Financial Accounting

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Sixth Edition

McGraw-Hill/Irwin

Chapter 13

Analyzing and Interpreting Financial Statements

Conceptual Learning Objectives

C1: Explain the purpose and identify the building blocks of analysis.

C2: Describe standards for comparisons in analysis.

Analytical Learning Objectives

A1: Summarize and report results of analysis.

A2: Appendix 13A – Explain the form and assess the content of a complete income statement (see text for details).

Procedural Learning Objectives

P1: Explain and apply methods of horizontal analysis.

P2: Describe and apply methods of vertical analysis.

P3: Define and apply ratio analysis.

C1

Building Blocks of Analysis

Ability to meet short-term obligations and to efficiently generate revenues

Ability to generate future revenues and meet long-term obligations

Ability to provide financial rewards sufficient to attract and retain financing

Ability to generate positive market expectations

C 2

Standards for Comparison

When interpreting measures, we need to decide whether the measures indicate good, bad, or average performance. We can use the following to make that judgment:

- Intracompany
- Competitor
- Industry
- Guidelines (rule of thumb)

C 1

Tools of Analysis

Horizontal Analysis

Comparing a company's financial condition and performance across time.

Vertical Analysis

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

Measurement of key relations between financial statement items

Ratio Analysis

P 1

Comparative Statements

Calculate Change in Dollar Amount

Dollar change = **Analysis period amount** – **Base period amount**

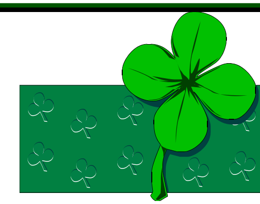
Since we are measuring the amount of the change between 2011 and 2010, the dollar amounts for 2010 become the "base" period amounts.

Calculate Change as a Percent

$$\textbf{Percent change} = \frac{\textbf{Dollar change}}{\textbf{Base period amount}} \times \textbf{100}$$

P 1

CLOVER CORPORATION
Comparative (partial) Balance Sheet
December 31, 2011



	2011	2010	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		
Inventory	80,000	100,000		
Prepaid expenses	3,000	1,200	1,800	
Total current assets	$ 155,000	$ 164,700		
Property and equipment:				
Land	40,000	40,000		0.0
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.

$12,000 – $23,500 = $(11,500)

($11,500 ÷ $23,500) × 100 = 48.9%

P 1

CLOVER CORPORATION
Comparative (Partial) Balance Sheet
December 31, 2011

	2011	2010	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.

P 1

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31, 2011

	2011	2010	Dollars Change	Percent Change
Revenues	$520,000	$480,000	$40,000	8.3%
Costs and expenses:				
Cost of sales	360,000	315,000	45,000	14.3
Selling and admin.	128,600	126,000	2,600	2.1
Interest expense	6,400	7,000	(600)	(8.6)
Income before taxes	25,000	32,000	(7,000)	(21.9)
Income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$17,500	$22,400	($4,900)	(21.9)
Net income per share	$0.79	$1.01		
Avg. # common shares	22,200	22,200		

Percent changes rounded to first decimal point.

P 1

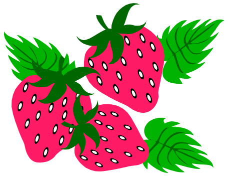
Trend Analysis

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

$$\text{Trend percent} = \frac{\text{Analysis period amount}}{\text{Base period amount}} \times 100$$

P 1

Trend Analysis



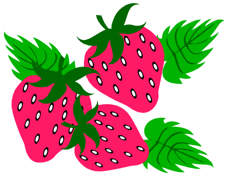
Berry Products
Income Information
For the Years Ended December 31,

Item	2011	2010	2009	2008	2007
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

2007 is the base period so its amounts will equal 100%.

P 1

Trend Analysis



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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

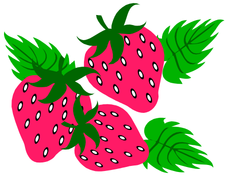
Item	2011	2010	2009	2008	2007
Revenues				105%	100%
Cost of sales				104%	100%
Gross profit				108%	100%

(290,000	÷	275,000)	×	100%	=	105%
(198,000	÷	190,000)	×	100%	=	104%
(92,000	÷	85,000)	×	100%	=	108%

P 1

Trend Analysis

Berry Products
Income Information
For the Years Ended December 31,



Item	2011	2010	2009	2008	2007
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

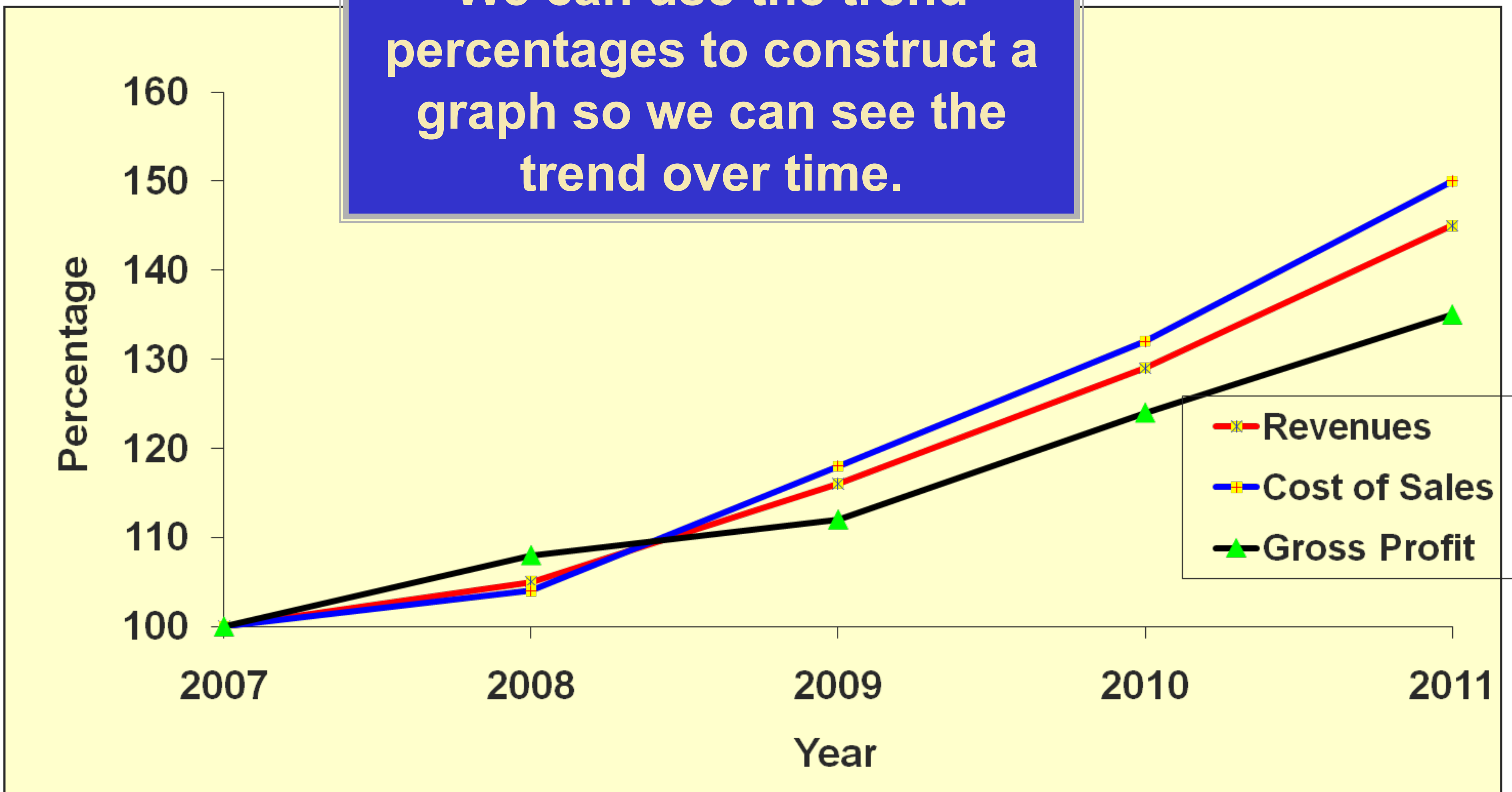
Item	2011	2010	2009	2008	2007
Revenues	145%	129%	116%	105%	100%
Cost of sales	150%	132%	118%	104%	100%
Gross profit	135%	124%	112%	108%	100%

How would this trend analysis look on a line graph?

P 1

Trend Analysis

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



P 2

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

P 2

CLOVER CORPORATION
Comparative (Partial) Balance Sheet
December 31, 2011

			Common-Size Percents*	
	2011	2010	2011	2010
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	3,000	1,200		
Total current assets	$ 155,000	$ 164,700		
Property and equipment:				
Land	40,000	40,000	12.7%	
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.

($12,000 ÷ $315,000) × 100 = 3.8%

($23,500 ÷ $289,700) × 100 = 8.1%

P 2

CLOVER CORPORATION
Comparative (Partial) Balance Sheet
December 31, 2011

			Common-Size Percents*	
	2011	2010	2011	2010
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.

P 2

CLOVER CORPORATION
Comparative (Partial) Balance Sheets
December 31, 2011

			Common-Size Percents*	
	2011	2010	2011	2010
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%

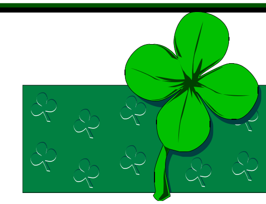
* Percent rounded to first decimal point.

P 2

CLOVER CORPORATION

Comparative Income Statements

For the Years Ended December 31, 2011



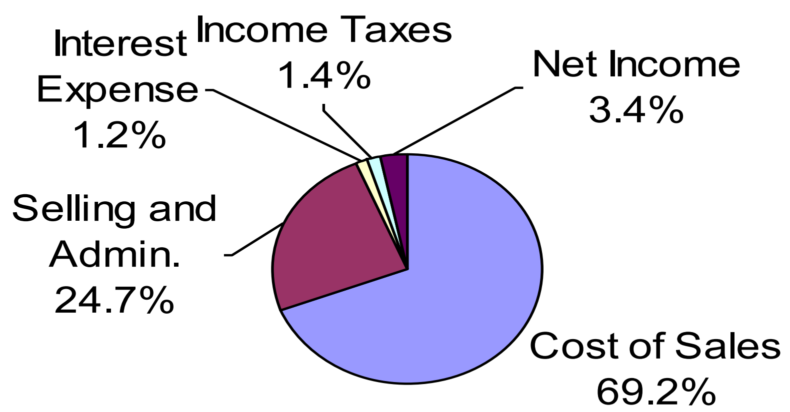
			Common-Size Percents*	
	2011	2010	2011	2010
Revenues	$ 520,000	$ 480,000	100.0%	100.0%
Costs and expenses:				
Cost of sales	360,000	315,000	69.2%	65.6%
Selling and admin.	128,600	126,000	24.7%	26.3%
Interest expense	6,400	7,000	1.2%	1.5%
Income before taxes	$ 25,000	$ 32,000	4.8%	6.7%
Income taxes (30%)	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.

P 2

Common-Size Graphics

This is a graphical analysis of Clover Corporation's common-size income statement for 2011.



P 3

Ratio Analysis

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

P 3

NORTON CORPORATION Balance Sheet December 31, 2011		
	2011	2010
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

P 3

NORTON CORPORATION
Balance Sheet
December 31, 2011

	2011	2010
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

P 3

NORTON CORPORATION
Income Statement
For the Years Ended December 31

	2011	2010
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

Inventory Turnover

Days' Sales Uncollected

Days' Sales in Inventory

Total Asset Turnover

P 3

Liquidity and Efficiency

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

NORTON CORPORATION 2011	
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

P 3

Working Capital

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

	Dec. 31, 2011
Current assets	**$ 65,000**
Current liabilities	**(42,000)**
Working capital	**$ 23,000**

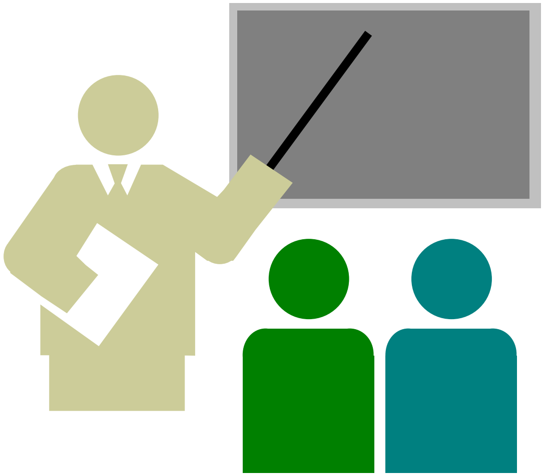
P 3

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.



P 3

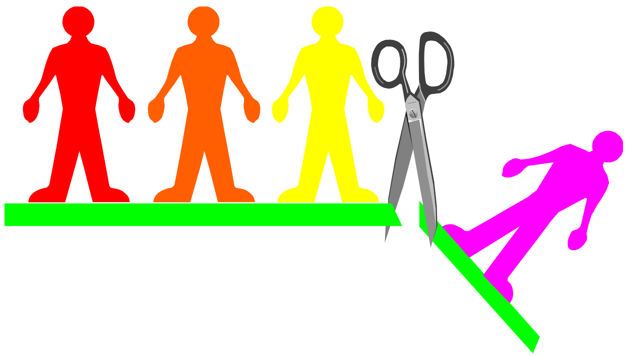
Acid-Test Ratio

$$\text{Acid-test ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

Quick assets are Cash, Short-Term Investments, and Current Receivables.

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

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.



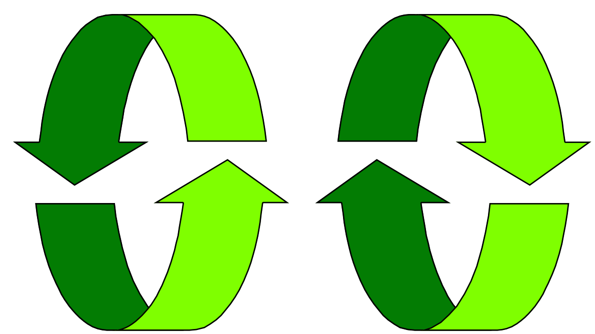
P 3

Accounts Receivable Turnover

$$\text{Accounts receivable turnover} = \frac{\text{Net sales}}{\text{Average accounts receivable/net}}$$

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

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

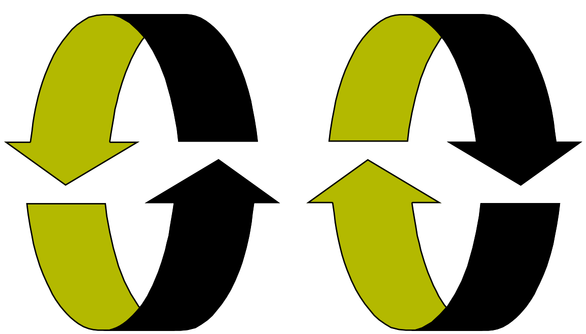


P 3

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 and replaced during the year.

P 3

Days' Sales Uncollected

$$\text{Days' sales uncollected} = \frac{\text{A/R, net}}{\text{Net sales}} \times 365$$

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

This ratio measures the liquidity of receivables.

P3

Days' Sales in Inventory

$$\text{Days' sales in inventory} = \frac{\text{Ending inventory}}{\text{Cost of goods sold}} \times 365$$

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

This ratio measures the liquidity of inventory.

P 3

Total Asset Turnover

$$\text{Total asset turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

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

This ratio measures the efficiency of assets in producing sales.

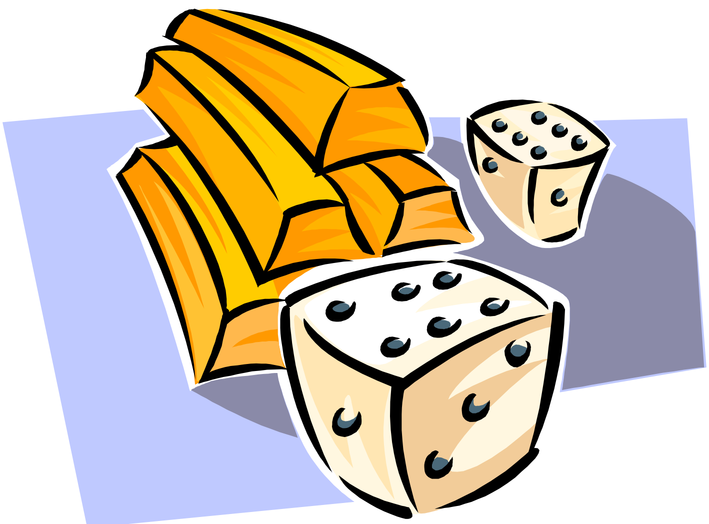
P 3

Solvency

Debt Ratio

Equity Ratio

Pledged Assets to Secured Liabilities



Times Interest Earned

P 3

Solvency

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

NORTON CORPORATION 2011	
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

P 3

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.

P 3

Equity Ratio

$$\text{Equity ratio} = \frac{\text{Total equity}}{\text{Total assets}}$$

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

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

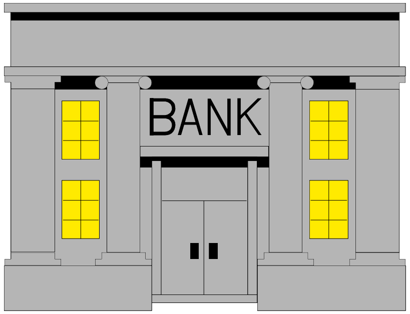
P 3

Debt-to-Equity Ratio

$$\text{Debt-to-equity-ratio} = \frac{\text{Total liabilities}}{\text{Total equity}}$$

$$\text{Debt-to-equity-ratio} = \frac{\$\ 112{,}000}{\$\ 346{,}390} = 32\%$$

This ratio measures the solvency of companies.



P 3

Times Interest Earned

$$\text{Times interest earned} = \frac{\text{Income before interest expense and income taxes}}{\text{Interest expense}}$$

$$\text{Times interest earned} = \frac{\$84{,}000}{\$7{,}300} = 11.51$$

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

P 3

Profitability

Profit Margin

Gross Margin

Return on Total Assets

Basic Earnings per Share

Book Value per Common Share

Return on Common Stockholders' Equity

P 3

Profitability

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

NORTON CORPORATION 2011	
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

P 3

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.

P 3

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.

P 3

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.

P 3

Return on Common Stockholders' Equity

$$\text{Return on common stockholders' equity} = \frac{\text{Net income - Preferred dividends}}{\text{Average common stockholders' equity}}$$

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

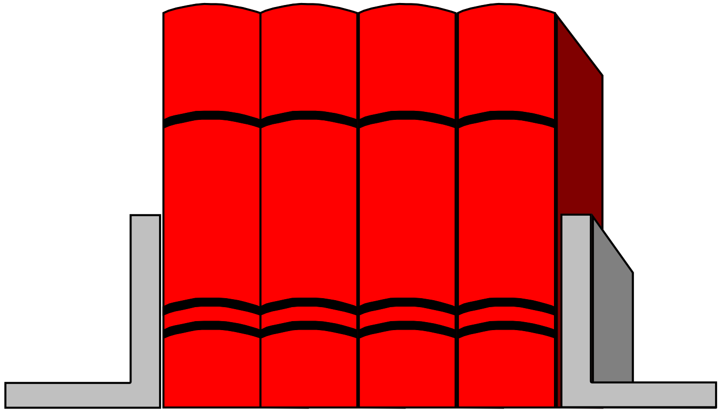
This measure indicates how well the company employed the owners' investments to earn income.

P 3

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.



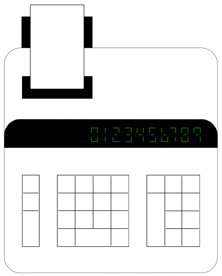
P 3

Basic Earnings per Share

$$\text{Basic earnings per share} = \frac{\text{Net income - Preferred dividends}}{\text{weighted-average common shares outstanding}}$$

$$\text{Basic earnings per share} = \frac{\$53{,}690 - 0}{27{,}400} = \$1.96 \text{ per share}$$

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



P 3

Market Prospects

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

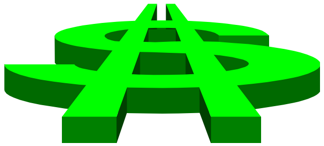
NORTON CORPORATION December 31, 2011	
Earnings per share	$ 1.96
Market price	15.00
Annual dividend per share	2.00

P 3

Price-Earnings Ratio

Price-earnings ratio = $\dfrac{\text{Market price per common share}}{\text{Earnings per share}}$

Price-earnings ratio = $\dfrac{\$15.00}{\$1.96}$ = **7.65 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.

P 3

Dividend Yield

$$\text{Dividend yield} = \frac{\text{Annual cash dividends per share}}{\text{Market price per share}}$$

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

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

A1

Summarizing Results

A financial statement analysis report helps by directly assessing the building blocks of analysis and by identifying weaknesses in inference and by requiring explanation. It usually consists of six sections:

- Executive summary
- Analysis overview
- Evidential matter
- Assumptions
- Key factors
- Inferences

End of Chapter 13