

Accounting Principles

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Lecture 3

Financial Statements Analysis and Interpretation



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Basics of Analysis

Application of
analytical tools

Reduces uncertainty



Involves transforming
data

Purpose of Analysis

Financial statement analysis helps users make better decisions.



Internal Users

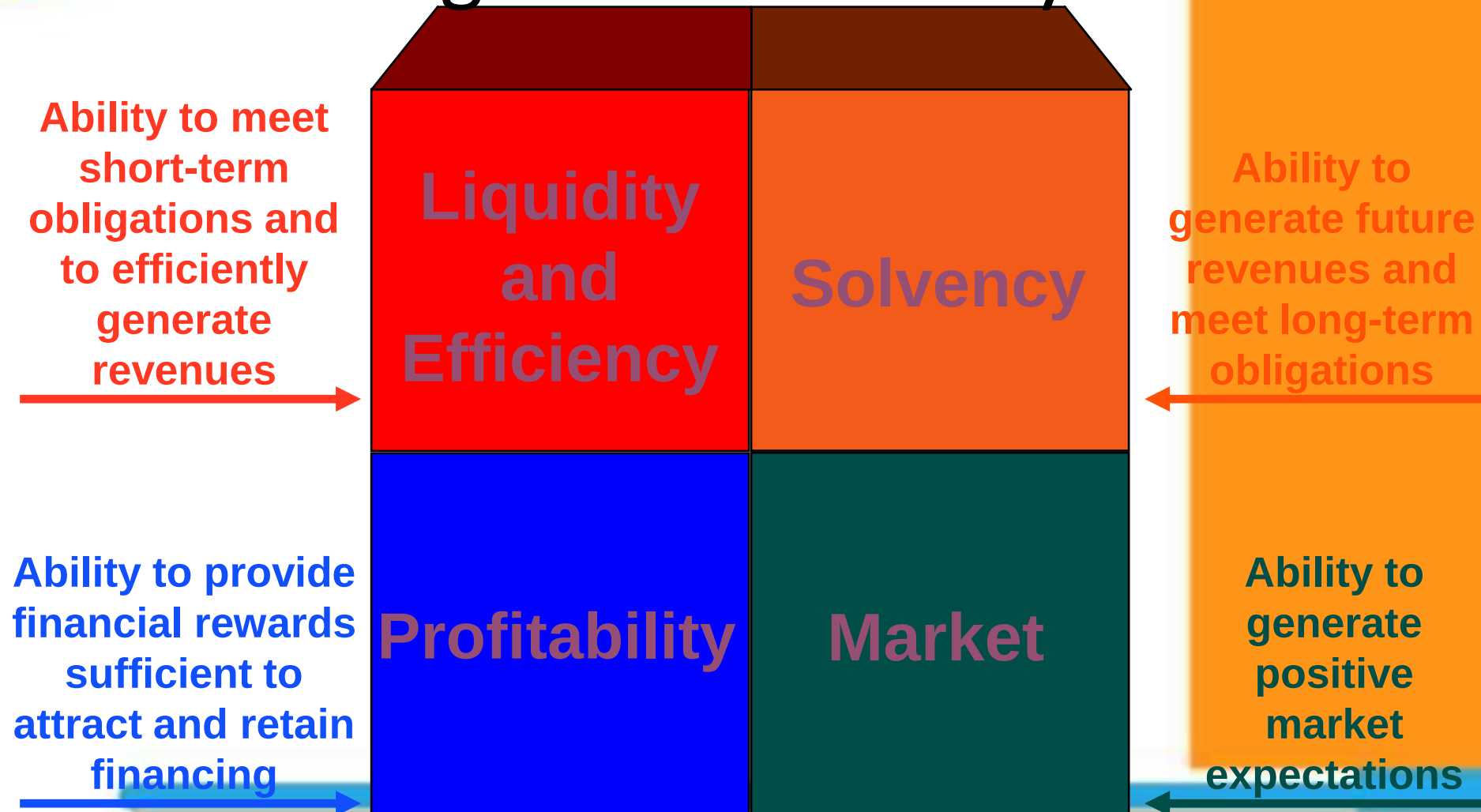
Managers
Officers
Internal Auditors



External Users

Shareholders
Lenders
Customers

Building Blocks of Analysis



- **Balance Sheet** ●

Statement of Changes in Stockholders' Equity

Statement of Cash Flows

Notes

Standards for Comparison

To help me interpret our financial statements, I use several standards of comparison.



- ① **Intracompany**
- ② **Competitor**
- ③ **Industry**
- ④ **Guidelines**

Tools of Analysis

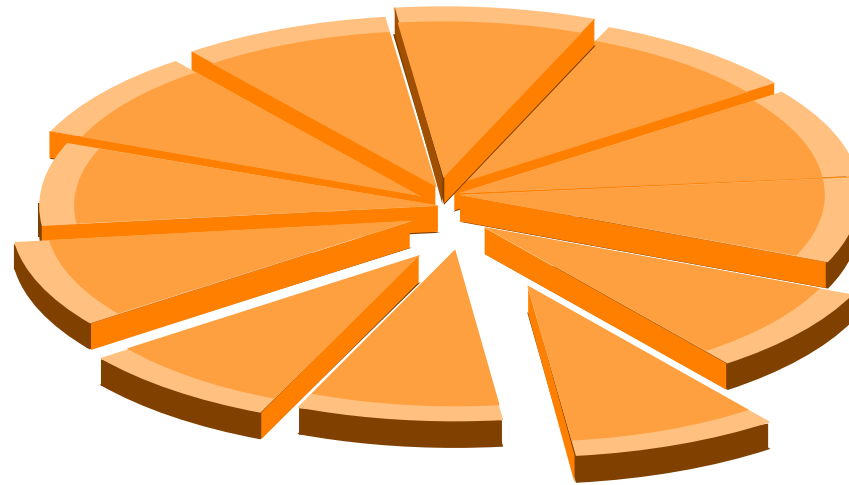
Horizontal Analysis

Comparing a company's financial condition and performance across time



Tools of Analysis

**Comparing a company's
financial condition and
performance to a base amount**



Tools of Analysis

Using key relations
among financial
statement items

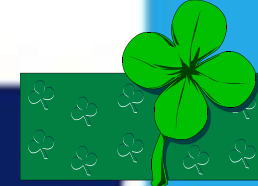
Ratio Analysis



Horizontal Analysis



**Now, let's
look at
some ways
to use
horizontal
analysis.**



CLOVER CORPORATION
Comparative Balance Sheets
December 31,

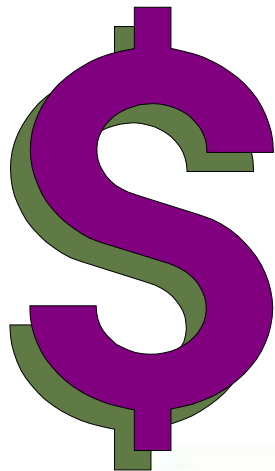
	2002	2001	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500		
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	3,000	1,200		
Total current assets	\$ 155,000	\$ 164,700		
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700		

* Percent rounded to first decimal point.

Comparative Statements

Calculate Change in Dollar Amount

$$\text{Dollar Change} = \text{Analysis Period Amount} - \text{Base Period Amount}$$



Since we are measuring the amount of the change between 2001 and 2002, the dollar amounts for 2001 become the “base” period amounts.

Comparative Statements

Calculate Change as a Percent

Percent
Change

=

Dollar Change
Base Period Amount

×

100%

%



CLOVER CORPORATION Comparative Balance Sheets December 31,				
	2002	2001	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	$\$(11,500)$	(48.9)
Accounts receivable	$\$12,000 - \$23,500 = \$(11,500)$			
Inventory	80,000	100,000		
Prepaid expenses	3,000	1,200		
Total current	$(\$11,500 \div \$23,500) \times 100\% = 48.9\%$			
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700		
* Percent rounded to first decimal point.				

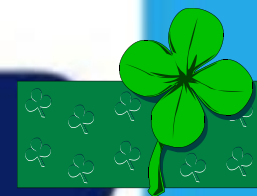


CLOVER CORPORATION
Comparative Balance Sheets
December 31,

	2002	2001	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	\$ (11,500)	(48.9)
Accounts receivable, net	60,000	40,000	20,000	50.0
Inventory	80,000	100,000	(20,000)	(20.0)
Prepaid expenses	3,000	1,200	1,800	150.0
Total current assets	\$ 155,000	\$ 164,700	\$ (9,700)	(5.9)
Property and equipment:				
Land	40,000	40,000	-	0.0
Buildings and equipment, net	120,000	85,000	35,000	41.2
Total property and equipment	\$ 160,000	\$ 125,000	\$ 35,000	28.0
Total assets	\$ 315,000	\$ 289,700	\$ 25,300	8.7

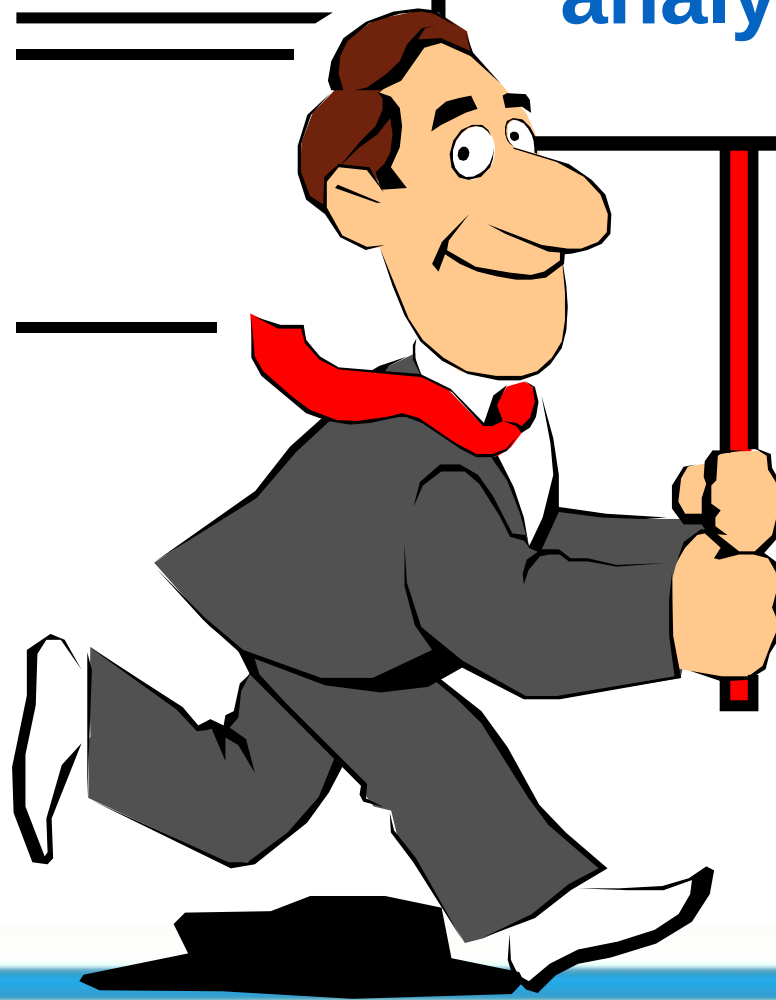
* Percent rounded to first decimal point.





CLOVER CORPORATION Comparative Balance Sheets December 31,				
	2002	2001	Dollar Change	Percent Change*
Liabilities and Shareholders' Equity				
Current liabilities:				
Accounts payable	\$ 67,000	\$ 44,000	\$ 23,000	52.3
Notes payable	3,000	6,000	(3,000)	(50.0)
Total current liabilities	\$ 70,000	\$ 50,000	\$ 20,000	40.0
Long-term liabilities:				
Bonds payable, 8%	75,000	80,000	(5,000)	(6.3)
Total liabilities	\$ 145,000	\$ 130,000	\$ 15,000	11.5
Shareholders' equity:				
Preferred stock	20,000	20,000	-	0.0
Common stock	60,000	60,000	-	0.0
Additional paid-in capital	10,000	10,000	-	0.0
Total paid-in capital	\$ 90,000	\$ 90,000	-	0.0
Retained earnings	80,000	69,700	10,300	14.8
Total shareholders' equity	\$ 170,000	\$ 159,700	\$ 10,300	6.4
Total liabilities and shareholders' equity	\$ 315,000	\$ 289,700	\$ 25,300	8.7
* Percent rounded to first decimal point.				

Now, let's
look at trend
analysis!



Trend Analysis



Trend analysis is used to reveal patterns in data covering successive periods.

$$\text{Trend Percent} = \frac{\text{Analysis Period Amount}}{\text{Base Period Amount}} \times 100\%$$

Trend Analysis

Berry Products
Income Information
For the Years Ended December 31,



Item	2002	2001	2000	1999	1998
Revenues	\$ 400,000	\$ 355,000	\$ 320,000	\$ 290,000	\$ 275,000
Cost of sales	285,000	250,000	225,000	198,000	190,000
Gross profit	115,000	105,000	95,000	92,000	85,000

1998 is the base period so its amounts will equal 100%.

Trend Analysis

Berry Products
Income Information
For the Years Ended December 31,



Item	2002	2001	2000	1999	1998
Revenues	\$ 400,000	\$ 355,000	\$ 320,000	\$ 290,000	\$ 275,000
Cost of sales	285,000	250,000	225,000	198,000	190,000
Gross profit	115,000	105,000	95,000	92,000	85,000

Item	2002	2001	2000	1999	1998
Revenues				105%	100%
Cost of sales				104%	100%
Gross profit				108%	100%

$$(290,000 \div 275,000) \times 100\% = 105\%$$

$$(198,000 \div 190,000) \times 100\% = 104\%$$

$$(92,000 \div 85,000) \times 100\% = 108\%$$

Trend Analysis

Berry Products
Income Information
For the Years Ended December 31,



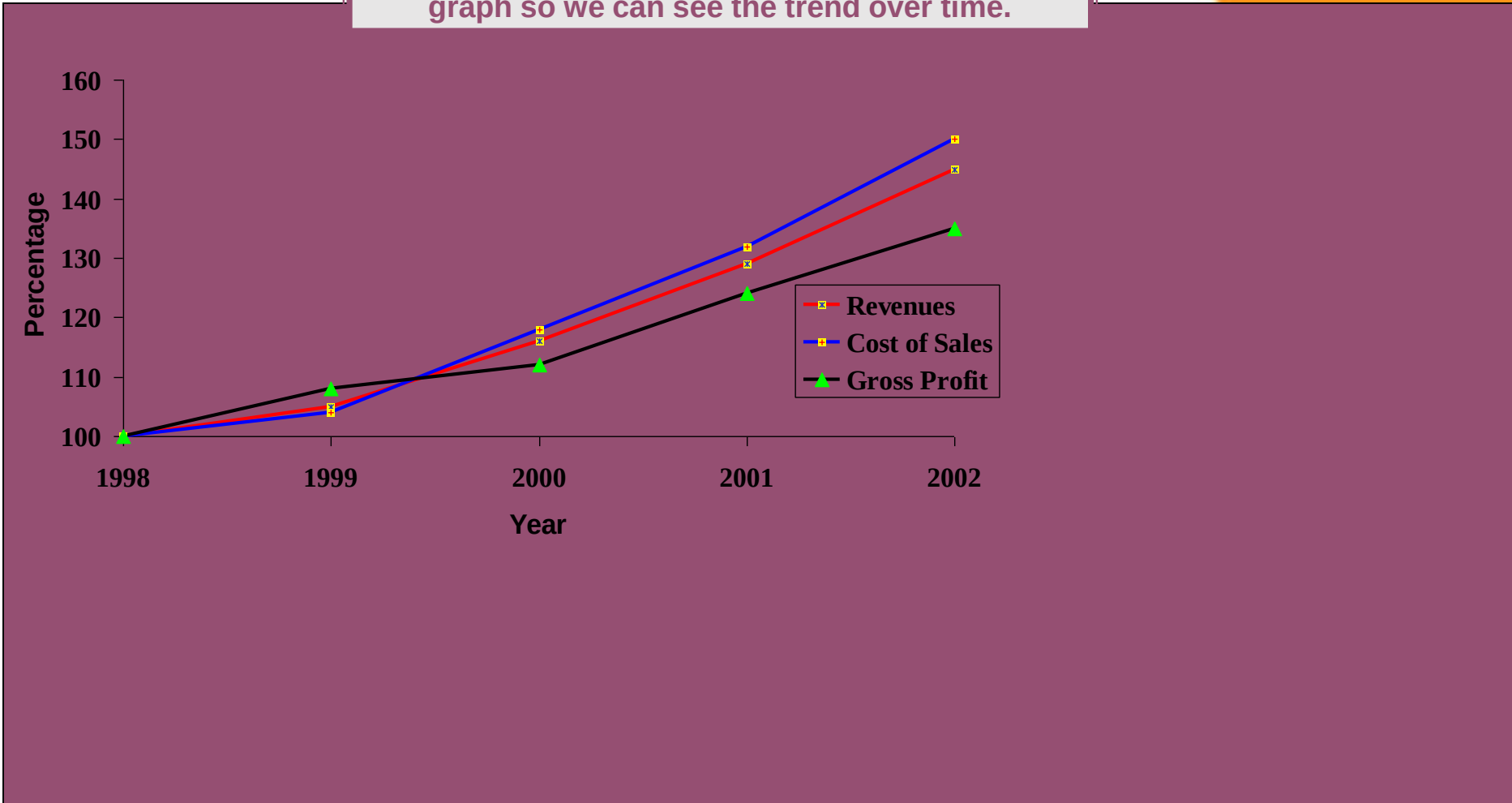
Item	2002	2001	2000	1999	1998
Revenues	\$ 400,000	\$ 355,000	\$ 320,000	\$ 290,000	\$ 275,000
Cost of sales	285,000	250,000	225,000	198,000	190,000
Gross profit	115,000	105,000	95,000	92,000	85,000

Item	2002	2001	2000	1999	1998
Revenues	145%	129%	116%	105%	100%
Cost of sales	150%	132%	118%	104%	100%
Gross profit	135%	124%	112%	108%	100%

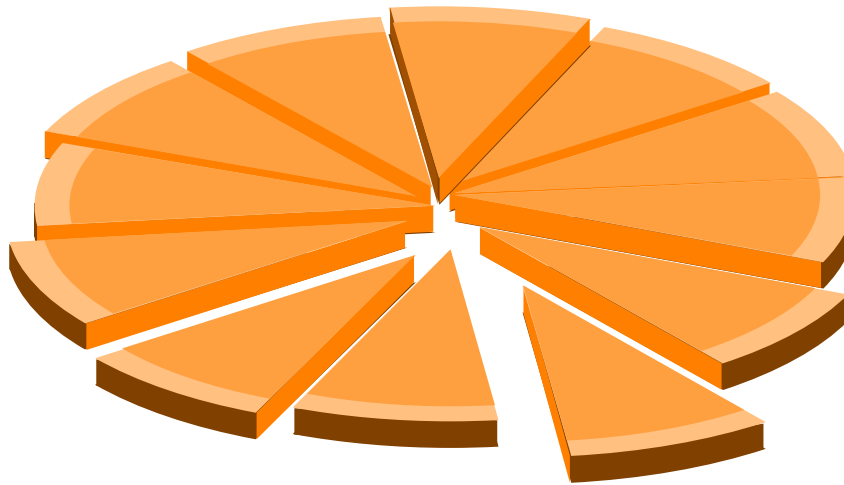
How would this trend analysis
look on a **line graph**?

Trend Analysis

We can use the trend percentages to construct a graph so we can see the trend over time.



Now, let's look at some vertical analysis tools!



Common-Size Statements

Calculate Common-size Percent

$$\text{Common-size Percent} = \frac{\text{Analysis Amount}}{\text{Base Amount}} \times 100\%$$

Financial Statement Base Amount

Balance Sheet

Total Assets

Income Statement

Revenues

CLOVER CORPORATION
Comparative Balance Sheets
December 31,



			Common-size Percents*	
	2002	2001	2002	2001
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	3.8%	8.1%
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	$(\$12,000 \div \$315,000) \times 100\% = 3.8\%$			
Total current assets	\$ 155,000	\$ 164,700		
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700	100.0%	100.0%

* Percent rounded to first decimal point.

CLOVER CORPORATION
Comparative Balance Sheets
December 31,



			Common-size Percents*	
	2002	2001	2002	2001
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	3.8%	8.1%
Accounts receivable, net	60,000	40,000	19.0%	13.8%
Inventory	80,000	100,000	25.4%	34.5%
Prepaid expenses	3,000	1,200	1.0%	0.4%
Total current assets	\$ 155,000	\$ 164,700	49.2%	56.9%
Property and equipment:				
Land	40,000	40,000	12.7%	13.8%
Buildings and equipment, net	120,000	85,000	38.1%	29.3%
Total property and equipment	\$ 160,000	\$ 125,000	50.8%	43.1%
Total assets	\$ 315,000	\$ 289,700	100.0%	100.0%

* Percent rounded to first decimal point.

CLOVER CORPORATION
Comparative Balance Sheets
December 31,



			Common-size Percents*	
	2002	2001	2002	2001
Liabilities and Shareholders' Equity				
Current liabilities:				
Accounts payable	\$ 67,000	\$ 44,000	21.3%	15.2%
Notes payable	3,000	6,000	1.0%	2.1%
Total current liabilities	\$ 70,000	\$ 50,000	22.2%	17.3%
Long-term liabilities:				
Bonds payable, 8%	75,000	80,000	23.8%	27.6%
Total liabilities	\$ 145,000	\$ 130,000	46.0%	44.9%
Shareholders' equity:				
Preferred stock	20,000	20,000	6.3%	6.9%
Common stock	60,000	60,000	19.0%	20.7%
Additional paid-in capital	10,000	10,000	3.2%	3.5%
Total paid-in capital	\$ 90,000	\$ 90,000	28.6%	31.1%
Retained earnings	80,000	69,700	25.4%	24.1%
Total shareholders' equity	\$ 170,000	\$ 159,700	54.0%	55.1%
Total liabilities and shareholders' equity	\$ 315,000	\$ 289,700	100.0%	100.0%

* Percent rounded to first decimal point.

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31,

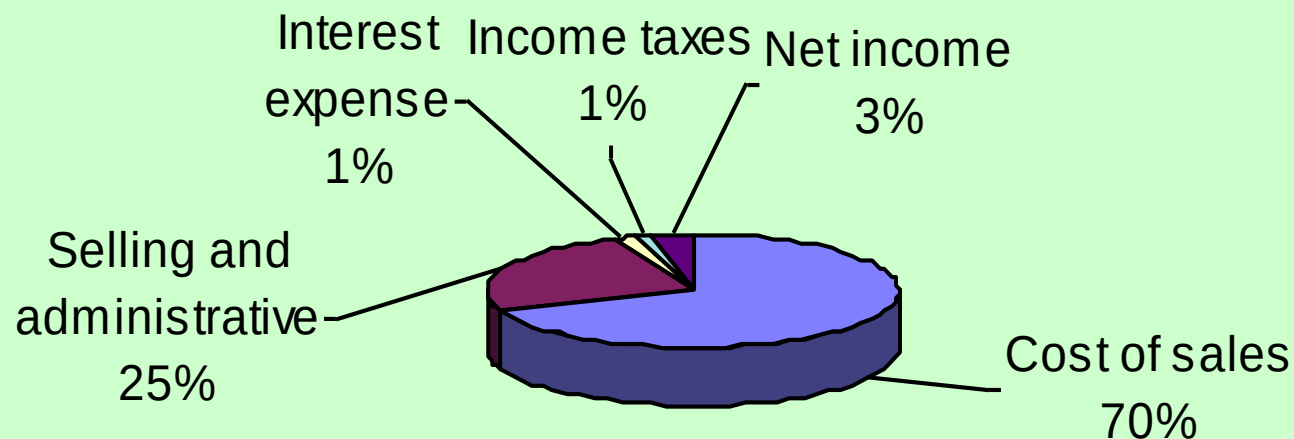


			Common-size Percents*	
	2002	2001	2002	2001
Revenues	\$520,000	\$480,000	100.0%	100.0%
Costs and expenses:				
Cost of sales	360,000	315,000	69.2%	65.6%
Selling and admin.	128,600	126,000	24.7%	26.3%
Interest expense	6,400	7,000	1.2%	1.5%
Income before taxes	\$ 25,000	\$ 32,000	4.8%	6.7%
Income taxes (30%)	7,500	9,600	1.4%	2.0%
Net income	\$ 17,500	\$ 22,400	3.4%	4.7%
Net income per share	\$ 0.79	\$ 1.01		
Avg. # common shares	22,200	22,200		

*** Rounded to first decimal point.**

Common-Size Graphics

This is a graphical analysis of Clover Corporation's common-size income statement for 2002.





Ratio Analysis

Let's use the following financial statements for Norton Corporation for our ratio analysis.

NORTON CORPORATION
Balance Sheet
December 31,

	2002	2001
Assets		
Current assets:		
Cash	\$ 30,000	\$ 20,000
Accounts receivable, net	20,000	17,000
Inventory	12,000	10,000
Prepaid expenses	3,000	2,000
Total current assets	\$ 65,000	\$ 49,000
Property and equipment:		
Land	165,000	123,000
Buildings and equipment, net	116,390	128,000
Total property and equipment	\$ 281,390	\$ 251,000
Total assets	\$ 346,390	\$ 300,000

NORTON CORPORATION
Balance Sheet
December 31,

	2002	2001
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	\$ 39,000	\$ 40,000
Notes payable, short-term	3,000	2,000
Total current liabilities	\$ 42,000	\$ 42,000
Long-term liabilities:		
Notes payable, long-term	70,000	78,000
Total liabilities	\$ 112,000	\$ 120,000
Shareholders' equity:		
Common stock, \$1 par value	27,400	17,000
Additional paid-in capital	158,100	113,000
Total paid-in capital	\$ 185,500	\$ 130,000
Retained earnings	48,890	50,000
Total shareholders' equity	\$ 234,390	\$ 180,000
Total liabilities and shareholders' equity	\$ 346,390	\$ 300,000

NORTON CORPORATION
Income Statement
For the Years Ended December 31,

	2002	2001
Revenues	\$ 494,000	\$ 450,000
Cost of sales	140,000	127,000
Gross margin	\$ 354,000	\$ 323,000
Operating expenses	270,000	249,000
Net operating income	\$ 84,000	\$ 74,000
Interest expense	7,300	8,000
Net income before taxes	\$ 76,700	\$ 66,000
Less income taxes (30%)	23,010	19,800
Net income	\$ 53,690	\$ 46,200

Liquidity and Efficiency

Current
Ratio

Acid-test
Ratio

Accounts Receivable
Turnover

Total Asset Turnover

Inventory Turnover

Days' Sales
Uncollected

Days' Sales in
Inventory



Use this information to calculate the liquidity and efficiency ratios for Norton Corporation.

NORTON CORPORATION	
2002	
Cash	\$ 30,000
Accounts receivable, net	
Beginning of year	17,000
End of year	20,000
Inventory	
Beginning of year	10,000
End of year	12,000
Total current assets	65,000
Total current liabilities	42,000
Total assets	
Beginning of year	300,000
End of year	346,390
Revenues	494,000
Cost of sales	140,000

Working Capital

Working capital represents current assets financed from long-term capital sources that do not require near-term repayment.

	Dec. 31, 2002
Current assets	\$ 65,000
Current liabilities	(42,000)
Working capital	\$ 23,000

Current Ratio

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Current Ratio} = \frac{\$65,000}{\$42,000} = 1.55 : 1$$

This ratio measures the short-term debt-paying ability of the company.



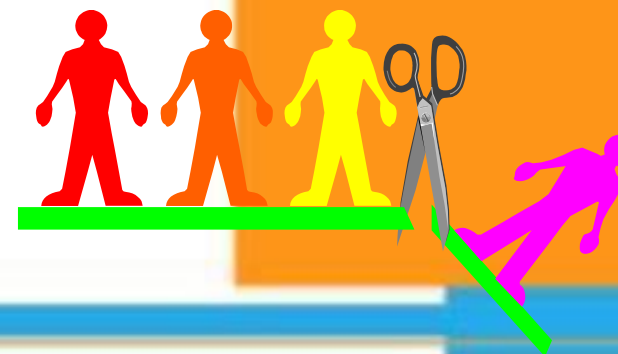
$$\text{Acid-Test Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Acid-Test Ratio

Quick assets are Cash, Short-Term Investments, Accounts Receivable and Notes Receivable.

$$\text{Acid-Test Ratio} = \frac{\$50,000}{\$42,000} = 1.19 : 1$$

This ratio is like the current ratio but **excludes** current assets such as inventories and prepaid expenses that may be difficult to quickly convert into cash.

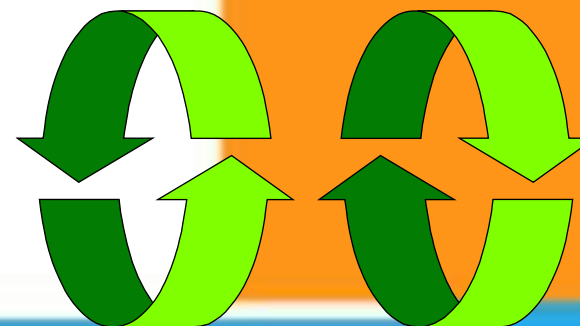


Accounts Receivable Turnover

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales on Account}}{\text{Average Accounts Receivable}}$$

$$\text{Accounts Receivable Turnover} = \frac{\$494,000}{(\$17,000 + \$20,000) \div 2} = 26.7 \text{ times}$$

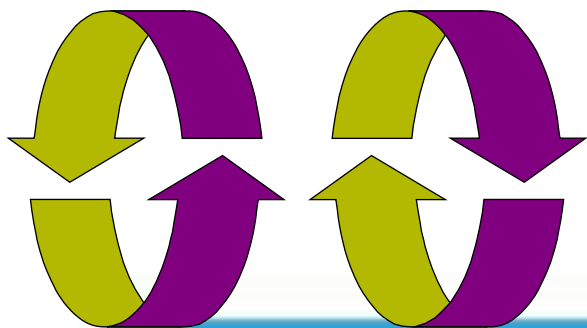
This ratio measures how many times a company converts its receivables into cash each year.



Inventory Turnover

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

$$\text{Inventory Turnover} = \frac{\$140,000}{(\$10,000 + \$12,000) \div 2} = 12.73 \text{ times}$$



This ratio measures the number of times merchandise is sold and replaced during the year.

Days' Sales Uncollected

$$\text{Days' Sales Uncollected} = \frac{\text{Accounts Receivable}}{\text{Net Sales}} \times 365$$

$$\text{Days' Sales Uncollected} = \frac{\$20,000}{\$494,000} \times 365 = 14.8 \text{ days}$$

This ratio measures the liquidity of receivables.



$$\text{Days' Sales in Inventory} = \frac{\text{Ending Inventory}}{\text{Cost of Goods Sold}} \times 365$$

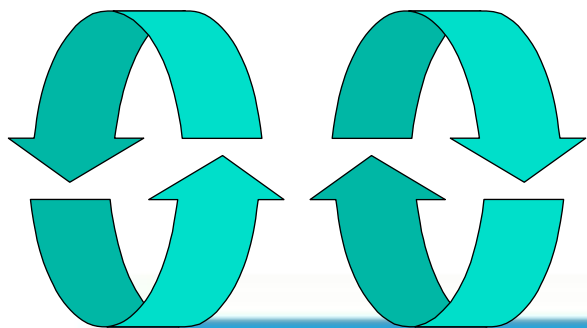
$$\text{Days' Sales in Inventory} = \frac{\$12,000}{\$140,000} \times 365 = 31.29 \text{ days}$$

This ratio measures the liquidity of inventory.



$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

$$\text{Total Asset Turnover} = \frac{\$494,000}{(\$300,000 + \$346,390) \div 2} = 1.53 \text{ times}$$



This ratio measures the efficiency of assets in producing sales.

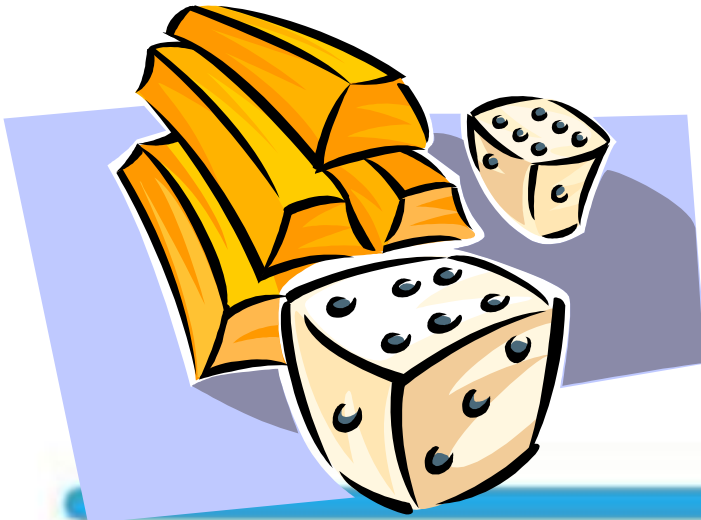
Debt
Ratio

Solvency



Equity
Ratio

Pledged Assets to Secured
Liabilities



Times Interest Earned

Use this information to calculate the solvency ratios for Norton Corporation.

NORTON CORPORATION**2002**

Net income before interest expense and income taxes	\$	84,000
Interest expense		7,300
Total shareholders' equity		234,390
Total liabilities		112,000
Total assets		346,390

Debt Ratio

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

$$\text{Debt Ratio} = \frac{\$112,000}{\$346,390} = 32.3\%$$

This ratio measures what portion of a company's assets are contributed by **creditors**.



$$\text{Equity Ratio} = \frac{\text{Total Equity}}{\text{Total Assets}}$$

$$\text{Equity Ratio} = \frac{\$234,390}{\$346,390} = 67.7\%$$

This ratio measures what portion of a company's assets are contributed by **owners**.

Equity Ratio



Pledged Assets to Secured Liabilities

$$\text{Pledged Assets to Secured Liabilities} = \frac{\text{Book Value of Pledged Assets}}{\text{Book Value of Secured Liabilities}}$$

This ratio measures the protection to secured creditors.



Times Interest Earned

$$\text{Times Interest Earned} = \frac{\text{Net Income before Interest Expense and Income Taxes}}{\text{Interest Expense}}$$

$$\text{Times Interest Earned} = \frac{\$84,000}{\$7,300} = 11.51$$

This is the most common measure of the ability of a firm's operations to provide protection to the long-term creditor.



Profitability

Profit
Margin

Gross Margin

Return on Total
Assets

Return on Common
Stockholders' Equity

Basic Earnings per
Share

Book Value per
Common Share



Use this information to calculate the profitability ratios for Norton Corporation.

NORTON CORPORATION	
2002	
Number of common shares outstanding all year	27,400
Net income	\$ 53,690
Shareholders' equity	
Beginning of year	180,000
End of year	234,390
Revenues	494,000
Cost of sales	140,000
Total assets	
Beginning of year	300,000
End of year	346,390

Profit Margin

$$\text{Profit Margin} = \frac{\text{Net Income}}{\text{Net Sales}}$$

$$\text{Profit Margin} = \frac{\$53,690}{\$494,000} = 10.87\%$$

This ratio describes a company's ability to earn a net income from sales.



Gross Margin

$$\text{Gross Margin} = \frac{\text{Net Sales} - \text{Cost of Sales}}{\text{Net Sales}}$$

$$\text{Gross Margin} = \frac{\$494,000 - \$140,000}{\$494,000} = 71.66\%$$



This ratio measures the amount remaining from \$1 in sales that is left to cover operating expenses and a profit after considering cost of sales.

Return on Total Assets

$$\text{Return on Total Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

$$\text{Return on Total Assets} = \frac{\$53,690}{(\$300,000 + \$346,390) \div 2} = 16.61\%$$



This ratio is generally considered the best overall measure of a company's profitability.

$$\text{Return on Common Stockholders' Equity} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Common Stockholders' Equity}}$$

$$\text{Return on Common Stockholders' Equity} = \frac{\$53,690 - 0}{(\$180,000 + \$234,390) \div 2} = 25.9\%$$

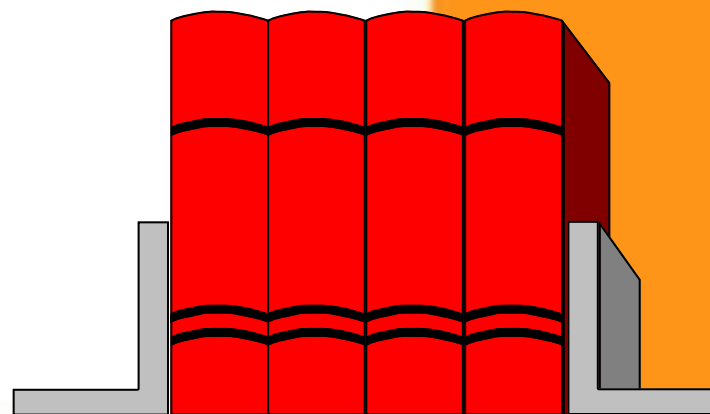


This measure indicates how well the company employed the owners' investments to earn income.

Book Value per Common Share

$$\text{Book Value per Common Share} = \frac{\text{Shareholders' Equity Applicable to Common Shares}}{\text{Number of Common Shares Outstanding}}$$

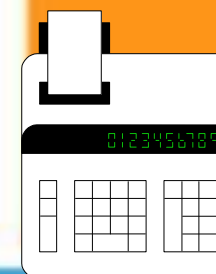
This ratio measures liquidation at reported amounts.



$$\begin{array}{l} \text{Basic} \\ \text{Earnings} \\ \text{per} \\ \text{Share} \end{array} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Weighted-Average Common Shares Outstanding}}$$

$$\begin{array}{l} \text{Basic} \\ \text{Earnings} \\ \text{per} \\ \text{Share} \end{array} = \frac{\$53,690 - 0}{27,400} = \$1.96 \text{ per share}$$

This measure indicates how much income was earned for each share of common stock outstanding.



Market

Price-Earnings Ratio

Dividend Yield



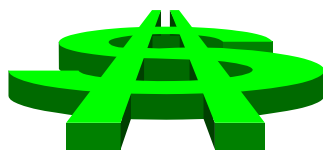
Use this information to calculate the market ratios for Norton Corporation.

NORTON CORPORATION		
December 31, 2002		
Earnings per Share	\$	1.96
Market Price		15.00
Annual Dividend per Share		2.00

Price-Earnings Ratio

$$\text{Price-Earnings Ratio} = \frac{\text{Market Price Per Share}}{\text{Earnings Per Share}}$$

$$\text{Price-Earnings Ratio} = \frac{\$15.00}{\$1.96} = 7.65 \text{ times}$$



This measure is often used by investors as a general guideline in gauging stock values. Generally, the higher the price-earnings ratio, the more opportunity a company has for growth.

Dividend Yield

$$\text{Dividend Yield} = \frac{\text{Annual Dividends Per Share}}{\text{Market Price Per Share}}$$

$$\text{Dividend Yield} = \frac{\$2.00}{\$15.00} = 13.3\%$$



This ratio identifies the return, in terms of cash dividends, on the current market price of the stock.

