	12.0%
Risk Free Rate	3.5%	3.5%	3.5%

Required:

Calculate the expected return on each of the three stocks above.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/v1o9D5NaLBs>

10-4B – Expected Returns

A portfolio of stocks is shown below:

	Stock #1	Stock #2	Stock #3
Beta	1.6	1.2	0.9
Expected Market Return	10.0%	10.0%	10.0%
Risk Free Rate	4.0%	4.0%	4.0%

Required:

Calculate the expected return on each of the three stocks above.

Members-only Video Walkthrough:

<https://youtu.be/7Rj8WxwZwSI>

10-5A – Expected Returns

Details of a stock are shown below:

Expected Return	14.0%
Beta	1.2
Risk Free Rate	3.0%

Required:

Compute the expected market return.

FREE VIDEO WALKTHROUGH:

https://youtu.be/DtUd5Rhb5_A

10-5B – Expected Returns

Details of a stock are shown below:

Expected Return	7.0%
Beta	0.8
Risk Free Rate	4.0%

Required:

Compute the expected market return.

Members-only Video Walkthrough:

<https://youtu.be/VCQiSGEc-FQ>

10-6A – Reward-to-Risk Ratios

The details of two stocks are shown below:

	Expected Return	Risk-Free Rate	Beta
Stock A	13%	4%	1.30
Stock B	11%	4%	0.90

Required:

- For each stock, compute the reward-to-risk ratio.
- According to the ratios calculated in a.), relative to Stock B, is Stock A overpriced or underpriced?
- At what risk-free rate would these stocks be properly priced?
- Assume a market-risk premium of 7.75%. Use the CAPM model to determine if the two stocks are correctly priced.

Members-only Video Walkthrough:

<https://youtu.be/KDQ8GsJE6UQ>

10-6B – Reward-to-Risk Ratios

The details of two stocks are shown below:

	Expected Return	Risk-Free Rate	Beta
Stock X	18.50%	6.50%	1.60
Stock Y	11.50%	6.50%	0.80

Required:

- For each stock, compute the reward-to-risk ratio.
- According to the ratios calculated in a.), relative to Stock Y, is Stock X overpriced or underpriced?
- At what risk-free rate would these stocks be properly priced?
- Assume a market-risk premium of 7.00%. Use the CAPM model to determine if the two stocks are correctly priced.

Members-only Video Walkthrough:

<https://youtu.be/CeBzr34hNsM>

10-7A – CAPM Calculations

50% of an investor's portfolio consists of one stock with the following characteristics:

	Expected Return	Risk-Free Rate	Beta
Stock	17.00%	4.00%	1.40

The other 50% of the portfolio is invested in US Government bonds which earn 4.0% (the risk-free rate).

Required:

- What is the expected return of this portfolio?
- If an investor desired a portfolio beta of 0.90, what would the relative weights of the stock and government bonds need to be (rather than 50/50)?
- If an investor desired a beta of 3.0, what would the portfolio weights need to be? This produces a funny looking result, how is this possible?
- What relative weights between the stock and government bonds would be needed to produce an expected return of 9%? At this level, what would the beta be?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/u-y0yC3xhgY>

10-7B – CAPM Calculations

50% of an investor's portfolio consists of one stock with the following characteristics:

	Expected Return	Risk-Free Rate	Beta
Stock	13.00%	5.00%	1.20

The other 50% of the portfolio is invested in US Government bonds which earn 5.0% (the risk-free rate).

Required:

- What is the expected return of this portfolio?
- If an investor desired a portfolio beta of 0.75, what would the relative weights of the stock and government bonds need to be (rather than 50/50)?
- What relative weights between the stock and government bonds would be needed to produce an expected return of 7%? At this level, what would the beta be?
- If an investor desired a beta of 2.0, what would the portfolio weights need to be? This produces a funny looking result, how is this possible?

Members-only Video Walkthrough:

<https://youtu.be/ml8INCkynBU>

10-8A – Portfolio Calculations

You have \$200,000 to invest. You've chosen 3 stocks and a risk-free government bond.

	Amount Invested	Beta
Stock 1	\$40,000	1.3
Stock 2	\$45,000	0.8
Stock 3	?	1.4
Risk Free Gov't Bond	?	?

Required:

You want your portfolio to have equal risk to the market, how much will you invest in Stock 3, and how much will you invest in the risk-free government bond?

Members-only Video Walkthrough:

https://youtu.be/yP_JoDwhHyU

10-8B – Portfolio Calculations

You have \$400,000 to invest. You've chosen 3 stocks and a risk-free government bond.

	Amount Invested	Beta
Stock 1	\$50,000	0.7
Stock 2	\$80,000	1.5
Stock 3	?	1.3
Risk Free Gov't Bond	?	?

Required:

You want your portfolio to have equal risk to the market, how much will you invest in Stock 3, and how much will you invest in the risk-free government bond?

Members-only Video Walkthrough:

<https://youtu.be/nmXKSGdZnAo>

Module 11: Weighted Average Cost of Capital

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/G769PN12Pjk>

11-1A – Cost of Equity Using the Dividend Discount Model

Alpha Company's stock currently sells for \$40 per share. The company paid a dividend of \$1 per share last year and the dividend is expected to grow by 10% per year going forward.

Required:

Calculate the company's cost of equity.

Members-only Video Walkthrough:

<https://youtu.be/pepJYq2G8WY>

11-1B – Cost of Equity Using the Dividend Discount Model

Beta Company's stock currently sells for \$18 per share. The company paid a dividend of \$2 per share last year and the dividend is expected to grow by 5% per year going forward.

Required:

Calculate the company's cost of equity.

Members-only Video Walkthrough:

<https://youtu.be/2hVp-pDF5Og>

11-2A – Cost of Equity Using the Dividend Discount Model with Uneven Dividends

Lambda Company's stock currently sells for \$75 per share. Over the last 5 years, the company has paid dividends per share of \$2.00, \$2.24, \$2.15, \$2.30, and a dividend of \$2.35 has just been paid.

Required:

- a) Use an arithmetic growth rate to estimate the company's cost of equity capital.
- b) Use a geometric growth rate to estimate the company's cost of equity capital.

Members-only Video Walkthrough:

<https://youtu.be/EvUE7tErqQc>

11-2B – Cost of Equity Using the Dividend Discount Model with Uneven Dividends

Delta Company's stock currently sells for \$25 per share. Over the last 5 years, the company has paid dividends per share of \$1.20, \$1.24, \$1.00, \$1.30, and a dividend of \$1.40 has just been paid.

Required:

- a) Use an arithmetic growth rate to estimate the company's cost of equity capital.
- b) Use a geometric growth rate to estimate the company's cost of equity capital.

Members-only Video Walkthrough:

<https://youtu.be/6Cshz05Ljs0>

11-3A – Cost of Equity Using CAPM

Jazzy Company's stock has a beta of 1.4. The following market conditions are known:

Risk Free Rate	5%
Expected Market Returns	9%

Required:

What is Jazzy Company's cost of equity?

Members-only Video Walkthrough:

<https://youtu.be/FOcUxKCj2jc>

11-3B – Cost of Equity Using CAPM

Snazzy Company's stock has a beta of 0.9. The following market conditions are known:

Risk Free Rate	4%
Expected Market Returns	10%

Required:

What is Snazzy Company's cost of equity?

Members-only Video Walkthrough:

<https://youtu.be/G i rZkt0Ag>

11-4A – Cost of Debt

A company has 14 years remaining on its 20-year bonds – (they were issued 6 years ago). The bonds have a coupon rate of 10% and pay interest semiannually. The bond is currently quoted at 104.000. The company's tax rate is 20%.

Required:

- a) Compute the pretax cost of debt.
- b) Compute the after-tax cost of debt.

Members-only Video Walkthrough:

<https://youtu.be/DqnIkdR5bsc>

11-4B – Cost of Debt

A company has 21 years remaining on its 25-year bonds – (they were issued 4 years ago). The bonds have a coupon rate of 4% and pay interest semiannually. The bond is currently quoted at 91.000. The company's tax rate is 25%.

Required:

- a) Compute the pretax cost of debt.
- b) Compute the after-tax cost of debt.

Members-only Video Walkthrough:

<https://youtu.be/rBDxd0fP7q8>

11-5A – WACC

A company's target capital structure consists of:

Debt	60%
Common shares	30%
Preferred shares	10%

Facts relating to the company's financing costs are below:

Cost of debt (pre-tax)	12%
Cost of common equity	18%
Cost of preferred equity	10%

The company's tax rate is 25%.

Required:

Compute the WACC.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/GMOUPNc8xLM>

11-5B – WACC

A company's target capital structure consists of:

Debt	35%
Common shares	60%
Preferred shares	5%

Facts relating to the company's financing costs are below:

Cost of debt (pre-tax)	14%
Cost of common equity	22%
Cost of preferred equity	8%

The company's tax rate is 20%.

Required:

Compute the WACC.

Members-only Video Walkthrough:

<https://youtu.be/i4HT2WsLRYM>

11-6A – WACC

The following information is known about a company's balance sheet:

Liabilities	1,500 5% bonds outstanding, quoted at 96.500, \$1,000 par value. The bonds mature in 10 years and make semi-annual payments.
Common shares	50,000 common shares outstanding, the market price is \$50 per share, the beta is 1.05.
Preferred shares	The company has 2,000 preferred shares outstanding. The annual dividend is \$12 per share and shares sell for \$110 per share.

Additional information:

- The company's tax rate is 25%.
- The risk-free rate is 3%.
- The market risk premium is 9%.

Required:

Compute the WACC.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/ttsxyXm9N9s>

11-6B – WACC

The following information is known about a company's balance sheet:

Liabilities	10,000 11% bonds outstanding, quoted at 103.000, \$1,000 par value. The bonds mature in 15 years and make semi-annual payments.
Common shares	200,000 common shares outstanding, the market price is \$60 per share, the beta is 1.25.
Preferred shares	The company has 1,000 preferred shares outstanding. The annual dividend is \$10 per share and shares sell for \$100 per share.

Additional information:

- The company's tax rate is 30%.
- The risk-free rate is 4%.
- The market risk premium is 7%.

Required:

Compute the WACC.

Members-only Video Walkthrough:

<https://youtu.be/FbEoHh6qM6I>

11-7A – Project Selection

Your company is financed only through equity. It is considering the projects below:

	Beta	Expected Return
#1	0.5	9%
#2	0.9	10%
#3	1.1	11%
#4	1.9	14%

The risk-free rate is 4% and the market risk premium is 8%. Your company's WACC is 12%.

Required:

- If the company uses its WACC rate of 12% as a hurdle rate, which projects will be accepted?
- Use the SML approach. Under this approach, which projects should be accepted?

Members-only Video Walkthrough:

<https://youtu.be/TUdYbWRN3Cw>

11-7B – Project Selection

Your company is financed only through equity. It is considering the projects below:

	Beta	Expected Return
#1	0.5	10.5%
#2	0.8	11.5%
#3	1.1	13.0%
#4	1.6	17.0%

The risk-free rate is 4.5% and the market risk premium is 8%. Your company's WACC is 12.5%.

Required:

- If the company uses its WACC rate of 12.5% as a hurdle rate, which projects will be accepted?
- Use the SML approach. Under this approach, which projects should be accepted?

Members-only Video Walkthrough:

<https://youtu.be/StVQFWKeveg>

11-8A – NPV

Your company is contemplating a project with an upfront cost of \$340,000. The project will have after-tax cash flows of \$100,000 per year for the next five years. The company's structure is 60% debt and 40% equity. The cost of equity is 18%, and the after-tax cost of debt is 10%.

Required:

- a.) What is the NPV of this project?
- b.) The project will be riskier than normal for your company, and you wish to apply a +3% risk adjustment to the discount rate. What is the adjusted NPV of this project?

Members-only Video Walkthrough:

<https://youtu.be/dNKKYJYxEBc>

11-8B – NPV

Your company is contemplating a project with an upfront cost of \$1,000,000. The project will have after-tax cash flows of \$240,000 per year for the next eight years. The company's structure is 70% debt and 30% equity. The cost of equity is 17%, and the after-tax cost of debt is 12%.

Required:

- a.) What is the NPV of this project?
- b.) The project will be riskier than normal for your company, and you wish to apply a +4% risk adjustment to the discount rate. What is the adjusted NPV of this project?

Members-only Video Walkthrough:

https://youtu.be/Sf_NTY9Br4I

11-9A – Flotation Costs - Harder

Your company is considering a project with an upfront cost of \$5,000,000. The company has a target debt-equity ratio of 0.4. The flotation cost for equity is 9% and for debt is 4%.

Required:

- a) What is the weighted average flotation cost?
- b) What is the true cost of the project after flotation costs are considered?

Members-only Video Walkthrough:

<https://youtu.be/Xec0IxWtnho>

11-9B – Flotation Costs - Harder

Your company is considering a project with an upfront cost of \$2,000,000. The company has a target debt-equity ratio of 0.7. The flotation cost for equity is 11% and for debt is 6%.

Required:

- a) What is the weighted average flotation cost?
- b) What is the true cost of the project after flotation costs are considered?

Members-only Video Walkthrough:

<https://youtu.be/Uw7prUrBzoE>

11-10A – Flotation Costs - Easier

Apex Company wants to raise \$20,000,000 by selling shares in a general cash offering. The offer price is \$50 per share. The company's investment bank will charge a 6% commission.

Required:

How many shares need to be sold in this offering?

Members-only Video Walkthrough:

<https://youtu.be/w5ibTrhVIdE>

11-10B – Flotation Costs - Easier

Balison Company wants to raise \$60,000,000 by selling shares in a general cash offering. The offer price is \$40 per share. The company's investment bank will charge a 5% commission.

Required:

How many shares need to be sold in this offering?

Members-only Video Walkthrough:

https://youtu.be/iiSsWIDj_as

11-11A - The Value of a Right

Smith Company is preparing a rights offering. The company wishes to raise \$10,000,000. The stock currently sells for \$75 per share and there are 1,200,000 shares outstanding. The subscription price is set at \$50 per share.

Required:

- (a) Calculate the ex-rights price.
- (b) Calculate the value of a right.
- (c) Would a shareholder be better off, worse off, or the same because of the offering?
Show your work.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/rNMYI-Rn114>

11-11B - The Value of a Right

Jones Company is preparing a rights offering. The company wishes to raise \$50,000,000. The stock currently sells for \$125 per share and there are 2,500,000 shares outstanding. The subscription price is set at \$40 per share.

Required:

- (a) Calculate the ex-rights price.
- (b) Calculate the value of a right.
- (c) Would a shareholder be better off, worse off, or the same because of the offering?
Show your work.

Members-only Video Walkthrough:

https://youtu.be/ppxTCU0tK_I

Module 12: M&M Propositions

FREE VIDEO WALKTHROUGH:

Intro Video: <https://youtu.be/QthGSOQWzrw>

12-1A – M&M Proposition I and Homemade Leverage

XYZ Company has no debt and is financed 100% through equity. The company has 800 common shares outstanding and the price per share is \$150. EBIT is expected to be \$10,000 per year.

Required:

- a.) You invested in this company because you LOVE their debt-free capital structure. You own 120 common shares. Assuming a dividend payout rate of 100% and assuming no taxes, what is your cash flow from owning your shares?
- b.) The company is debating borrowing money in a way that would make its capital structure 25% debt and 75% equity. The interest on the debt would be 6%. After borrowing, the total assets of the company would remain the same – the money would be used to buy back shares. You intend to keep all 120 of your shares. What would your cash flow be under this new capital structure?
- c.) If the company borrows as proposed in part b) above, how could you make use of homemade leverage to recreate the original capital structure for your investment?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/HkS871xjIAU>

12-1B – M&M Proposition I and Homemade Leverage

ABC Company has no debt and is financed 100% through equity. The company has 10,000 common shares outstanding and the price per share is \$70. EBIT is expected to be \$50,000 per year for the foreseeable future.

Required:

- a) You invested in this company because you LOVE their debt-free capital structure. You own 1,000 common shares. Assuming a dividend payout rate of 100% and assuming no taxes, what is your cash flow from owning your shares?
- b) The company is debating borrowing money in a way that would make its capital structure 40% debt and 60% equity. The interest on the debt would be 4%. After borrowing, the total assets of the company would remain the same – the money would be used to buy back shares. You intend to keep all 1000 of your shares. What would your cash flow be under this new capital structure?
- c) If the company borrows as proposed in part b) above, how could you make use of homemade leverage to recreate the original capital structure for your investment?

Members-only Video Walkthrough:

<https://youtu.be/Qec4aZLic40>

12-2A – M&M Proposition II - Cost of Equity without tax

DEF Company has a WACC of 10% and cost of debt is 4%. Assume no taxes.

Required:

- a) If the company's debt-equity ratio is 0.5, what is the company's cost of equity?
- b) If the company's debt-equity ratio is 1.5, what is the company's cost of equity?
- c) What is the relationship between the debt-equity ratio and the cost of equity?

Members-only Video Walkthrough:

<https://youtu.be/Awkto-sx3Gs>

12-2B – M&M Proposition II - Cost of Equity without tax

GHI Company has a WACC of 14% and cost of debt is 8%. Assume no taxes.

Required:

- a) If the company's debt-equity ratio is 1.2, what is the company's cost of equity?
- b) If the company's debt-equity ratio is 1.8, what is the company's cost of equity?
- c) What is the relationship between the debt-equity ratio and the cost of equity?

Members-only Video Walkthrough:

https://youtu.be/vQA_DW0vqPs

12-3A – M&M Proposition II - Cost of Equity with and without tax

Flyer Company has zero debt and can borrow at 4%. The company's WACC is 8%.

Scenario 1: Assuming no taxes, answer the required items below.

Scenario 2: Assuming a 20% tax rate, answer the required items below.

Required:

- a) What is the company's cost of equity?
- b) If the company changes its capital structure to be 25% debt, what will its cost of equity be?
What will the WACC be at this debt level?
- c) If the company changes its capital structure to be 75% debt, what will its cost of equity be?
What will the WACC be at this debt level?
- d) What are the implications of your answers to b) and c) above?

FREE VIDEO WALKTHROUGH:

<https://youtu.be/VbNSC7mhJF4>

12-3B – M&M Proposition II - Cost of Equity with and without tax

Zippy Company has zero debt and can borrow at 6%. The company's WACC is 11%.

Scenario 1: Assuming no taxes, answer the required items below.

Scenario 2: Assuming a 25% tax rate, answer the required items below.

Required:

- a) What is the company's cost of equity?
- b) If the company changes its capital structure to be 35% debt, what will its cost of equity be?
What will the WACC be at this debt level?
- c) If the company changes its capital structure to be 70% debt, what will its cost of equity be?
What will the WACC be at this debt level?
- d) What are the implications of your answers to b) and c) above?

Members-only Video Walkthrough:

<https://youtu.be/9QYsmXiF1ts>

12-4A – M&M Proposition I - Tax considerations

Smith Company has a market value of \$50,000,000. The company has zero debt and its WACC is 10%.

Required:

- a) If the company has a corporate tax rate of 20% and the firm issues debt, and increases its debt-to-equity ratio to 1 (from 0), what will the value of the firm be? What if it increases its debt-to-equity ratio to 2?
- b) Redo the calculations from part a.) assuming the tax rate is 30%. Explain the reason the answers were different?

Members-only Video Walkthrough:

<https://youtu.be/ZuI09AGUav0>

12-4B – M&M Proposition I - Tax considerations

Jones Company has a market value of \$10,000,000. The company has zero debt and its WACC is 8%.

Required:

- a) If the company has a corporate tax rate of 25% and the firm issues debt, and increases its debt-to-equity ratio to 1, what will the value of the firm be? What if it increases its debt-to-equity ratio to 2?
- b) Redo the calculations from part a.) assuming the tax rate is 30%. Explain the reason the answers were different?

Members-only Video Walkthrough:

<https://youtu.be/ND8yQuz-iel>

12-5A – M&M Proposition I – With tax considerations

James Company has zero debt. The company's cost of equity is 14% and it can borrow at 6%. The company's tax rate is 30%. The company's EBIT is expected to be \$15,000 per year for the foreseeable future.

Required:

- a) What is the value of the company?
- b) If the company borrows \$25,000 and uses the money to repurchase shares, what will be the value of the company?
- c) If the company wants to maximize firm value, should it borrow money?

Members-only Video Walkthrough:

<https://youtu.be/6cZC7f1zihs>

12-5B – M&M Proposition I – With tax considerations

Harden Company has zero debt. The company's cost of equity is 15% and it can borrow at 9%. The company's tax rate is 25%. The company's EBIT is expected to be \$35,000 per year for the foreseeable future.

Required:

- a) What is the value of the company?
- b) If the company borrows \$50,000 and uses the money to repurchase shares, what will be the value of the company?
- c) If the company wants to maximize firm value, should it borrow money?

Members-only Video Walkthrough:

<https://youtu.be/bq0MIXWoDSs>

Module 13: Dividends and Repurchases

FREE VIDEO WALKTHROUGH:

Intro Video: https://youtu.be/_FdkpSzjt_0

Problem 13-1A – Stock Dividends

Acorn Tools has 1,000,000 shares outstanding at a price of \$50.00 per share. Theoretically, what will the stock price be after the following independent events?

- a.) A 10% stock dividend
- b.) A 40% stock dividend
- c.) A 3-for-1 stock split

FREE VIDEO WALKTHROUGH:

<https://youtu.be/hOQ9IJtO3ZI>

Problem 13-1B – Stock Dividends

Weston Construction has 200,000 shares outstanding at a price of \$150.00 per share. Theoretically, what will the stock price be after the following independent events?

- a.) A 20% stock dividend
- b.) A 45% stock dividend
- c.) A 5-for-2 stock split

Members-only Video Walkthrough:

https://youtu.be/fB3uV_s3j-g

Problem 13-2A – Dividends vs Share Repurchases

Part 1 - Dividends

Switch Company has assets with a market value of \$600,000. Because the company has no liabilities, its Equity also has a market value of \$600,000. The company has 10,000 common shares outstanding. The company is considering declaring a dividend of \$3.00 per share today with the stock going ex-dividend tomorrow. Assume the company declares and pays the dividend as planned:

Required:

- a.) What is the stock price today?
- b.) What will the stock price be tomorrow?
- c.) What will be the change in assets and equity as a result of this dividend?

Part 2 – Share Repurchase

Assume instead of the dividend outlined in Part 1, the company decides to repurchase \$30,000 of stock.

Required:

- d.) Consider how this will affect the company's equity by answering the following:
 - i. What is the new market value of the company's equity?
 - ii. How many shares will be repurchased?
 - iii. How many shares will be outstanding?
 - iv. What will be the new price per share?
- e.) Explain the key differences and similarities between the repurchase in Part 2, and the dividend being considered in Part 1.

FREE VIDEO WALKTHROUGH:

<https://youtu.be/TPhWEp5btAc>

Problem 13-2B – Dividends vs Share Repurchases

Part 1 - Dividends

Wee Company has assets with a market value of \$2,000,000. Because the company has no liabilities, its Equity also has a market value of \$2,000,000. The company has 100,000 common shares outstanding. The company is considering declaring a dividend of \$1.00 per share today with the stock going ex-dividend tomorrow. Assume the company declares and pays the dividend as planned:

Required:

- a.) What is the stock price today?
- b.) What will the stock price be tomorrow?
- c.) What will be the change in assets and equity as a result of this dividend?

Part 2 – Share Repurchase

Assume instead of the dividend outlined in Part 1, the company decides to repurchase \$100,000 of stock.

Required:

- d.) Consider how this will affect the company's equity by answering the following:
 - i. What is the new market value of the company's equity?
 - ii. How many shares will be repurchased?
 - iii. How many shares will be outstanding?
 - iv. What will be the new price per share?
- e.) Explain the key differences and similarities between the repurchase in Part 2, and the dividend being considered in Part 1.

Members-only Video Walkthrough:

<https://youtu.be/Zxbu2M5ymA0>

Problem 13-3A – Dividends vs Share Repurchases

Smith Company has \$40,000 in excess cash and is debating between a cash dividend and a share repurchase. The company has 20,000 shares outstanding; its stock price is \$32, and \$0.75 in earnings per share.

Ignore the effect of taxes and other “real-world irregularities” in your analysis.

Required:

- a.) Compare the two options in terms of the effect on the stock price and overall shareholder wealth.
- b.) Compare the two options in terms of the effect on EPS and PE ratio.
- c.) If we consider taxes and “real world irregularities”, which option do you think is better? Why?

Members-only Video Walkthrough:

https://youtu.be/L_Rp3G6MgFo

Problem 13-3B – Dividends vs Share Repurchases

Jones Company has \$240,000 in excess cash and is debating between a cash dividend and a share repurchase. The company has 100,000 shares outstanding; its stock price is \$40, and \$2.00 in earnings per share.

Ignore the effect of taxes and other “real-world irregularities” in your analysis.

Required:

- a.) Compare the two options in terms of the effect on the stock price and overall shareholder wealth.
- b.) Compare the two options in terms of the effect on EPS and PE ratio.
- c.) If we consider taxes and “real world irregularities”, which option do you think is better? Why?

Members-only Video Walkthrough:

<https://youtu.be/kU1sYa3eiS4>