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MANAGEMENT DEVELOPMENT PROGRAMME

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202.6-84 FI-1575

AUTONOMOUS GROUP LEARNING (AGL)

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CENTRE FOR THE STUDY OF WATER SUPPLY
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LC: 200.6 84FI

No. 11: FINANCIAL MANAGEMENT FOR THE WATER INDUSTRY

DAILY WORK PACK

PART I

BASIC ACCOUNTING CONCEPTS

To be used and returned to the course organiser at the end of the day

Boland/Wallace/ILO 1984/3

PROGRAMME - PART I

<u>Ref.</u>	<u>Activity</u>	<u>Mode</u>	<u>Time</u>
1.	Introduction	MG/SG	30
2.	Quiz	IND	30
3.	Accounting reports PL	IND	45
4.	Lecture	MG/SG	30
	Coffee	-	15
5.	Case: John Marais SG	SG	45
	CSG	CSG	30
6.	SG	MG/SG	45
	Lunch	-	45
7.	Balance sheets PL	IND	45
8.	Lecture	MG/SG	30
	Coffee	-	15
9.	Case: Cape Electronics SG	SG	45
	CSG	CSG	30
10.	SG	MG/SG	30
11.	Summary lecture	SG	30
			—
		Total minutes	540
			—
Homework			
	Review and summaries		30
	Exercises		90
		Total minutes	120
			—

ABBREVIATIONS

AGL	-	AUTONOMOUS GROUP LEARNING
IND	-	INDIVIDUAL
SG	-	SMALL GROUP
CSG	-	COMBINED SMALL GROUP
MG	-	MAIN GROUP
ASS	-	ACCOUNTING STEP BY STEP
PL	-	PROGRAMME LEARNING
L	-	LECTURE
D	-	DISCUSSION
CH	-	CHAPTER
HRBS	-	HOW TO READ A BALANCE SHEET

STOP - DO NOT LOOK PAST THIS PAGE UNTIL SPECIFICALLY INSTRUCTED

ASSIGNMENT 1.0 - INTRODUCTION

1.1 SPECIFIC OBJECTIVES

- (a) Understand accounting language and concepts
- (b) Interpret balance sheets and income statements
- (c) Use basic financial indicators and operating indicators for the water industry
- (d) Develop confidence in using accounting and financial data for the water industry
- (e) Motivate further study in the future

1.2 AUTONOMOUS GROUP LEARNING (AGL)

The AGL method is designed to achieve rapid individual learning using special material and the stimulus of group activity without a formal instructor. The groups use the material to find the answers to all problems and questions.

1.3 GROUP ARRANGEMENTS

The work will be done:

- (a) IND - Individually, or
- (b) SB - Small Group (in small groups of four members which will change daily), or
- (c) CSG - Combined Small Group (two small groups together, with one group acting as "dealers" to lead the discussion and record key points on the "flipcharts" provided), or
- (d) MG - Main Group (for short taped lectures on key learning points with visual aids).

1.4 SG - SMALL GROUPS

Initial group names provided on separate sheets. Note the name of your SG and names of the other members.

1.5 LEARNING MATERIALS

- (a) Retained by members
- Programme learning book
 - Notebook - for recording every key point
 - Daily course diary
 - Exercises.
- (b) Used but not retained by members:
- Daily work packs including: introduction, lectures, cases, solutions, key learning points to be noted.

Note: Use your notebook. Do not mark the Daily Work Pack which must be handed back at the end of each day. You receive all the material in your SG. Don't look ahead in the work pack until you are specifically asked to do so!

1.6 METHOD

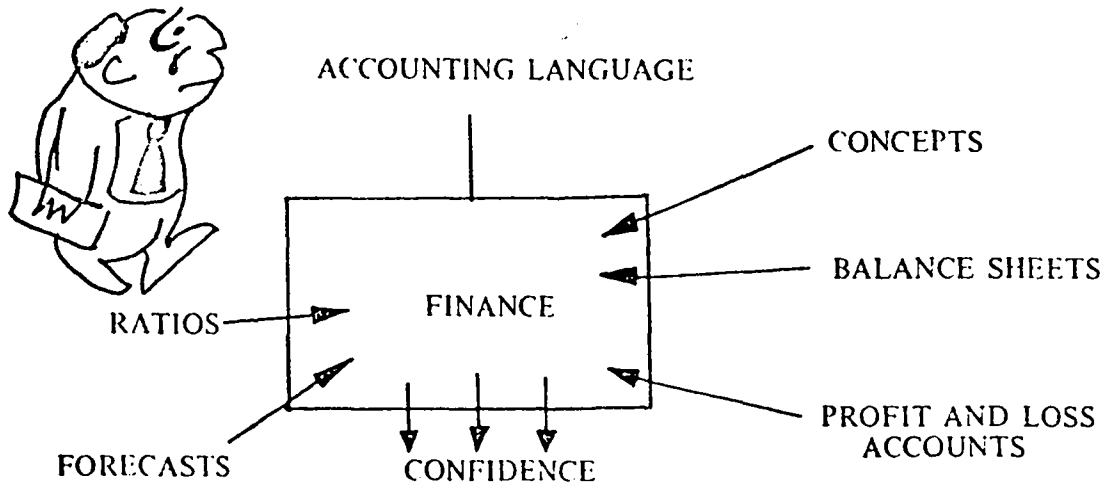
Try to complete every task in the time allowed. A pattern of learning methods will be used including:

- (a) Programmed learning
- (b) Case analysis
- (c) Lectures
- (d) Quizzes
- (e) Learning patterns
- (f) Homework reading
- (g) Action planning

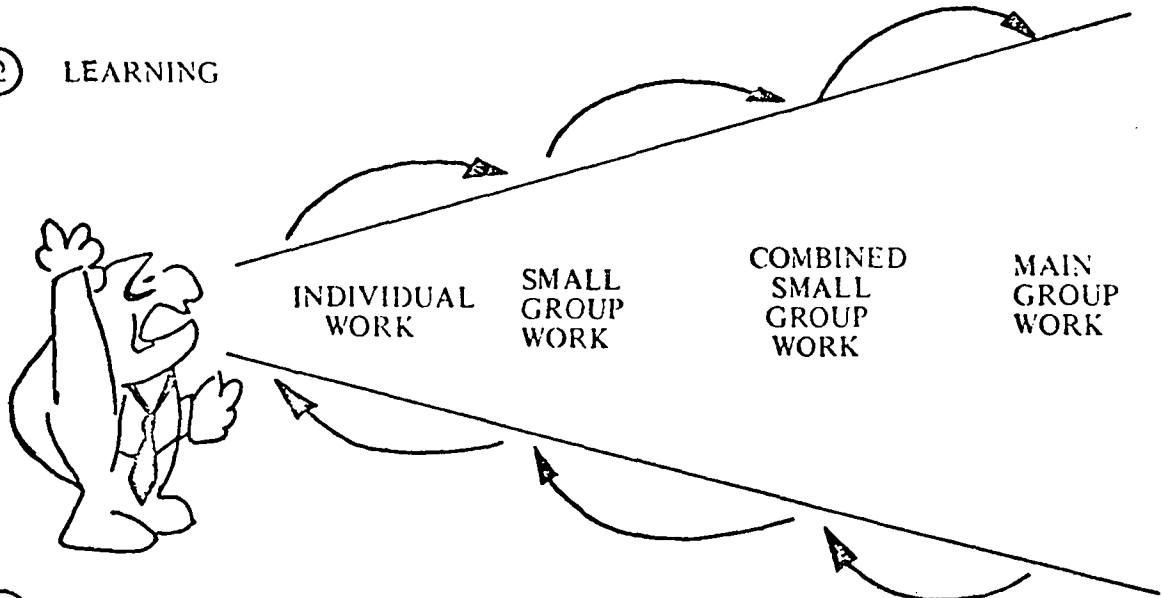
Note: Part I of the programme introduces basic accounting concepts and Part II deals with the application of the concepts, specifically to finance in the water industry.

1.7 LEARNING PATTERNS - REVIEW

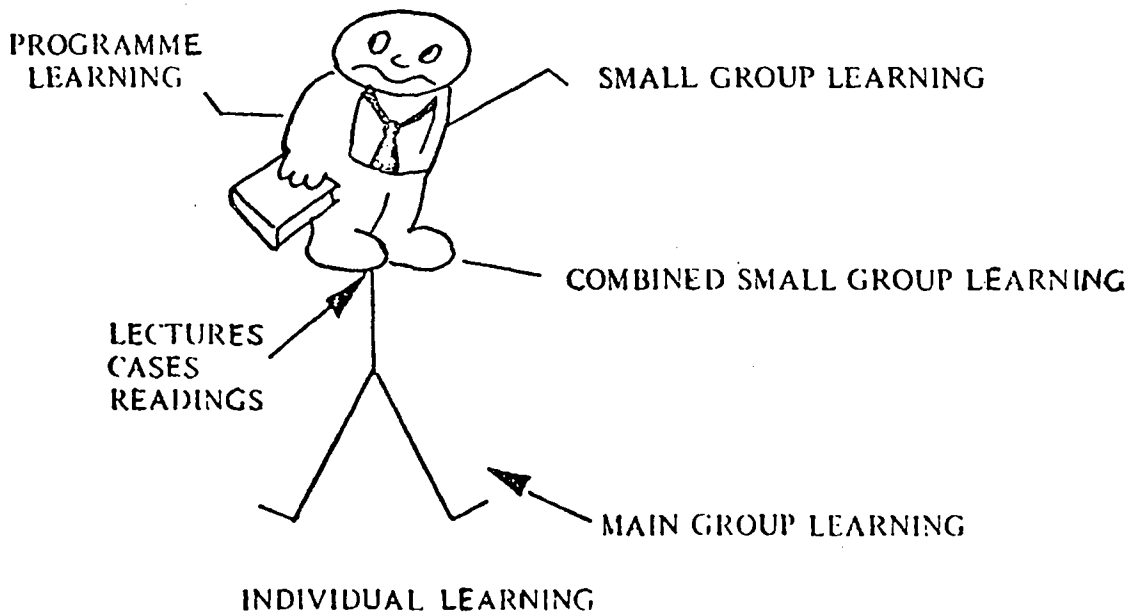
① OBJECTIVES



② LEARNING



③ METHOD



1.8 INSTRUCTIONS

- (a) Assemble in SGs to introduce yourself, indicate your past experience in finance and what you hope to contribute to and gain from the course.
- (b) Complete page one of the Daily Course Diary.

ASSIGNMENT 2.0 - QUIZ

2.1 INSTRUCTIONS - INDIVIDUAL WORK

- (a) Assemble in SG.
- (b) Answer the quiz of 100 questions; mark your answers a, b, c, or d with a clear X on the special form provided in the Daily Course Diary.
- (c) Work as quickly as possible but don't guess - leave blanks.
- (d) Hand in your answer sheet to the Organiser who will show you how to mark it and give you a quantitative measure of your financial knowledge at the start of the course..
- (e) Reassemble in MG when the bell rings.

ASSIGNMENT 3.0 - PROGRAMME LEARNING

3.1 INSTRUCTIONS - INDIVIDUAL WORK

- (a) Assemble in SG.
 - (b) Read ASS pages 9 and 10 "How to use the programme"; and chapters 1 and 2.
- OR
- (c) How to Read a Balance Sheet; chapters 1 and 2.
 - (d) Record significant points in your notebook.
 - (e) Reassemble in MG when the bell rings.

NOTE: Work very quickly and aloud. Write the answers in the ASS book; check out one question at a time.

ASSIGNMENT 4.0 - LECTURE ON ACCOUNTING REPORTS (15 MINUTES)

4.1 METHOD

Listen and respond verbally to any questions.

4.2 ACCOUNTING REPORTS

(a) Income statement (IS)

Profit and loss account or

Operating statement

Accounting period is one year

Sales less cost of goods actually sold = gross profit

Gross profit less expenses = net profit

Ratios are thermometers

Gross profit over sales = gross profit per cent

Net profit over sales = net profit per cent

(b) Balance sheet (BS)

Situation at the beginning of accounting period

Situation at end of accounting period

Assets of a business are financed by: liabilities and owners equity

4.3 ASSETS (A)

Things owned by a business which have measurable cost:

Cash, accounts receivable (debtors), inventories (stock),
prepayments, equipment, buildings, land, etc.

4.4 LIABILITIES (L)

Amounts due to be paid (i.e. cash must be paid to "them")

Accounts payable, trade creditors, other liabilities, taxation payable

Long-term liabilities

4.5 OWNERS EQUITY (OE)

Owners' claims against a business

Original capital plus accumulated profit

Assets less liabilities = owners equity

Profit increases owners equity

Losses and dividends reduce owners equity

4.6 EQUITY:DEBT (E:D)

This means equity as distinct from liabilities

Ratio of assets financed from owners equity and liabilities (payables)

4.7 TRANSACTIONS

Each transaction has a dual effect

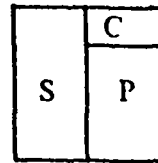
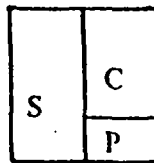
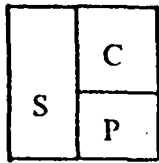
Assets increase and cash decreases, or

Assets increase and liabilities increase

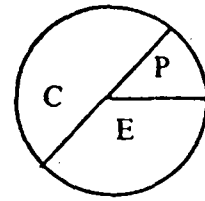
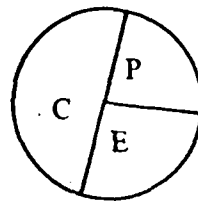
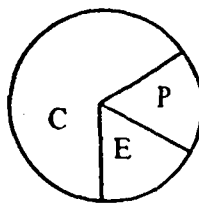
Cash decreases and liabilities decrease

4.8 LEARNING PATTERNS - REVIEW

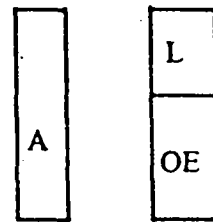
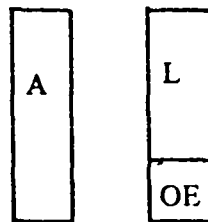
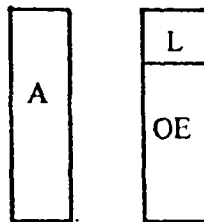
① RATIOS



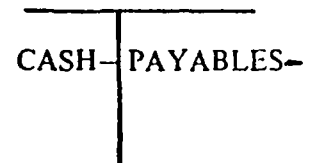
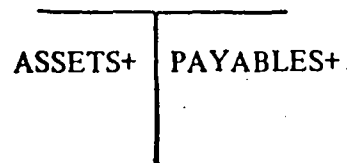
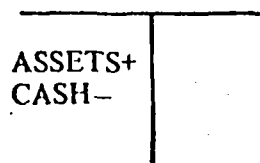
② PROFIT & LOSS ACCOUNTS



③ BALANCE SHEETS



④ TRANSACTIONS



4.9 WATER INDUSTRY ACCOUNTING

- (a) Basic accounting concepts apply to the Water Industry with the special features outlined below.
- (b) The Water Industry operation: water production treatment and distribution for non-agricultural purposes, requires high fixed asset investment with low sales/assets ratio (about 0.4 compared with 1.0).
- (c) The resulting "Structure of Cost" is: high fixed and low variable cost, with wide total cost variation (\$0.01 to \$5.00 per M³).
- (d) Water Industry fixed assets have a long horizon (working life) of 10-50 years leading to low depreciation rates. However, with inflation, the fixed assets replacement cost may exceed book value by a factor of two to four times. Thus profitability may depend on the amount of depreciation charged.
- (e) Water Industry financial statements include:
 - 1. Balance Sheet - showing assets and how they are financed from liabilities and owners' equity. Often the E:D ratio will be 1:1 or even 1:2 rather than 2:1, with increased use of long-term debt (Exhibit 1).
 - 2. Income Statement - showing sales less operating costs to give OPBD (Operating Profit before Depreciation). OPBD less depreciation to give OPAD (Operating Profit after Depreciation). OPAD less Non-operating Expense to give PBT. PBT less Income Tax equals Net Profit (Exhibit 2).

Ratios for the Income Statement are the same as those for general business PLUS special operating indicators relating sales and costs to: No. of Connections, Water Output (M³ and \$), No. of Employees, etc.
 - 3. Statement of Accumulated Profit - showing the opening balance, plus net profit less dividends to give the closing balance, which is part of the Owners' Equity in the Balance Sheet (Exhibit 3).
 - 4. Funds Flow Statement - showing the sources and uses of new funds during the accounting period (to be discussed later).
 - 5. Statistical Data - on population, production, number of connections, tariffs, employees, sales M³, sales \$, etc. (Exhibit 4).
 - 6. Performance indicators for the Water Industry with rough standards (Exhibit 5).
- (f) The long-term financial strategy of the water industry is to provide efficient coverage of the total population in a way that is financially viable. Thus, water tariffs should exceed long-term costs and each water company should always be financially "healthy" in terms of: liquidity, activity, profitability and potential.

WATER INDUSTRY - STANDARD BALANCE SHEET AT 31 DECEMBER 1982

	<u>\$000</u>
<u>ASSETS</u>	
<u>Current assets</u>	
Cash	2
Accounts receivable	146
Inventory	78
Other	175
Total	<u>401</u>
<u>Fixed assets</u>	
Cost/revaluation	5,831
Accumulated depreciation	1,165
Net	4,666
Construction in progress	30
Total	<u>4,696</u>
<u>Other assets</u>	
Investments	32
Other	116
Total	<u>148</u>
 TOTAL ASSETS	 5,245 =====
 <u>LIABILITIES AND OWNERS EQUITY</u>	
<u>Current liabilities</u>	
Accounts payable	115
Accrued expenses	77
Other	25
Total	<u>217</u>
<u>Long term liabilities</u>	
Bonds	2,522
Other	896
Total	<u>3,418</u>
<u>Owners equity</u>	
Capital stock	814
Revaluation reserve	299
Accumulated profit	497
Total	<u>1,610</u>
 TOTAL LIABILITIES AND OWNERS EQUITY	 5,245 =====

WATER INDUSTRY - STANDARD INCOME STATEMENT
YEAR ENDED 31 DECEMBER 1982

	Amount \$000	%
Water sales	1,420	100
Other sales	-	-
Total	<u>1,420</u>	<u>100</u>
 <u>OPERATING COSTS</u>		
Personnel	305	22
Power	75	5
Chemicals	125	9
Maintenance, Other	215	15
Indirect Administrative Expenditure	153	10
Total	<u>873</u>	<u>61</u>
OPERATING PROFIT BEFORE DEPRECIATION (OPBD)	547	39
DEPRECIATION	87	6
OPERATING PROFIT AFTER DEPRECIATION (OPAD)	<u>460</u>	<u>33</u>
NON-OPERATING EXPENSES - Interest	<u>309</u>	<u>22</u>
	151	11
NON-OPERATING INCOME	21	1
PROFIT BEFORE TAXES	<u>172</u>	<u>12</u>
TAXES	71	5
NET PROFIT	<u>101</u>	<u>7</u>
	=====	===

EXHIBIT 3

WATER INDUSTRY - STATEMENT OF ACCUMULATED PROFIT YEAR ENDED 31 DECEMBER

	<u>\$000</u>
Opening balance	471
Add: Net profit for the year	101
	<u>572</u>
Less: Dividends	85
Closing balance	497
	=====

WATER INDUSTRY - STATISTICAL DATA ON POPULATION, PRODUCTION AND SALES

1982

Population

Served	70,000
Not Served	<u>30,000</u>
Total	<u>100,000</u>

No. of Connections

Standpipes	-
Private	5,801
Industrial	774
Government	<u>120</u>
Total	<u>6,695</u>
New (lost) connections	(55)

Tariffs Per M³

Standpipes	
Private	Detail omitted
Industrial	
Government	
Average of total	<u>\$.37</u>

Production (000 M³)

Metered and sold	3,876
Metered and unaccounted for	<u>932</u>
Subtotal	4,808
Unused capacity	<u>3,200</u>
Total capacity	<u>8,008</u>

Employees

Total number	21
Total cost (000\$)	<u>\$ 305</u>

Water sales (000 M³)

Standpipes	-
Private	1,160
Industrial	1,616
Government	<u>1,100</u>
Total	<u>3,876</u>

Water sales (000 \$)

Standpipes	-
Private	693
Industrial	458
Government	<u>269</u>
Total	<u>\$ 1,420</u>

SPECIAL PERFORMANCE INDICATORS FOR THE WATER INDUSTRY

<u>No.</u>	<u>Rough Std.</u>	<u>Item</u>	<u>Units</u>	<u>Format A</u>	<u>Format B</u>
<u>LIQUIDITY</u>					
L1	2:1	CA:CL	- Ratio	2:1	2.0
L2	1:1	QA:QL	- Ratio	.7:1	.7
L3	1:2	E : D	- Ratio	1:2	.5
<u>ACTIVITY</u>					
A1	.4	S/A	- times	.3	.3
A2	30	Days - Receivables	- days	38	38.0
A3	30	Days - Payable	- days	20	20.0
A4	-	Connections - No.	- no.	6695	6695.0
A5	+10	Conn. (new)/Conn. no.	- %	16	.01
A6	600	Sales Vol. M ³ /Conn. No.	- M ³ /conn.	578	578.0
A7	200	Sales Vol. \$/Conn. No.	- \$/conn.	\$212	\$212.00
A8	1000	People served/No employees	- Pop/employee	1000	1000.00
<u>PROFITABILITY</u>					
P1	50	OPBD/S %	- %	39	.39
P2	5	NP/S %	- %	7	.07
P3	10	NP/OE %	- %	6	.06
P4	15	Cash Flow/Total Assets %	- %	3	.03
P5	5	OPBD/Interest	- times	1.3	1.30
P6	\$.20	Oper. Cost \$/Sales Vol. M ³	- \$/M ³	\$.24	\$.24
P7	\$.25	Total Cost \$/Sales Vol. M ³	- \$/M ³	\$.33	\$.33
P8	\$.33	Sales Val. \$/Sales Vol. M ³	- \$/M ³	\$.37	\$.37
<u>POTENTIAL</u>					
O1	80	Pop. served/Total Pop. %	- %	70	70
O2	80	Prod. Metered/Prod. Cap. %	- %	60	60
O3	80	Sales Vol./Prod. Met. %	- %	81	81
O4	20	Water Unacctd./Prod. Met. %	- %	19	19

Note: The above are only rough standards. More useful standards are based on such factors as: size, technology, location, etc., and the effects of inflation.

Note: Format A is the way the operating indicators are presented in this programme. Format B is an alternative presentation of the same data.

Note: Formulae for computation of the indicators are given in the Course Diary.

ASSIGNMENT 5.0 - CASE ANALYSIS OF JOHN MARAIS

5.1 INSTRUCTIONS

(a) General

John Marais is a case study in your work pack (Exhibits 1 and 2). It is the story of a business in words and figures; the questions are to help you to analyse the problems.

(b) Individual and SG Work

Read the case; study it carefully; analyse all the key problems; answer all the questions; write notes about the key points of the case and the answers in your own notebook.

Discuss all the points with your group and formulate a specific plan of action.

You need not all agree but you must decide.

(c) Combined Small Group Work

Groups will be combined as follows:

A with D
B with E
C with F

Groups A, B and C will act as "Dealers", i.e., they make a short presentation giving the answers to the questions, lead the CSG discussion, record key points continually on the "flipchart" and lead the CSG to a definite range of decisions.

(d) Reassemble in MG when the bell rings.

JOHN MARAIS

On 1 July 1983, John Marais, a plumber, took his savings and bought some materials and started business for himself. It wasn't a large business but it did give him the pleasure of being his own boss and combined the inside work of manufacturing with the inside work of manufacturing with the outside work of selling. His products were water pumps priced to retail at \$200 each. They were good pumps intended to last 8 years. Mr. Marais did all the work himself and had no employees.

At the end of the first six months' trading, Mr. Marais took pride in his first income statement. He hoped that it would be the forerunner of a long series of reports showing profitable operations. This statement is shown in Exhibit 2.

QUESTIONS

1. Study the story of the case and every figure in the financial statements to determine its meaning and significance. Get a picture of what has happened. Don't miss the obvious things. This case demonstrates basic accounting concepts applicable to both general business and the water industry.

Actual Rough
Indicator Standard

2. Roughly compute the following indicators :

$\frac{\text{Gross profit}}{\text{Sales}} \times 100\%$	=	40%
$\frac{\text{Net profit}}{\text{Sales}} \times 100\%$	=	10%
$\frac{\text{Net profit}}{\text{Owners equity}} \times 100\% \text{ p.a.}$	=	25%
Current assets : current liabilities	=	2:1
Quick assets : quick liabilities (Cash and Debtors (Creditors)	=	1.5:1
Equity : Debt	=	2:1

3. Consider the financial health of the business in terms of: liquidity, activity, profitability and potential.
4. List the achievements and problems of the business.
5. Write out a plan of action to deal with the problems.

JOHN MARAIS
Income Statement for the six months ending
31 December 1983

Net sales		\$4,000
Cost of goods <u>actually</u> sold:		
Opening inventory (stock) 1.7.82	\$ 200	
Materials purchased	2,000	
Wages (paid to J. Marais)	5,000	
Rent	<u>800</u>	
Total manufacturing cost	8,000	
Less inventory unsold on 31.12.82 valued at manufacturing cost	<u>6,000</u>	<u>2,000</u>
GROSS PROFIT		2,000
Expenses:		
Advertising and selling	\$ 950	
Interest	<u>50</u>	<u>1,000</u>
NET PROFIT		<u>\$1,000</u> =====

BALANCE SHEET AS AT 31 DECEMBER 1983

Assets:

Cash		\$ 140
Accounts receivable (due since October 1982)		50
Inventory at manufacturing cost		<u>6,000</u>
TOTAL ASSETS (To be financed)		<u>\$6,190</u>

Liabilities and Owners Equity:

Liabilities		
Loan: S.O. Marais (father)	\$2,000	
Accounts payable (creditors)	<u>1,690</u>	<u>3,690</u>
Owners equity:		
Capital	\$1,500	
Accumulated profit	<u>1,000</u>	<u>2,500</u>
TOTAL FINANCE FOR THE ASSETS		<u>\$6,190</u> =====

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ASSIGNMENT 6.0 - LECTURE - JOHN MARAIS

6.1 STORY OF THE CASE

John Marais has been in business for six months producing pumps. He reckons he made a profit of \$1,000 and has drawn \$5,000 from the business. He thinks he has done rather well.

Let's now review the accounts. First, the income statement: sales \$4,000, cost \$2,000 to manufacture, giving a gross profit of \$2,000. From the gross profit, the expenses of \$1,000 are deducted to give a net profit of \$1,000.

In the balance sheet: assets of the business were: cash, accounts receivable and inventory totalling \$6,190. These were financed partly by liabilities \$3,690 and partly by owners equity \$2,500. Most of the money for the business was provided by S.O. Marais. Most of the money has been taken out by John Marais.

6.2 INDICATORS

$$\frac{\text{Gross profit}}{\text{Sales}} \quad \frac{\$2,000}{\$4,000} \times 100\% = 50\%$$

$$\frac{\text{Net profit}}{\text{Sales}} \quad \frac{\$1,000}{\$4,000} \times 100\% = 25\%$$

$$\frac{\text{Net profit}}{\text{Owners equity}} \quad \frac{\$1,000}{\$2,500} \times 100\% = 80\% \text{ p.a. (twice 40\%)}$$

Rough
standard

$$\text{Current assets : current liabilities} \quad \$6,190 : \$1,690 = 4:1 \quad (2:1)$$

$$\text{Quick assets : quick liabilities} \quad \$ 190 : \$1,690 = 1:8 \quad (1.5:1)$$

$$\text{Equity : Debt (liabilities)} \quad \$2,500 : \$3,690 = 1:1.5 \quad (2:1)$$

6.3 FINANCIAL HEALTH

- (a) Liquidity - current assets to current liabilities are strong but quick assets to quick liabilities are weak, indicating a cash shortage = critical point.
Equity:Debt - less than 1:1 means that there is not enough equity in the business = critical point.
Drawings of \$5,000 in this early stage of the business has led to a cash shortage = critical point.
- (b) Activity - sales of \$4,000 cost only \$2,000 against a remaining inventory of \$6,000. Thus, for one toy sold, we have three unsold in inventory. Production and marketing must be balanced = critical point.
- (c) Profitability - good, but profit depends upon the value of the inventory which includes \$5,000 of wages. If the inventory valued at market price is lower than cost, then the inventory value must come down. Reduction in inventory value reduces a profit. Thus, a reduction from \$6,000 to \$5,000 in inventory value would mean no profit this year at all!
- (d) Potential - there is only one product; the garage is full of unsold pumps; the cash is short; payments are overdue; management is doubtful.

6.4 ACHIEVEMENTS AND PROBLEMS

- (a) John Marais has started the business and if the inventory can be sold at least for cost, he has made a small profit.
- (b) He has drawn a large salary which is only earned if the inventory can be sold.
- (c) He needs cash to pay his creditors.
- (d) His inventory is too high and he may never sell it.
- (e) He is not managing his finances well and may be bankrupt if the creditors press for payment.

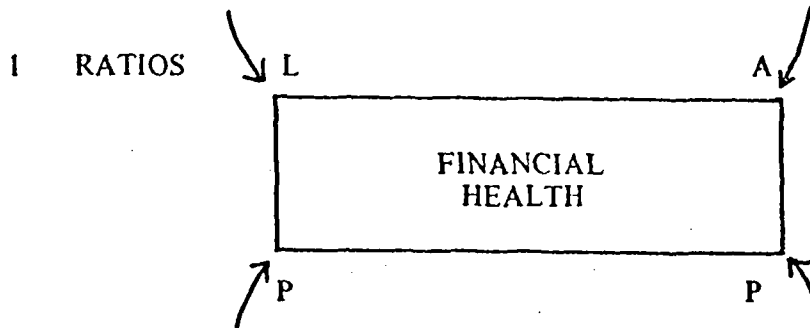
6.5 PLAN OF ACTION

- (a) Get cash to pay the creditors.
- (b) Stop production and sell off the inventory.
- (c) Consider whether the business is viable or product range too narrow to be worthwhile.
- (d) Cut the salary to nothing.
- (e) Go out and sell (or work for someone else!).

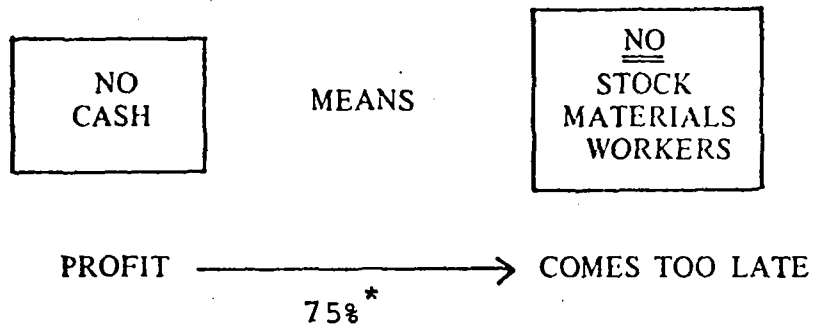
6.6 LEARNING POINTS

- (a) Cash is more important than profit in running a business, because without cash, the manager can do nothing.
- (b) Performance indicators are useful in assessing the health of the business, as follows:
 - L - Liquidity
 - A - Activity
 - P - Profitability
 - P - Potential
- (c) It is not correct to charge all wages to manufacturing costs, because this increases the cost of the inventory.
- (d) The inventory is valued at the lower of cost or market value.
- (e) Inventory valuation is the key to profit.
- (f) The high drawings are bad for an expanding business.
- (g) Look for the story behind the figures. Learn the language of accounting quickly.
- (h) All financial statements are estimates based upon assumptions. They are not scientific facts.

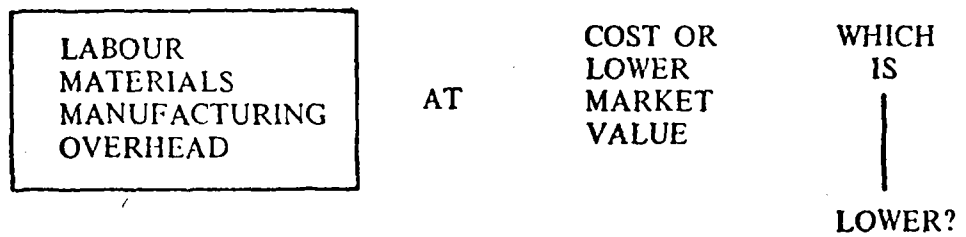
6.7 LEARNING PATTERNS - REVIEW



2 CASH



3 STOCK VALUATION



*75% of the businesses that go bankrupt are making a profit - they just run short of cash!!

ASSIGNMENT 7.0 - PROGRAMME LEARNING

7.1 INSTRUCTIONS - INDIVIDUAL WORK

- (a) Assemble in new SG.
- (b) Do ASS Chapter 3 in writing, or HRBS Chapters 3 and 4.
- (c) Review the ASS Glossary and tick those words that you immediately understand.
- (d) Record any significant points in your notebook.
- (e) Reassemble in MG when the bell rings.

ASSIGNMENT 8.0 - LECTURE ON BALANCE SHEETS

8.1 ASSETS

Valuable things owned by a business.

Fixed assets are for long-term use in a business; valued at cost less depreciation, not market value; e.g. land, buildings, machinery, equipment, motor cars, etc. Sometimes they are revalued to "replacement cost".

Current assets are cash or near cash within one year; valued at cost or lower realisable (market) value; e.g., cash, accounts receivable (debtors), inventories (stock), prepaid expenses, marketable securities.

Other assets are special assets valued at cost or lower; e.g., patents, trade investments, goodwill, etc.

8.2 LIABILITIES

Amounts due to be paid by the business to someone else.

Accounts payable (creditors) are liabilities.

Current liabilities are due for payment within one year, e.g. accounts payable, creditors, other payables, income tax payable, dividends payable.

Long-term liabilities are due for payment in more than one year; e.g., mortgages, loans, debentures, etc.

Bank loans and overdrafts are normally classified as current liabilities whereas bank loans for more than one year are long-term liabilities.

Liabilities are normally unsecured, but may have special security on particular assets.

8.3 OWNERS EQUITY

Assets of a business are financed by either liabilities or owners equity.

Owners equity is the capital issued to shareholders (stockholders), in exchange for cash, plus reserves accumulated in the business.

Reserves include capital reserves (share premium, revaluation reserve, etc.) or revenue reserves (retained earnings) or accumulated profits.

Assets less liabilities = owners equity

Assets = liabilities plus owners equity

Assets less owners equity = liabilities

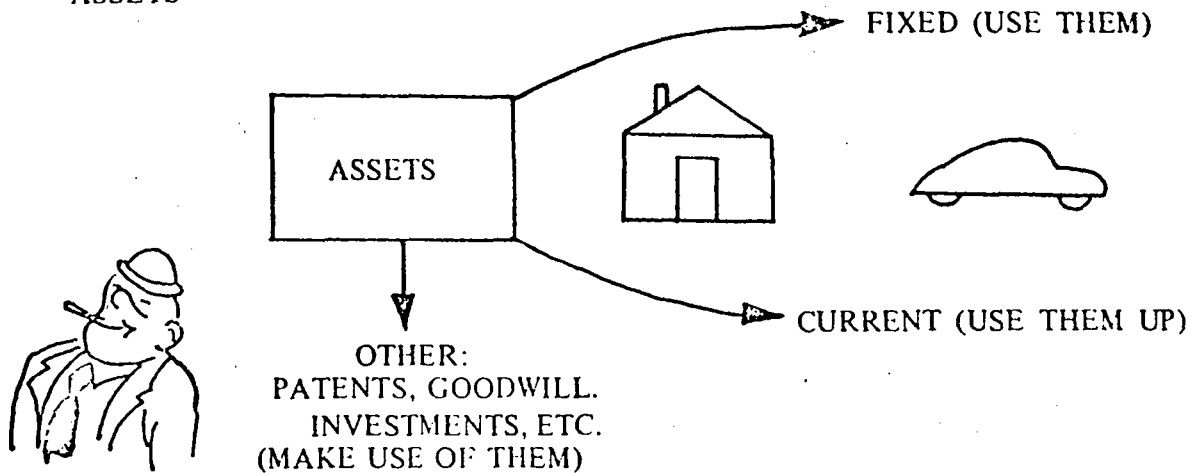
8.4 PERFORMANCE INDICATORS

Indicators are like a thermometer which takes the actual temperature of a business in relation to some standard scale:

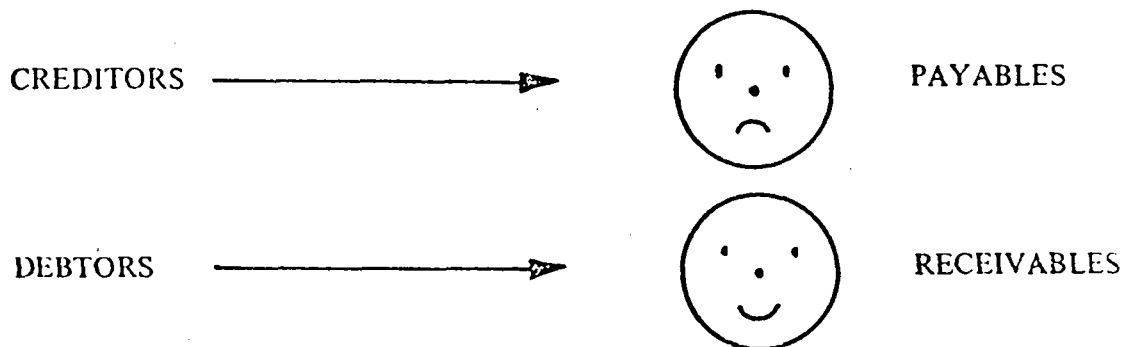
	Good	<u>Rough standard</u> Average	Poor
(a) Liquidity			
CA:CL	2:1	1:1	1:2
QA:QL	1.5:1	1:1	1:2
E : D	2:1	1:1	1:2
(b) Profitability			
GP/S x 100%	Up	Same	Down
NP/S x 100%	Up	Same	Down
NP/OE x 100% p.a.	Up	Same	Down

8.5 LEARNING PATTERNS - REVIEW

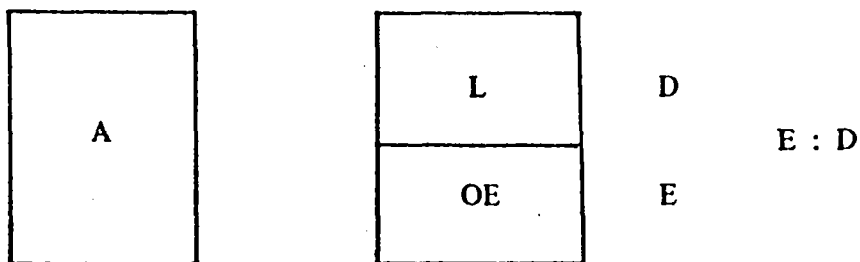
① ASSETS



② DISTINGUISH



③ EQUITY: DEBT



④ CURRENT MEANS ONE YEAR

⑤ LAPP

- L LIQUIDITY
 - A ACTIVITY
 - P PROFITABILITY
 - P POTENTIAL
- 1.24

ASSIGNMENT 9.0 - CASE ANALYSIS - CAPE ELECTRONICS COMPANY

9.1 INSTRUCTIONS

(a) Individual and SG Work (Exhibits 1-3).

(b) CSG Work

Groups will be combined as follows:

A with E) Groups D, E and F will act as "Dealers"
B with F) Note: Dealer MUST record every key point
C with G) on the "flipchart" provided.

(c) Reassemble in MG when the bell rings.

CAPE ELECTRIC COMPANY

QUESTIONS

1. Study the story of the case and every figure in the financial statements to determine its meaning and significance. Get a picture of what has happened. Don't miss the obvious things. This case also demonstrates basic accounting concepts applicable both to general business and the water industry.

2. Roughly compute the following indicators :

	<u>Actual</u> Ratio	<u>Rough</u> Standard
<hr/>		
(a) Liquidity		
Current assets : current liabilities		2:1
Quick assets : quick liabilities		1.5/2:1
Equity : Debt		2:1
(b) Activity		
$\frac{\text{Sales}}{\text{Assets}} = [\text{times turned over (p.a.)}]$		1+
$\frac{\text{Cost of goods sold}}{\text{Inventories}} = [\text{times turned over (p.a.)}]$		2+
(c) Profitability		
$\frac{\text{Gross profit}}{\text{Sales}} \times 100\%$		30%
$\frac{\text{Net profit}}{\text{Sales}} \times 100\%$		8%
$\frac{\text{Net profit}}{\text{Owners equity}} \times 100\%$		25%
		(before tax)

3. Compute a better figure of net profit (\$2,480) by deducting charges for:

(a) depreciation of equipment	\$	(10 years' life)
(b) cost of labour	\$	(\$3 per hour)
(c) depreciation patent	\$	(4 years life)
(d) overhead	\$	(say, 100)

The revised net profit is \$ _____
=====

Note: Do not re-calculate the indicators .

4. Consider the financial health of the business in terms of: liquidity, activity, profitability and potential.
5. List the achievements and problems of the business.
6. Write out a specific plan of action to deal with the problems.

(DON'T FORGET TO COVER EVERY QUESTION)

CAPE ELECTRICS COMPANY

After six months of part-time operations, Pete and Charlie met to decide whether to make Cape Electrics Company not a part-time, but a full-time venture.

Pete was Production Manager for GMC Manufacturing Company and Charlie was the Sales Manager. Each earned a salary of \$14,000 per annum. Pete had developed a new measuring meter which several water companies were buying. He developed a working model, applied for a patent and on 1 May 1982 sold 20 units at \$375 each to GMC. Pete and Charlie immediately formed Cape Electrics Company, and each took 200 shares in exchange for \$2,000 in cash. Pete also assigned his invention to the company in exchange for a non-interest bearing 20-year note for \$5,000.

The manufacture of this special measuring meter involved mainly assembly and wiring. The two men did this themselves in a garage working evenings and weekends. 20 units were then completed and paid for by September 1982.

Meanwhile, Charlie placed a small advertisement in the trade papers and this resulted in enquiries that led to orders for 5 additional units from other companies. In September, he placed larger advertisements costing \$1,000. To fill the orders expected from the advertising promptly, they had 5 units on hand. They also had on hand a supply of components.

During the period 1 May to 31 October, they worked 10 hours each weekly on production plus additional time dealing with prospective customers and other problems. They drew no salary.

They decided that the time had come to think about devoting full-time to the business, so Charlie prepared the financial statement shown as Exhibit 3. There were no outstanding sales orders and they had placed orders for components for \$2,800 for delivery in November.

CAPE ELECTRICS COMPANY

FINANCIAL STATEMENTS AS OF 31 OCTOBER 1982

BALANCE SHEET

Assets

Current assets:

Cash	\$ 288	
Accounts receivable (debtors)	750	
Inventory of components (at cost)	2,363	
Inventory of finished switches (at cost)	<u>1,187</u>	

4,588

Fixed assets:

Equipment (at cost)	\$2,879	
Patent right (at cost)	<u>5,000</u>	

7,879

Total assets

\$12,467
=====

Liabilities and Equity

Liabilities:

Accounts payable (creditors)		\$ 987
Note payable		<u>5,000</u>
Total liabilities		<u>5,987</u>

Owners' equity:

Share capital	\$4,000	
Accumulated profit	<u>2,480</u>	
Total equities		<u>6,480</u>

Total equities

\$12,467
=====

INCOME STATEMENT FOR SIX MONTHS ENDED 31 OCTOBER 1982

Sales		\$9,375
Cost of sales		<u>4,862</u>

Gross profit

4,513

Advertising	\$1,463	
Other expenses	<u>570</u>	

2,033

Net profit

\$2,480
=====

DO NOT TURN PAGE UNTIL TOLD TO DO SO

ASSIGNMENT 10.0 - LECTURE ON CAPE ELECTRONICS COMPANY (30 MINUTES)

10.1 STORY OF THE CASE

The two managers had an idea for a new product and while fully employed elsewhere, they produced and sold a few units to their employers; they advertised and sold a few more units; working part-time in a garage and made a profit (if we ignore labour, equipment, depreciation of patents, overheads, etc.). Should they now work in this new business full-time?

10.2 RATIOS - COMPARED WITH A GOOD STANDARD

		Actual Ratio	Good Standard
(a) Liquidity:			
CA : CL	\$4,588 : \$ 987	5 : 1	2 : 1
QA : QL	\$1,038 : \$ 987	1 : 1	1.5 : 1
E : D	\$6,480 : \$5,987	1+ : 1	2 : 1
(b) Activity:			
<u>Sales</u>	\$9,375	1+ p.a.	1+ p.a.
<u>Assets</u>	\$12,467	(twice ^{3/4})	
<u>Cost of goods sold</u>	\$4,862	2+p.a.	2+ p.a.
<u>Inventories</u>	\$3,549	(twice)	
(c) Profitability:			
<u>Gross profit</u>	\$4,512	48%	30%
<u>Sales</u>	\$9,375		
<u>Net profit</u>	\$2,480	27%	5%
<u>Sales</u>	\$9,375		
<u>Net profit (p.a.)</u>	\$2,480 (half year)	76% p.a.	25%
<u>Owners equity</u>	\$6,480	(twice 38%)	(before tax)

10.3 COMPUTATION OF NEW PROFIT FIGURE

The profit has been incorrectly calculated because there are no charges for: labour, equipment depreciation, patent depreciation and overheads. A better calculation is as follows:

Profit per accounts for six months		\$2,480
Less:		
Labour 520 hours at \$6 per hour	\$1,560	
Equipment depreciation (10 year life)	143	
Patent depreciation (4 year life)	625	
Overheads, say	<u>100</u>	<u>2,428</u>
Corrected profit (before tax)		\$ 52 =====

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Overheads, say	<u>100</u>	<u>2,428</u>
Corrected profit (before tax)		\$ 52 =====

10.4 DEPRECIATION

Distinguish between the patent as an asset owned by Cape Electrics and the liability to pay for it (at some later date).

Depreciate the asset in order to charge expense with the cost as the asset is used up, over the "working life".

The "working life" of the patent does not depend upon the law at the time of payment.

The "working life" depends upon the electronics industry. Such a patent is probably not useful after four years.

Until the profit is correctly calculated, the indicators are misleading.

10.5 COMMENTS ON THE HEALTH OF THE COMPANY

- (a) Liquidity - the current ratio is reasonable, but the quick ratio indicates a shortage of cash to pay creditors (payables); this will be worse when the new materials are received.
- (b) Activity - the company is fairly active, but the advertising of \$1,462 has only produced six more sales. Will the company ever be active enough to justify full-time work?
- (c) Profitability - the profit is nil after adjustment, except as a part-time hobby.
- (d) Potential - product limited; market limited; physical facilities in a garage are not adequate for full-scale production; management may not be adequate.

10.6 ACHIEVEMENTS AND PROBLEMS

Operated for six months and made a small return for their time. Market for this product may be small and not last very long. Additional factory facilities and labour are required to produce in quantity.

They must produce over 200 units to make salaries of \$14,000 per annum plus new overheads of, say, \$12,000. (This is calculated as selling price per unit \$375 less cost of direct labour and material about \$175 = contribution \$200. Contribution x 200 units = \$40,000.)

Is it possible to produce and sell so many units? Would the low equity support the working capital required to expand production without having a cash crisis?

10.7 PLAN OF ACTION

- (a) Market research to determine the potential of the product.
- (b) Cash to pay the creditors.
- (c) More equity to finance a bigger operation if justified.
- (d) Otherwise keep it as a hobby or sell out.

10.8 LEARNING POINTS

- (a) Accounting depends upon assumptions; figures are only estimates.
- (b) Income statement is not valid unless all costs have been charged including labour, depreciation, overheads, etc.
- (c) Depreciation is based on the working life of a fixed asset not the time of payment. Depreciation of a patent is difficult because the working life is uncertain. Four years seems reasonable.
- (d) Bigger production requires a proper factory and new overheads of about \$12,000 per annum or more and a larger "equity base".
- (e) Cash is more important than profit.
- (f) Sales orders are vital to the health of a business. They are not, however, recorded on the balance sheet.
- (g) Balance sheet and income statement may be analysed under the LAPP system.
- (h) Management competence may be judged from the financial story.
- (i) Don't work in small figures not justified by the underlying assumptions. Financial statements should be in whole dollars or thousands of dollars, not dollars and cents, since accounting is not that accurate.

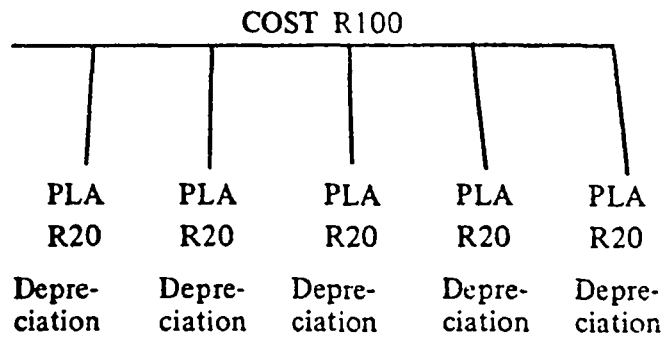
(1) ASSUMPTIONS MEAN

BIG FIGURES

R1 000 000. (01)
↓
OUT!

(2) DEPRECIATION

LEGAL LIFE
WORKING LIFE
 PAYING LIFE
 ENGINEERING LIFE

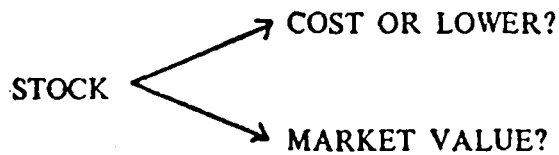


(3) CASH

CASH
NOW

PROFIT
LATER?

(4) ORDERS / STOCK



SALES ORDERS IN HAND - ESSENTIAL

AUTONOMOUS GROUP LEARNING (AGL)

No. 11: FINANCIAL MANAGEMENT FOR THE WATER INDUSTRY

QUIZ

Boland/Wallace/ILO 1984/3

Wang 0215f

Choose, if possible, the most correct answer and mark the answer sheet a, b, c, d, with an "x". DO NOT MARK THE QUIZ.

1. An instantaneous financial picture of a water company as of a particular date is:
 - (a) an income statement
 - (b) a statement of retained earnings
 - (c) a balance sheet
 - (d) a profit and loss account

2. An accurate report for a water company of the flows of sales, costs and profit over an accounting period is called a/an:
 - (a) income statement
 - (b) sales report
 - (c) balance sheet
 - (d) receipts and payments account

3. Days of receivables (debtors) are generally computed:
 - (a) receivables divided by sales x 7
 - (b) receivables multiplied by sales x 360
 - (c) payables divided by sales x 360
 - (d) receivables divided by sales x 360

4. Owner's claims against the assets of a water company are called:
 - (a) owners equity
 - (b) liabilities
 - (c) capital
 - (d) income

5. When fixed assets of a water company are revalued to replacement cost, we may definitely expect:
 - (a) lower depreciation costs
 - (b) improved E:D ratio
 - (c) higher tariffs
 - (d) improvement in working capital

6. Assets less liabilities equals:
 - (a) share capital
 - (b) retained earnings
 - (c) owners equity
 - (d) reserves

7. Customers who owe for water supplied are listed on a balance sheet as:
 - (a) payables
 - (b) sales
 - (c) claims against the assets
 - (d) debtors (receivables)

8. Land, buildings, plant, etc., owned by a water company are normally:
- (a) current assets
 - (b) fixed assets
 - (c) share capital
 - (d) expenses
9. The key ratio for marketing efficiency of a water company is:
- (a) sales value/connection
 - (b) M^3 /connection
 - (c) M^3 /km pipeline
 - (d) M^3 /employee
10. The owners equity of a water company consists of:
- (a) capital and reserves
 - (b) capital stock alone
 - (c) assets of the business
 - (d) dividends, reserves and capital
11. The key difference in the financial structure of a water company compared with a general business is:
- (a) low fixed assets
 - (b) high equity, low debt
 - (c) high working capital
 - (d) high debt, low equity
12. If a water business has cash of \$2,000,000, payables of \$100,000, a mortgage liability of \$5,000,000 and fixed assets of \$10,000,000, the owners equity is:
- (a) impossible to compute
 - (b) \$6,900,000
 - (c) \$10,000,000
 - (d) \$5,100,000
13. A balance sheet is prepared for a business entity. For a water company, this entity is:
- (a) the company alone
 - (b) the company and its management
 - (c) the company and its shareholders
 - (d) the shareholders alone
14. Owners equity equals:
- (a) assets plus liabilities
 - (b) total assets of the business
 - (c) what a business could be sold for
 - (d) assets less liabilities

15. A transaction in accounting is:
- (a) any event which changes the balance sheet of the business
 - (b) anything bought only for cash
 - (c) anything sold for cash or credit
 - (d) any event which produces a profit or a loss
16. A transaction always affects, at least, ... items on a balance sheet:
- (a) one
 - (b) two
 - (c) three
 - (d) none
17. Investment for increased water production capacity and sales results in:
- (a) reduced cost/M³
 - (b) increased cost/M³
 - (c) increased working capital needed
 - (d) improved E:D
18. A current asset is normally converted into cash or used up within:
- (a) six weeks
 - (b) one year
 - (c) two years
 - (d) some other period
19. With increased billing, the key ratio for cash flow of a water company is:
- (a) CA:CL
 - (b) days payables
 - (c) days receivables
 - (d) E:D
20. Water construction in progress is normally classified in the balance sheet as:
- (a) current asset
 - (b) capital reserve
 - (c) expense
 - (d) fixed asset
21. What is most important in actually running any business:
- (a) assets
 - (b) cash
 - (c) profit
 - (d) liabilities

22. In financial analysis, information about the sales orders backlog of a general business is:
- (a) significant
 - (b) irrelevant
 - (c) relevant but not significant
 - (d) less important than purchases
23. If we expand water sales above existing production capacity, we:
- (a) do not require more assets
 - (b) generally require more assets
 - (c) will not increase profit
 - (d) will increase profit
24. An investment of shares in another water company can be classified in the balance sheet as:
- (a) an "other" asset
 - (b) a fixed asset or current asset
 - (c) only a current asset
 - (d) a part of owners equity
25. Fixed assets are normally valued in the balance sheet as:
- (a) lower of cost or market value
 - (b) market valued at date of the balance sheet
 - (c) cost or higher market value
 - (d) cost or revaluation, less depreciation
26. The most important water industry ratios relate to:
- (a) M³ produced
 - (b) M³ sold
 - (c) number of connections
 - (d) all of the above
27. Pipeline investment is normally valued in the balance sheet as:
- (a) its purchase price plus amounts written off
 - (b) market value at date of the balance sheet
 - (c) an increasing value each year if the business is profitable
 - (d) cost less depreciation
28. Inventory which cost \$300 and has a market value of \$400 is valued in the balance sheet at:
- (a) \$400
 - (b) \$350
 - (c) another value
 - (d) \$200

29. Inventory which cost \$300 and has a market value of \$200 is valued in the balance sheet at:
- (a) \$200
 - (b) \$250
 - (c) \$300
 - (d) another value
30. Increases in water tariffs result in:
- (a) increased sales volume
 - (b) increased production
 - (c) higher costs
 - (d) increased sales value
31. The accounting value of current assets in the balance sheet never exceeds:
- (a) actual cost
 - (b) realisable market value
 - (c) liquidation value
 - (d) standard cost
32. Accounts payable are:
- (a) amounts due to the shareholders for dividends
 - (b) amounts due to debtors
 - (c) amounts due to creditors
 - (d) long-term liabilities
33. The difference between current assets and current liabilities is:
- (a) owners equity
 - (b) net worth
 - (c) net assets
 - (d) working capital
34. The healthy E:D ratio for the water industry is about:
- (a) 1:4
 - (b) 1:1
 - (c) 2:1
 - (d) 3:1
35. If a business pays accounts payable \$3,000, the effect on the balance sheet is:
- (a) cash plus \$3,000, owners equity plus \$3,000
 - (b) cash less \$3,000, owners equity plus \$3,000
 - (c) cash less \$3,000, payables less \$3,000
 - (d) cash less \$3,000, payables plus \$3,000

36. The accounting period is the:
- (a) period of the income statement
 - (b) date of the balance sheet
 - (c) period since the business commenced
 - (d) time taken to prepare accounts
37. Profits always increase:
- (a) owners equity
 - (b) cash
 - (c) inventory
 - (d) receivables (debtors)
38. The statement that summarises the transactions that together result in profit or loss during an accounting period is called a/an:
- (a) balance sheet
 - (b) income statement
 - (c) owners equity
 - (d) capital statement
39. An income statement or profit and loss account is prepared:
- (a) for a specific day
 - (b) for a short period
 - (c) for an accounting period
 - (d) to show assets and liabilities
40. A profit on sale of a fixed asset is recognised when it:
- (a) is realised in cash
 - (b) possibly exists
 - (c) is almost definite
 - (d) is realised in cash or in receivables
41. A loss is recognised:
- (a) when paid for in cash
 - (b) as soon as it is known
 - (c) when offset by a corresponding profit
 - (d) only if there is adequate cash available
42. A transaction which is incurred without actual transfer of cash is:
- (a) not recognised in accounting
 - (b) an accrual transaction
 - (c) a debtor transaction
 - (d) something else

43. The "matching concept" means that:
- (a) revenues should be matched with relevant costs and expenses
 - (b) revenues exactly equal costs
 - (c) assets equal claims
 - (d) something else
44. Sales are recognised for the sale of water when:
- (a) a sales order is received
 - (b) it is invoiced to the customer
 - (c) cash is received from the customer
 - (d) only when the meter is read
45. Profit is recognised by a water company when water is:
- (a) produced
 - (b) metered
 - (c) invoiced
 - (d) paid for
46. Sales less cost of sales equals:
- (a) net profit
 - (b) working capital
 - (c) operating profit
 - (d) gross profit
47. Net sales consist of:
- (a) gross sales, less sales tax and discounts
 - (b) gross sales, less sales tax, returns and discounts
 - (c) gross sales less sales tax
 - (d) something else
48. Water industry statistical data for operating ratio computation includes data on:
- (a) production and sales
 - (b) population and production
 - (c) population, production and sales
 - (d) connections
49. A healthy sales to assets ratio would be about:
- (a) 10:1
 - (b) 4:1
 - (c) 1:2
 - (d) something else

50. Cost of sales for work materials sold to customers equals:
- (a) opening inventory less purchases plus closing inventory
 - (b) opening inventory plus purchases less closing inventory
 - (c) purchases plus wages paid
 - (d) another formula
51. Sales less operating expenses and depreciation equals:
- (a) OPBD
 - (b) PBT
 - (c) OPAD
 - (d) NP
52. Gross profit less operating expenses equals:
- (a) net income
 - (b) sales
 - (c) non-operating income
 - (d) operating profit
53. Gain on sale of fixed assets is:
- (a) non-operating income
 - (b) operating profit
 - (c) gross profit
 - (d) something else
54. Operating profit less non-operating expense equals:
- (a) net income
 - (b) gross profit
 - (c) profit before taxes
 - (d) profit after taxes
55. The net profit percentage to sales is normally computed as:
- (a) operating profit over net sales times 100%
 - (b) net profit over gross sales times 100%
 - (c) gross profit over net sales times 100%
 - (d) something else
56. Dividends declared and paid to stockholders always:
- (a) reduce liabilities
 - (b) reduce profit
 - (c) reduce owners equity
 - (d) have some other effect

57. The ratio of sales volume/connections is an efficiency measure for:
- (a) marketing
 - (b) production
 - (c) finance
 - (d) personnel
58. A reasonable standard for OPAD/I is about:
- (a) 10
 - (b) 7.50
 - (c) another figure
 - (d) 5
59. In valuing inventory at the lower of cost or market value, the term "market value" means conservatively:
- (a) the realisable value
 - (b) the replacement price
 - (c) some value lower than cost
 - (d) realisable value or replacement value according to what type of inventory is considered
60. The balance sheet of a business shows:
- (a) what it would sell for on liquidation
 - (b) assets of the business and claims against those assets
 - (c) what it cost
 - (d) the market value of the assets
61. A typewriter is a fixed asset to a:
- (a) typewriter manufacturer
 - (b) typewriter wholesaler
 - (c) typewriter retailer
 - (d) water company
62. A fixed asset was purchased for \$500. \$100 was paid to transport it to the factory and \$50 to instal it and make it work. One month later, \$60 was spent to repair it. The cost of the fixed asset in the balance sheet would be:
- (a) \$650
 - (b) \$500
 - (c) \$600
 - (d) \$710

63. The distinction between a betterment and a repair of a fixed asset is:
- (a) a betterment brings the machine up to its original condition whereas a repair does not
 - (b) a betterment increases the cost base of the fixed asset whereas a repair is charged to expense
 - (c) a betterment makes a fixed asset work like new whereas a repair merely makes the machine work
 - (d) something else
64. The purpose of depreciation is to:
- (a) allocate the cost of fixed assets to expense over their working lives
 - (b) reduce fixed assets to market value each year
 - (c) reduce fixed assets to nil as soon as possible
 - (d) save income tax
65. The net book value of the fixed assets in the balance sheet represents:
- (a) the cost of the fixed assets not yet allocated to depreciation expense
 - (b) the original cost of the assets
 - (c) the current market value of the fixed assets
 - (d) the best estimate of what the assets would fetch on liquidation
66. The straight line method of depreciation:
- (a) writes off the cost of the asset equally over the working life
 - (b) increases each year
 - (c) writes off the same percentage of the reducing value of the asset each year
 - (d) is the only way to depreciate assets
67. If a fixed asset has a cost of \$100, accumulated depreciation of \$58, and is sold for \$59, what is the profit or loss on the sale:
- (a) \$58
 - (b) \$59
 - (c) \$17
 - (d) something else
68. The equity:debt ratio mainly measures:
- (a) marketing efficiency
 - (b) liquidity
 - (c) collection effort
 - (d) profitability
69. In the water industry, the working life of fixed assets is generally:
- (a) 50-100 years
 - (b) 10- 50 years
 - (c) 5- 20 years
 - (d) 3- 10 years

70. Owners of a company with limited liability are known as:
- (a) partners
 - (b) debenture holders
 - (c) shareholders (stockholders)
 - (d) secured creditors
71. Preference shares normally entitle the holder to:
- (a) fixed dividend each year and part repayment of capital
 - (b) dividend varying with the profits earned
 - (c) fixed dividend out of profits if earned provided the dividend is declared
 - (d) balance of the profits after the ordinary shareholders have received a dividend
72. The cash flow ROI in the water industry is calculated:
- (a) $(NP + D/TA) \times 100\%$
 - (b) $(NP/TA) \times 100\%$
 - (c) $(NP/D) \times 100\%$
 - (d) $(NP/OE) \times 100\%$
73. Common shareholders are normally entitled to:
- (a) the profits after payment of preference dividends
 - (b) the profits in (a) but only if declared in dividends
 - (c) a fixed rate of ordinary dividend
 - (d) no dividends until liquidation of the company
74. A company issues \$100,000 4% bonds repayable in equal instalments over 20 years. What is the amount required in the initial year to pay interest and to redeem the bonds? (Ignore tax and DCF):
- (a) \$4,000
 - (b) \$5,000
 - (c) \$9,000
 - (d) 14,000
75. The parties who might be interested in the financial reports of a water company are limited to:
- (a) the management and shareholders (stockholders)
 - (b) the management and the government
 - (c) the government, the management, shareholders and the company's banker
 - (d) even more parties than mentioned above
76. In accounting, expenses which are incurred but not actually paid for in cash are normally:
- (a) ignored until paid in cash
 - (b) treated as an accrual and recorded accordingly
 - (c) treated as other assets
 - (d) treated as income

77. If sales expand, then profit:
- (a) will increase
 - (b) will remain at least stable
 - (c) will not increase
 - (d) will only increase if margins remain stable or improve
78. It is not possible to record on a balance sheet:
- (a) the amount paid for goodwill
 - (b) the amount spent for research and development
 - (c) anticipated loss from pending litigation
 - (d) the morale of the company employees
79. The balance sheet shows:
- (a) the assets owned by the business and how they are financed
 - (b) a clear and definite future of what a business is really worth
 - (c) the amount the business could be sold for in liquidation
 - (d) the amount the business could be sold for in the open market
80. All accounting reports are based upon:
- (a) ethical business practice
 - (b) accounting principles and the judgement of the accountant
 - (c) scientific accounting principles
 - (d) infallible accounting rules
81. If the E:D ratio is very healthy for a water company, then:
- (a) assets are not too high
 - (b) profit is good
 - (c) actual cash balance is not too important
 - (d) ratio is about 3:1
82. A healthy E:D ratio in the water industry would generally be about:
- (a) 1:1
 - (b) 8:1
 - (c) 1:4
 - (d) 4:1
83. A healthy CA:CL ratio would generally be about:
- (a) 8:1
 - (b) 1:2
 - (c) 1:1
 - (d) something else

84. A healthy QA:QL ratio would generally be about:

- (a) 3:1
- (b) 6:1
- (c) 1¹/₂:1
- (d) 1:2

85. A healthy OPAD to sales ratio would be:

- (a) steady or declining
- (b) steady or increasing
- (c) declining
- (d) about 20%

86. Balance sheet:

<u>Assets</u>	<u>Liabilities and Owners equity</u>	Which statement is the most appropriate:
Cash 1	CL 10	(a) current assets are too high
OCA 1	LTL 2	(b) equity is too high
FA 20	OE 10	(c) liquidity is poor
<u>\$22</u>	<u>\$22</u>	(d) fixed assets are too high

Note: OCA = Inventories and accounts receivable
 FA = Fixed assets
 CA = Current assets
 LTL = Long-term liabilities
 OE = Owners equity

87. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>		Which statement is the most appropriate:	
	<u>Yr.1</u>	<u>Yr.2</u>			
Cash	10	-	CL	<u>Yr.1</u> <u>Yr 2</u> 20 40	(a) the material increase is in fixed assets
AR	20	80	LTL	20 20	(b) there is poor use of long- term funds
Inv.	30	30	OE	60 100	(c) sales have increased signif- icantly
	60	110			(d) there is poor control of receivables
FA	40	50			
	<u>\$100</u>	<u>\$160</u>		<u>\$100</u> <u>\$160</u>	

88. Balance sheet:

<u>Assets</u>	<u>Liabilities and Owners equity</u>	Which statement is the most appropriate:
Cash 16	CL 6	(a) liquidity is poor
OCA 2	LTL 6	(b) cash is too high
FA 4	OE 10	(c) owners equity is too low
<u>\$22</u>	<u>\$22</u>	(d) owners equity is too high

89. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
Cash	2	CL	8
OCA	10	LTL	10
FA	10	OE	4
	<u>\$22</u>		<u>\$22</u>

Fixed assets are too high in relation to:

- (a) current assets
- (b) current liabilities
- (c) long-term liabilities
- (d) owners equity

90. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
Cash	2	CL	2
OCA	2	LTL	18
FA	18	OE	2
	<u>\$22</u>		<u>\$22</u>

Which statement is the most appropriate:

- (a) owners equity is too low
- (b) current liabilities are too low
- (c) long-term liabilities are adequate
- (d) fixed assets are too high for the other current assets

91. Balance sheet:

<u>Assets</u>			<u>Liabilities and Owners equity</u>		
	<u>Yr.1</u>	<u>Yr.2</u>		<u>Yr.1</u>	<u>Yr 2</u>
Cash	1	1	CL	2	4
OCA	5	5	LTL	2	4
FA	4	18	OE	6	16
	<u>\$ 10</u>	<u>\$ 24</u>		<u>\$ 10</u>	<u>\$ 24</u>

Which statement is the most appropriate:

- (a) increase in current assets is financed by liabilities
- (b) increase in fixed assets is financed by liabilities
- (c) increase in fixed assets is financed by profits
- (d) increase in fixed assets is financed by owners equity

92. Balance sheet:

<u>Assets</u>			<u>Liabilities and Owners equity</u>		
	<u>Yr.1</u>	<u>Yr.2</u>		<u>Yr.1</u>	<u>Yr 2</u>
Cash	1	1	CL	2	12
OCA	5	22	LTL	2	2
FA	4	4	OE	6	13
	<u>\$ 10</u>	<u>\$ 27</u>		<u>\$ 10</u>	<u>\$ 27</u>

Which statement is the most appropriate:

- (a) inventories and receivables increase is financed by liabilities
- (b) inventories and debtors increase is financed by equity and liabilities
- (c) inventories and debtors increase is due to sales expansion
- (d) profit margins are increasing

Income statement:

	<u>Yr.1</u>	<u>Yr.2</u>
Sales	20	40
GP	10	20
NP	\$ 4	\$ 7

93. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
	<u>Yr.1</u>	<u>Yr.2</u>	
Cash	1	1	CL
OCA	5	10	LTL
FA	4	5	OE
	<u>\$ 10</u>	<u>\$ 16</u>	<u>Yr.1</u>
			<u>Yr 2</u>
			2
			10
			2
			-
			6
			6
			<u>\$ 10</u>
			<u>\$ 16</u>

Which statement is the most appropriate:

- (a) sales increase led to an increase in receivables and inventory
- (b) significant increase in fixed assets is financed by liabilities
- (c) liabilities are too high in relation to sales
- (d) cash balance is too low

94. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
Cash	1	CL	-
OCA	11	LTL	-
FA	10	OE	22
	<u>\$22</u>		<u>\$22</u>

Which statement is the most appropriate:

- (a) current assets are too high
- (b) owners equity is too high
- (c) owners equity is too low
- (d) fixed assets are too high

95. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
Cash	2	CL	10
OCA	2	LTL	2
FA	18	OE	10
	<u>\$22</u>		<u>\$22</u>

Which statement is the most appropriate:

- (a) owners equity is too low for fixed assets
- (b) cash is adequate
- (c) liquidity is satisfactory
- (d) long-term liabilities are too low for the cash

96. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
Cash	1	CL	-
OCA	20	LTL	20
FA	1	OE	2
	<u>\$22</u>		<u>\$22</u>

Which statement is the most appropriate:

- (a) liquidity is poor
- (b) fixed assets are too low for long-term liabilities
- (c) current liabilities are well managed
- (d) owners equity is too low

97. Balance sheet:

<u>Assets</u>		<u>Liabilities and Owners equity</u>	
Cash	10	CL	2
OCA	10	LTL	10
FA	2	OE	10
	<u>\$22</u>		<u>\$22</u>

Which statement is the most appropriate:

- (a) current assets are too high for the fixed assets
- (b) liquidity is too high
- (c) liquidity is excellent
- (d) fixed assets are too low for the owners equity

98. Balance sheet:

Assets

	<u>Yr.1</u>	<u>Yr.2</u>
Cash	1	3
OCA	5	10
FA	4	5
	<u>\$ 10</u>	<u>\$ 18</u>

Income statement:

	<u>Yr.1</u>	<u>Yr.2</u>
Sales	20	21
GP	10	10
NP	<u>\$ 2</u>	<u>\$ 2</u>

Liabilities and Owners equity

	<u>Yr.1</u>	<u>Yr.2</u>
CL	2	8
LTL	2	2
OE	6	8
	<u>\$ 10</u>	<u>\$ 18</u>

Which statement is the most appropriate:

- (a) inventory and accounts receivable are too high in relation to equity
- (b) inventory and accounts receivable are too high in relation to assets
- (c) inventory and accounts receivable are too high in relation to sales
- (d) margins are improving

99. Balance sheet:

Assets

	<u>Yr.1</u>	<u>Yr.2</u>
Cash	10	10
AR	20	30
Inv.	30	20
	<u>\$ 60</u>	<u>\$ 60</u>
FA	40	180
	<u>\$100</u>	<u>\$240</u>

Note: AR = Accounts receivable

Income statement:

	<u>Yr.1</u>	<u>Yr.2</u>
Sales	100	150
GP	40	60
NP	20	30

Liabilities and Owners equity

	<u>Yr.1</u>	<u>Yr.2</u>
CL	20	40
LTL	20	140
OE	60	60
	<u>\$100</u>	<u>\$240</u>

The material change between year 1 and year 2 is:

- (a) increase in sales
- (b) reduction in profit margin
- (c) inventories
- (d) increase in fixed assets

100. Balance sheet:

Assets

	<u>Yr.1</u>	<u>Yr.2</u>
Cash	10	10
AR	20	5
Inv.	30	18
	<u>60</u>	<u>130</u>
FA	40	50
	<u>\$100</u>	<u>\$180</u>

Liabilities and Owners equity

	<u>Yr.1</u>	<u>Yr.2</u>
CL	20	95
LTL	20	20
OE	60	65
	<u>\$100</u>	<u>\$180</u>

Which statement is the most appropriate:

- (a) increase in fixed assets is financed by equity
- (b) increase in cash is mainly financed by equity
- (c) increase in inventory is mainly financed by liabilities
- (d) increase in sales is mainly financed by equity

QUIZ ANSWERS

1.	c	31.	b	61.	d	91.	d
2.	a	32.	c	62.	a	92.	b
3.	d	33.	d	63.	b	93.	d
4.	a	34.	b	64.	a	94.	b
5.	b	35.	c	65.	a	95.	a

6.	c	36.	a	66.	a	96.	d
7.	d	37.	a	67.	c	97.	b
8.	b	38.	b	68.	b	98.	c
9.	a	39.	c	69.	b	99.	d
10.	a	40.	d	70.	c	100.	c

11.	d	41.	b	71.	c		
12.	b	42.	b	72.	a		
13.	a	43.	a	73.	b		
14.	d	44.	b	74.	c		
15.	a	45.	c	75.	d		

16.	b	46.	d	76.	b		
17.	c	47.	b	77.	d		
18.	b	48.	c	78.	d		
19.	c	49.	d	79.	a		
20.	d	50.	b	80.	b		

21.	b	51.	c	81.	c		
22.	a	52.	d	82.	a		
23.	b	53.	a	83.	d		
24.	a	54.	c	84.	c		
25.	d	55.	d	85.	b		

26.	d	56.	c	86.	c		
27.	d	57.	a	87.	d		
28.	c	58.	d	88.	b		
29.	a	59.	d	89.	d		
30.	d	60.	b	90.	a		

AUTONOMOUS GROUP LEARNING (AGL)

No. 11: FINANCIAL MANAGEMENT FOR THE WATER INDUSTRY

DAILY WORK PACK

PART II

BASIC FINANCIAL MANAGEMENT
FOR THE WATER INDUSTRY

To be used and returned to the course organiser at the end of the day

Boland/Wallace/ILO 1984/3

Wang No. 0059f

PROGRAMME - PART II

<u>Ref.</u>	<u>Activity</u>	<u>Mode</u>	<u>Time</u>
1.	Review and quiz	SG	30
	Income Statements		
2.	PL	IND	45
3.	Lecture	MG/SG	30
	Coffee	-	15
	Case: Tom Lyster		
4.	SG	SG	45
	CSG	CSG	30
5.	SG	MG/SG	30
6.	Case: Bill Brown	SG	30
	Lunch	-	45
	Package of Accounting Reports		
7.	PL	IND	30
8.	Lecture	MG/SG	30
	Case: Special Supply		
9.	SG	SG	45
	CSG	CSG	30
10.	SG	MG/SG	30
	Coffee	-	15
11.	Quiz	PAIRS	45
12.	Summary lecture	MG/SG	15
			—
		Total minutes	540
			—

ASSIGNMENT 1.0 - REVIEW AND QUIZ

1.1 INSTRUCTIONS

- (a) Assemble in your NEW SG.
- (b) Discuss the work completed in Day 1, your summaries of key points and any outstanding questions.
- (c) Do in SG the short quiz of 12 questions on "The Effect of Transactions" (Exhibit 1). Don't look at the solution (Exhibit 2).
- (d) Check your answers and discuss questions arising.
- (e) Reassemble in MG when the bell rings.

SHORT QUIZ ON THE EFFECT OF TRANSACTIONS ON FINANCIAL STATEMENTS

For a water company, show the effect of each of the transactions listed below as of the time the event described takes place: cash, current assets, net working capital (current assets less current liabilities), net profit for the current period.

In the spaces provided, enter:
 plus sign (+) to indicate an increase, or
 minus sign (-) to indicate a decrease, or
 zero to indicate no effect at all.

Item No. 0 is given as an example.

	Cash	Current Assets	Net Working Capital	Net Profit
Example				
0. Wages earned by employees during the period were paid in cash and charged to operating expense	(-)	(-)	(-)	(-)
1. Chemicals were purchased for cash and charged to inventory				
2. Some of the chemicals were used and charged to operating cost				
3. New long-term bonds were issued for cash (ignore interest)				
4. Depreciation for the period was estimated and recorded in the books				
5. Money was borrowed from the bank on a 30-day note payable (ignore interest)				
6. Pumping equipment (fixed asset) was purchased for cash (ignore depreciation)				
7. Equipment was purchased on long-term credit (ignore depreciation)				
8. An account (creditor) payable was reduced by a cash payment				
9. Dividends were paid in cash and charged to accumulated profit				
10. Wages accrued in a prior accounting period were paid in cash				
11. A fixed asset was sold for cash at a profit				
12. Fixed assets were revalued at replacement cost and new depreciation charged accordingly				

NOTE: USE YOUR NOTEBOOK
- DO NOT MARK THE DAILY
WORK PACK

ANSWERS TO SHORT QUIZ ON THE EFFECT OF TRANSACTIONS

For a water company, show the effect of each of the transactions listed below as of the time the event described takes place: cash, current assets, net working capital (current assets less current liabilities), net profit for the current period.

In the spaces provided, enter:

plus sign (+) to indicate an increase, or
minus sign (-) to indicate a decrease, or
zero to indicate no effect at all.

Item No. 0 is given as an example.

	Cash	Current Assets	Net Working Capital	Net Profit
Example				
0. Wages earned by employees during the period were paid in cash and charged to operating expense	(-)	(-)	(-)	(-)
1. Chemicals were purchased for cash and charged to inventory	(-)	(0)	(0)	(0)
2. Some of the chemicals were used and charged to operating cost	(0)	(-)	(-)	(-)
3. New long-term bonds were issued for cash (ignore interest)	(+)	(+)	(+)	(0)
4. Depreciation for the period was estimated and recorded in the books	(0)	(0)	(0)	(-)
5. Money was borrowed from the bank on a 30-day note payable (ignore interest)	(+)	(+)	(0)	(0)
6. Pumping equipment (fixed asset) was purchased for cash (ignore depreciation)	(-)	(-)	(-)	(0)
7. Equipment was purchased on long-term credit (ignore depreciation)	(0)	(0)	(0)	(0)
8. An account (creditor) payable was reduced by a cash payment	(-)	(-)	(0)	(0)
9. Dividends were paid in cash and charged to accumulated profit	(-)	(-)	(-)	(0)
10. Wages accrued in a prior accounting period were paid in cash	(-)	(-)	(0)	(0)
11. A fixed asset was sold for cash at a profit	(+)	(+)	(+)	(+)
12. Fixed assets were revalued at replacement cost and new depreciation charged accordingly	(0)	(0)	(0)	(-)
	Score		Out of 48	

ASSIGNMENT 2.0 - PROGRAMME LEARNING ON INCOME STATEMENTS

2.1 INSTRUCTIONS

- (a) Assemble in SG.
- (b) Review the summaries of ASS or HRBS Chapters 1, 2 and 3.
- (c) Do ASS or HRBS Chapter 4.
- (d) Record significant points in your notebook.
- (e) Reassemble in MG when the bell rings.

ASSIGNMENT 3.0 - LECTURE
INCOME STATEMENTS - (30 MINUTES)

3.1 ACCOUNTING PERIOD CONCEPT

Income statement (profit and loss account, earnings statement) for the accounting period.
Balance sheet at the start and end of the accounting period.
Normally one year.

3.2 ACCRUAL CONCEPT

Sales, cost and expenses may be for cash or credit.
Income statement includes both cash and credit transactions.

3.3 INCOME STATEMENT AND BALANCE SHEETS

Income statement shows how the profit was made.
Balance sheet shows assets and how they are financed.

3.4 SALES AND GROSS PROFIT (FOR GENERAL BUSINESS)

A measure of activity is: $\frac{\text{Sales}}{\text{Assets}}$

Cost of goods sold means cost of sales.

"Trading account" is part of income statement which indicates: sales less cost of sales = gross profit.

Cost of sales for a trading company (buying and selling finished goods) is: opening inventory plus purchases of finished goods less closing inventory.

Cost of sales for a manufacturing company is different because it does not purchase finished goods. Finished goods are manufactured from factory labour, raw materials and manufacturing overhead.

Manufacturing cost of finished goods must be adjusted for work in process changes.

For a manufacturer, therefore: manufacturing labour + manufacturing materials used + manufacturing overhead + or - work in process changes = cost of finished goods manufactured for the period.

This is the same as the "purchase of finished goods" by a trading company.

Work in process is inventory unfinished - as the amount at the beginning and end of the accounting period changes, this difference must be added or deducted to manufacturing cost incurred, in order to compute cost of finished goods manufactured.

Water company sales and costs are discussed in 3.9

3.5 NET PROFIT

Net income, net earnings, net profit.

Expenses divided into:

- (a) normal operating expenses, and
- (b) special non-operating expenses.

Operating expenses (including selling, general and administrative) are normal costs not connected with normal operations.

Non-operating expenses are abnormal costs not connected with normal operations (e.g. loss on sale of assets, interest paid).

There may be non-operating income too! (e.g. profit on sale of assets, dividends received, etc.)

Gross profit less operating expenses = operating profit.

Operating profit less non-operating expenses = profit before taxes.

Profit before taxes less income tax = net profit.

3.6 INDICATORS

Profitability:

$$\frac{\text{Gross profit}}{\text{Sales}} \times 100\%$$

$$\frac{\text{Net profit}}{\text{Sales}} \times 100\%$$

$$\frac{\text{Net profit}}{\text{Owners equity}} \times 100\%$$

Activity:

$$\frac{\text{Sales}}{\text{Assets}} = \text{measure of "turnover" of assets (p.a.)}$$

$$\frac{\text{Cost of goods sold}}{\text{Inventory}} = \text{measure of "turnover" of inventory (p.a.)}$$

3.7 ACCUMULATED PROFIT

Retained earnings, revenue reserves.

Part of the reserves in the owners equity part of the balance sheet.

Appropriation account or statement of retained earnings.

Balance brought forward + net profit less dividends = balance c/f.

Profit increases owners equity.

Dividend and loss reduce owners equity.

Reserves increase the equity of the business but not necessarily the cash; cash may have been used to buy more assets or pay creditors.

3.8 LEARNING PATTERNS - REVIEW

① ACCRUAL



BUY NOW (DON'T PAY)

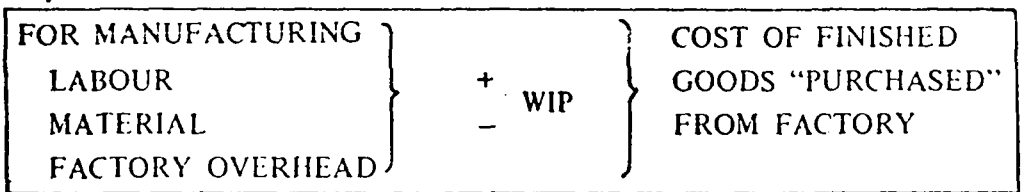


PAY LATER

BS	
+	+
ASSET	PAYABLES
BS	
-	-
CASH	PAYABLES SETTLED

② COST OF GOODS SOLD = COST OF SALES

$OI + \textcircled{P} - CI = \text{GOODS ACTUALLY SOLD AT COST}$



③ EXPENSES

MANUFACTURING (IF ANY) - IN COST OF SALES

- OPERATING (SALES, ADMINISTRATIVE & GENERAL)

NORMAL



- NON-OPERATING

PECULAR?



3.9 WATER INDUSTRY PRODUCTION COSTS AND SALES

- (a) Production - measurement of metered water is a complex technical problem, and the difference between total water production metered and total water sold ("Unaccounted for water") may vary from 10 to 60%. Alternative causes of such "losses" include: poor measurement, illegal connections, leakage, etc.
- (b) Cost - in the Water Industry, there is a wide variation of cost per M³ of water sold which may related to such factors as: water source, geography, processing, quality, size of plant, etc. A rough indication of this variation is given below:

	Water Plants		
	<u>Small</u>	<u>Medium</u>	<u>Large</u>
Population served - thousands	10.0	100.0	1,000.0
No. of Connections - thousands	2.0	20.0	200.0
Annual Production Capacity - M ³ millions	1.0	10.0	100.0
Total Water Cost - M ³	\$.30	\$.20	\$.10

Cost variations may also result from the following factors:

1. Only 20 to 80% of total population served.
2. Only 20 to 80% of population served with private connections.
3. Capacity production based on annual per capita consumption which may vary from 20 to 100 M³ per capita per annum.
4. Different water technologies:

	<u>Cost \$/M³</u>
Gravity feed without processing	\$0.01 to \$0.10
Deep well pumping with processing	\$0.10 to \$0.30
Salt water processing	\$0.40 to \$5.00

- (c) Non-operating expense and income - expense not directly related to normal water operations includes: interest, losses on sale of fixed assets, etc. Non-operating income may include: profits on sale of fixed assets, interest and dividends received, etc. Such non-operating items may significantly effect net profit, especially when foreign exchange and inflationary changes are considered.

3.10 WATER INDUSTRY TARIFFS, DEMAND AND QUALITY

- (a) Tariffs - selling prices for water are negotiated tariffs based on past costs and allowed rates of return on investment. The long delay between the request for price increases and the actual change of tariffs is normal and requires "financial forecasting".
- (b) Demand - it is also often assumed that the customers' demand for water is "inelastic" (not changed by price), however, recent studies report elasticity of demand by 30% when prices are increased by 100%.
- (c) Water quality - justification for high water quality at high cost must relate to the ultimate water usage, but only about 20% water produced may be consumed internally, from M³ 20 to 100 per capita per annum. In developing countries, contamination is often due less to processing problems than to infiltration of the pipes due to failure to maintain adequate water pressure in all parts of the system. This involves complex investment decisions as to how much spare pumping capacity is justified to maintain pressure and water quality.

3.11 WATER INDUSTRY FORECASTING

Since the horizon of the fixed assets is from 10 to 50 years, new capital projects require long-term financial forecasting to justify their return on investment. However, two problems arise:

- (a) There may be no viable return on investment where the investment is made for social/political objectives.
- (b) Financial forecasts of 5-20 years ahead require two key underlying assumptions that are difficult to estimate: tariff levels and inflation. These affect sales, costs, profits and, above all, cash flow. For long-term financial viability, there must be some attempt, despite all the financial uncertainties, to cover costs with adequate tariffs.

ASSIGNMENT 4.0 - CASE ANALYSIS OF TOM LYSTER

4.1 INSTRUCTIONS

- (a) Assemble in SG now.
- (b) Individual and SG work (Exhibits 1 and 2).
- (c) CSG work.

Groups will be combined:

A with D)
B with E) Dealers: A, B, C
C with F)

Each dealer represents the management team giving a presentation to its board of directors. The board is made up of shareholders (or the municipal council) and perhaps community members at an "open hearing" on the budget for next year. Management should be prepared to answer questions about their hiring and training plans, labour productivity, tariff decisions, etc. Someone should be prepared to discuss whether the company can make a profit if assets are revalued and whether net profit is a fair measure of management performance in this situation.

- (d) Reassemble in MG when the bell rings.

TOM LYSTER

In January 1984, Tom Lyster, the new general manager, reviewed the operations of the Water Company for the past year (1983) to evaluate company performance. He was preparing a presentation for his board of directors. He also planned to prepare forecast operations for the year 1984 using the following estimates, given to him by other departments:

- (a) Statistical data on population, production and sales (Exhibit 2)
- (b) Sales tariff average - \$0.25/M³, the board and the municipal authorities have insisted that water charges be reduced to their previous level, if possible and still operate without a subsidy.
- (c) Personnel cost - 24% sales
- (d) Power and chemicals - proportionate to sales
- (e) Maintenance and other expenses - 1983 plus \$130,000
- (f) Administrative and general expenses - 1983 plus \$150,000
- (g) Depreciation based on cost - \$748,000
- (h) Interest expense - \$329,000
- (i) Non-operating income - \$100,000
- (j) Income tax - 33 ¹/₃% PBT (profit before taxes)

He decided to compare all three years to determine the significance of changes in amount and percentage. In 1983 he had managed to reduce his payroll by getting the public works department to take on some of the workers that the Water Company didn't need because several large employers had gone out of business and many families had moved away. Now the city was planning to extend service to several adjacent areas in 1984.

QUESTIONS

1. Study the case to determine the meaning and significance of every word and figure (Exhibits 2-4).
2. Evaluate every aspect of the 1983 performance (sales, production, cost, coverage, etc.) in relation to 1982 using statistical data (Exhibit 2), financial reports (Exhibit 3) and performance indicators (Exhibit 4). Did the company do well in 1983?
3. Prepare a budgeted operating statement and performance indicators for 1984.
4. Comment on the key differences between 1983 and 1984. Prepare a clear table and be prepared to defend it.
5. He was asked whether the expected profitability of the company in 1984 would be affected by the recent report of the Engineering Department that the replacement cost of the fixed assets now is twice the net book value? How would you adjust for fixed asset revaluation in the balance sheet? What would be the general effect on the income statement and the ratios (S/A, NP/S, NP/OE, E:D) (no calculations required)? Can the company operate at a profit at \$0.25M³ or must it raise the tariff?

TOM LYSTER

STATISTICAL DATA ON POPULATION, PRODUCTION AND SALES

<u>Population</u>	<u>Total</u> <u>1982</u>	<u>Total</u> <u>1983</u>	<u>Planned</u> <u>1984</u>
Served	150,000	150,000	180,000
Not Served	100,000	100,000	80,000
Total	<u>250,000</u>	<u>250,000</u>	<u>260,000</u>

No. of Connections

Standpipes	-	-	-
Private	50,000	50,000	60,000
Industrial	1,000	1,000	1,000
Government	200	200	200
Total	<u>51,200</u>	<u>51,200</u>	<u>61,200</u>
New (lost) connections	800	(10,000)	10,000

Tariffs per M³

Standpipes			
Private		Detail omitted	
Industrial			
Government			
Average of total	\$.25	\$.30	\$.25

Production (000 M³)

Metered and sold	20,000	10,080	16,000
Unaccounted for water	5,000	3,020	4,000
Production	<u>25,000</u>	<u>13,100</u>	<u>20,000</u>
Unused capacity	5,000	16,900	10,000
Total capacity	<u>30,000</u>	<u>30,000</u>	<u>30,000</u>

Employees

Total number	140	70	90
Total cost (000\$)	1,850	810	960

Water sales (000M³)

Standpipes	-	-	-
Private	10,000	7,800	10,000
Industrial	8,000	2,000	4,000
Government	2,000	1,000	2,000
Total	<u>20,000</u>	<u>10,800</u>	<u>16,000</u>

Water sales (000\$)

Standpipes			
Private		Detail omitted	
Industrial			
Government			
Total	<u>5,000</u>	<u>3,240</u>	<u>4,000</u>

TOM LYSTER

INCOME STATEMENTS - YEAR ENDED 31 DECEMBER 1983
COMPARED WITH 1982 AND BUDGET FOR 1984

	1981 Actual		1982 Actual		1983 Budget	
	\$000	%	\$000	%	\$000	%
Water sales	5,000	100	3,240	100		
Other operating revenue	-	-	-	-	-	-
	<u>5,000</u>	<u>100</u>	<u>3,240</u>	<u>100</u>	<u>-</u>	<u>-</u>
Less operating expenses						
Personnel	1,850	37	810	25		
Power	300	6	190	6		
Chemicals	450	9	296	9		
Maintenance	100	2	150	5		
Administration	500	10	304	9		
	<u>3,200</u>	<u>64</u>	<u>1,750</u>	<u>54</u>	<u>-</u>	<u>-</u>
Operating profit before depreciation (OPBD)	1,800	36	1,490	46		
Depreciation	1,100	22	680	21		
Operating profit after depreciation (OPAD)	<u>700</u>	<u>14</u>	<u>810</u>	<u>25</u>	<u>-</u>	<u>-</u>
Non-operating expenses						
Interest	350	7	536	17		
	<u>350</u>	<u>7</u>	<u>274</u>	<u>8</u>	<u>-</u>	<u>-</u>
Non-operating income	<u>100</u>	<u>-</u>	<u>50</u>	<u>2</u>	<u>-</u>	<u>-</u>
Profit before tax	450	9	324	10		
Income tax	<u>150</u>	<u>3</u>	<u>108</u>	<u>3</u>	<u>-</u>	<u>-</u>
Net Profit	<u>300</u>	<u>6</u>	<u>216</u>	<u>7</u>	<u>-</u>	<u>-</u>
	=====	===	=====	===	=====	===

WATER INDUSTRY - SPECIAL PERFORMANCE INDICATORS

<u>No.</u>	<u>Std.</u>	<u>Item</u>		<u>1982</u> <u>Actual</u>	<u>1983</u> <u>Actual</u>	<u>1984</u> <u>Budget</u>	<u>%</u> <u>change</u> <u>over 1982</u> <u>+/-</u>
L	-	<u>LIQUIDITY</u>					
L1	2:1	CA:CL		-	-	-	-
L2	1:1	QA:QL		-	-	-	-
L3	1:2	E : D		-	-	-	-
A	-	<u>ACTIVITY</u>					
A1	.4	S/A	- times	-	-	-	-
A2	30	Days - receivables	- days	-	-	-	-
A3	30	Days - payable	- days	-	-	-	-
A4	-	Connections - no.	- no.	51,200	52,200		
A5	10	Conn. (new)/Conn. no.	- %	+1	-20		
A6	600	Sales Vol. M ³ /Conn. no.	- M ³ /conn	391	269		
A7	200	Sales Vol. \$/Conn. no.	- \$/conn.	\$ 98	\$ 80		
A8	500	Connections/Employee	- conn/no	365	574		
A9	1500	Population served/employees	- no	1,071	1,428		
A10		Labour productivity	- M ³ /emp	178	185		
P	-	<u>PROFITABILITY</u>					
P1	50	OPBD/S %	- %	36	46		
P2	5	NP/S %	- %	6	7		
P3	10	NP/OE %	- %	-	-	-	
P4	15	Cash Flow/Total Assets %	- %	-	-	-	
P5	5	OPBD/Interest	- times	5	3		
P6	\$.20	Oper. Cost \$/Sales Vol. M ³	- \$/M ³	\$.21	\$.24		
P7	\$.25	Total Cost \$/Sales Vol. M ³	- \$/M ³	\$.23	\$.28		
P8	\$.33	Sales Val. \$/Sales Vol. M ³	- \$/M ³	\$.25	\$.30		
O		<u>POTENTIAL</u>					
O1	80	Pop. served/Total Pop. %	- %	60	59		
O2	80	Prod. Metered/Prod. Cap. %	- %	83	44		
O3	80	Sales Vol./Prod. Met. %	- %	75	77		
O4	20	Water Unacctd./Prod. Met. %	- %	25	23		

Note: The above are only rough standards. More useful standards relate to such factors as: size, technology, location, etc., and the effects of inflation.

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ASSIGNMENT 5.0 - LECTURE ON TOM LYSTER

5.1 STORY OF THE CASE

Tom Lyster is comparing 1983 performance with that of 1982 before preparing a budget for 1984 using specific assumptions. All figures in 000 (thousands).

5.2 EVALUATION OF 1983 PERFORMANCE COMPARED WITH 1982

Sales decreased (\$5,000-3,240) by 35%
Operating expenses decreased (\$3,200-1,750) by 45%
OPBD decreased (\$1,800-1,490) and increased (36-46%)
Personnel cost decreased (\$1,850-810)
Depreciation cost decreased (\$1,100-680)
OPAD increased (\$700-810) (16-25%) or 16%
Non-operating expense increased (\$350-536)
Non-operating income reduced (\$100-50)
Net profit decreased in amount (\$300-216) but increased in percentage (6-7%)

Statistical data and performance indicators (Exhibit 1) which: lower population served (60-50%), reduced number of connections (20%), lower volume per connection (M³ 391-269) and value (\$98-80), possibly due to lower population (250,000-200,000) and tariff increase (\$0.25-0.30). Operating cost M³ increased (\$0.21-0.24) and plant capacity operation lower (83-44%) despite improved metering efficiency with reduced unaccounted-for water (25-23%).

Overall the tariff increase and falling population resulted in loss of production and sales. Cost cutting was successful in reducing the effect of the lower sales on net profit.

5.3 BUDGETTED INCOME STATEMENT 1983

See Exhibit 2.

5.4 COMMENTARY ON 1984 BUDGET COMPARED WITH 1983

Sales would increase (\$3,240-4,000) by 23%
OPBD would increase (\$1,490-1,706) with reduced percentage (46-42%)
Depreciation would increase (\$680-748)
Non-operating expense (interest) decreased (\$536-329)
Non-operating income increase (\$50-100)
Net profit would increase in amount (\$216-487) by 125% and percentage of sales (7-12%)

Statistical data and performance indicators show: increased population will be served (100,000-120,000), with more connections (plus 25%), and more sales volume per connection (M³ 269-313) and lower sales value (\$80-78) due to reduced tariffs (\$0.30-0.25). Increased production will be sold (M³ millions 10-16), at a reduced cost/M³ (\$0.28-0.22), increased population served (50-60%) and increased capacity working (44-66%) with lower unaccounted-for water (23-20%).

The causes of these improvements will come from better management and result in more net profit which can be invested in more facilities to further improve the coverage ratio.

5.5 CHANGING VALUE OF FIXED ASSETS

If the replacement cost of fixed assets is about twice the book value, then the depreciation expense of (\$748) understates the cost of using the assets to achieve the profit for the accounting period. If the depreciation charge were increased (\$748-1,500), then OPAD would decrease to \$206 (\$958 less \$752) and the net profit would become a loss of \$266 (\$486 less \$752). However, if the increased depreciation were allowed for tax purposes, then the resultant net profit would change to \$235 (\$486 less 33% of \$752).

The effect on the balance sheet of revaluing the fixed assets would be to: increase the fixed assets and increase owners equity by the same amount (capital reserve). The reduction in net profit due to high depreciation would reduce the owners equity accordingly each year. The effect of these changes on the ratios would be to: increase E:D and to decrease S/A, NP/S and NP/OE.

5.6 LEARNING POINTS

- (a) Sales less operating expenses (without depreciation) equals OPBD (operating profit before depreciation).
- (b) OPBD less depreciation equals OBAD (operating profit after depreciation).
- (c) OPAD less non-operating expense and plus non-operating income equals PBT (profit before taxes).
- (d) PBT less income tax (where applicable) equals NP (net profit, net earnings, net income).
- (e) Non-operating expense may be: interest, special losses, loss on sale of fixed assets, etc.
- (f) Non-operating income may be: dividends received, interest received, special profits, gain on sale of fixed assets, etc.
- (g) To evaluate an income statement compare significant items with the previous year or budget by amount and percentage.
- (h) Concentrate on: sales, operating expenses, depreciation, OPAD, non-operating expense and income, PBT and NP.
- (i) Non-operating expense and income may significantly effect the net profit for the accounting period.
- (j) Statistical data on population, production and sales enables useful Water Industry Operating Ratios to relate sales and costs to: population, production capacity, number of connections, sales value and volume of water (M³), number of employees, etc.
- (k) "Unaccounted-for water" is normal and may relate to: measurement, illegal connections, leakage, etc.
- (l) Forecast future income statements using sales, ratios and estimates.
- (m) Compare actual data against previous year or budget to evaluate: liquidity, activity, profitability and potential.
- (n) Reduce data to thousands (000) to improve communication of significant figures to management.
- (o) Recognise potential in the Water Industry relating to: population unserved, capacity unused and metered production unsold.
- (p) With high inflation levels (over 20% per annum), the replacement value of fixed assets may exceed the net book value significantly, thus depreciation expense may be understated and net profit overstated.
- (q) Revaluation of fixed assets to replacement cost will increase total assets and owners equity (capital reserve). The higher depreciation charges will reduce future net profit. The effect on ratios is to increase E:D and reduce S/A, NP/S, NP/OE. This revaluation should be considered in the tariff decisions.

WATER INDUSTRY - SPECIAL PERFORMANCE INDICATORS

<u>No.</u>	<u>Std.</u>	<u>Item</u>		<u>1982</u> <u>Actual</u>	<u>1983</u> <u>Actual</u>	<u>1984</u> <u>Budget</u>	<u>%</u> <u>change</u> <u>over 1982</u>
L	-	<u>LIQUIDITY</u>					
L1	2:1	CA:CL		-	-	-	-
L2	1:1	QA:QL		-	-	-	-
L3	1:2	E : D		-	-	-	-
A	-	<u>ACTIVITY</u>					
A1	.4	S/A	- times	-	-	-	-
A2	30	Days - receivables	- days	-	-	-	-
A3	30	Days - payable	- days	-	-	-	-
A4	-	Connections - no.	- no.	51,200	51,200	51,200	
A5	10	Conn. (new)/Conn. no. %	- %	+1	0	+20	
A6	600	Sales Vol. M ³ /Conn. no.	- M ³ /conn.	391	269	313	
A7	200	Sales Vol. \$/Conn. no.	- \$/conn.	\$ 98	\$ 62	\$ 65	
A8		Connections/employee	- conn/no	365	574	566	
A9	1500	Population served/employees	- no	1,071	1,428	1,333	
A10		Physical Labour productivity	- M ³ /emp.	178	185	222	
P	-	<u>PROFITABILITY</u>					
P1	50	OPBD/S %	- %	36	46	42	
P2	5	NP/S %	- %	6	7	12	
P3	10	NP/OE %	- %	-	-	-	
P4	15	Cash flow/total assets %	- %	-	-	-	
P5	5	OPBD/interest	- times	5	3	5	
P6	\$.20	Oper. cost \$/sales vol. M ³	- \$/M ³	\$.21	\$.24	\$.19	
P7	\$.25	Total cost \$/sales vol. M ³	- \$/M ³	\$.23	\$.28	\$.22	
P8	\$.38	Sales val. \$/sales vol. M ³	- \$/M ³	\$.25	\$.30	\$.25	
O		<u>POTENTIAL</u>					
O1	80	Pop. served/Total Pop. %	- %	60	59	70	
O2	80	Prod. Metered/Prod. Cap. %	- %	83	44	66	
O3	80	Sales Vol./Prod. Met. %	- %	75	77	80	
O4	20	Water Unacctd./Prod. Met. %	- %	25	23	20	

Note: The above are only rough standards. More useful standards relate to such factors as: size, technology, location, etc., and the effects of inflation.

TOM LYSTER

INCOME STATEMENTS - YEAR ENDED 31 DECEMBER 1982
COMPARED WITH 1981 AND BUDGET FOR 1982

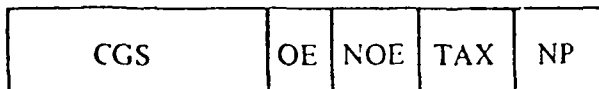
	1982		1983		1984	
	Actual \$000	%	Actual \$000	%	Budget \$000	%
Water sales	5,000	100	3,240	100	4,000	100
Other operating revenue	-	-	-	-	-	-
	<u>5,000</u>	<u>100</u>	<u>3,400</u>	<u>100</u>	<u>4,000</u>	<u>100</u>
Less operating expenses						
Personnel	1,850	37	810	25	960	24
Power	300	6	190	6	240	6
Chemicals	450	9	296	9	360	9
Maintenance	100	2	150	5	280	7
Administration	500	10	304	9	454	12
	<u>3,200</u>	<u>64</u>	<u>1,750</u>	<u>54</u>	<u>2,294</u>	<u>58</u>
Operating profit before depreciation (OPBD)	1,800	36	1,490	46	1,706	42
Depreciation	1,100	22	680	21	748	18
Operating profit after depreciation (OPAD)	<u>700</u>	<u>14</u>	<u>810</u>	<u>25</u>	<u>958</u>	<u>24</u>
Non-operating expenses						
Interest	350	7	536	17	329	8
	<u>350</u>	<u>7</u>	<u>274</u>	<u>8</u>	<u>629</u>	<u>16</u>
Non-operating income	<u>100</u>	<u>-</u>	<u>50</u>	<u>2</u>	<u>100</u>	<u>2</u>
Profit before tax	450	9	324	10	729	18
Income tax	<u>150</u>	<u>3</u>	<u>108</u>	<u>3</u>	<u>242</u>	<u>6</u>
Net Profit	<u>300</u>	<u>6</u>	<u>216</u>	<u>7</u>	<u>487</u>	<u>12</u>
	=====	===	=====	===	=====	===

5.7 LEARNING PATTERNS - REVIEW

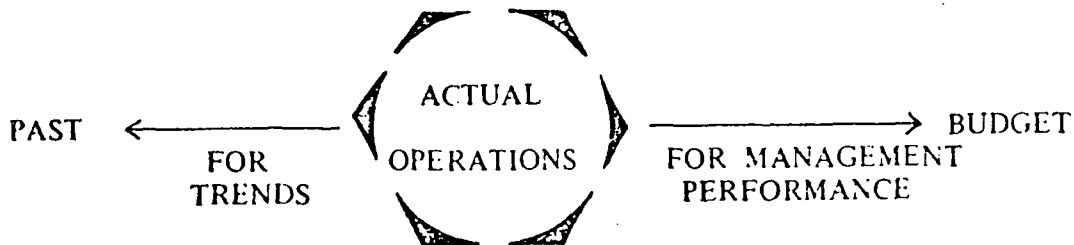
① PROFIT AND LOSS ACCOUNTS

$$\begin{aligned}
 S - CGS &= GP \\
 GP - OE &= OP \\
 OP - NOE &= PBT \\
 PBT - TAX &= NP
 \end{aligned}$$

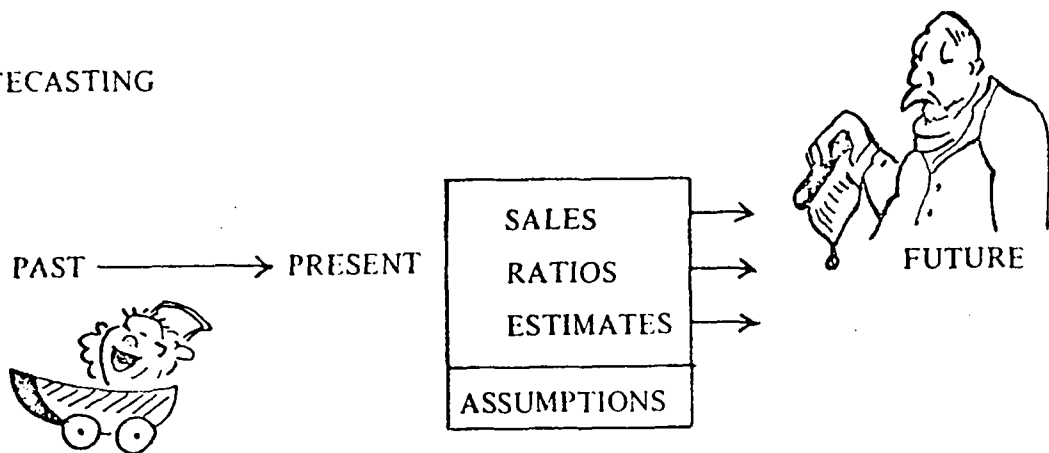
② PROFIT AND LOSS ACCOUNTS



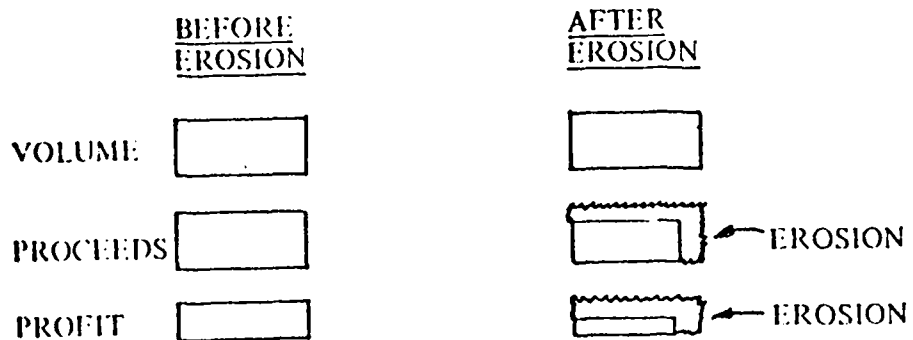
③ COMPARISON



④ FORCECASTING



⑤ PRICE EROSION AND NET PROFIT



ASSIGNMENT 6.0 - CASE OF BILL BROWN

6.1 INSTRUCTIONS - INDIVIDUAL WORK

- (a) Assemble in SG now.
- (b) Answer the questions (individual work) (Exhibit 1).

6.2 INSTRUCTIONS - SG WORK

- (a) Check your answers with the correct solution (Exhibit 2).
Enter your score in your Diary
- (b) Discuss outstanding questions.
- (c) Record significant points in your notebook.
- (d) Reassemble in MG when the bell rings.

NOTE: Use your notebook. Do not mark the Daily Work Pack.

BILL BROWN - QUESTIONS

Bill Brown, a water company manager has set a goal for next year: he wants to take several actions that will improve some of his performance indicators. Help him by forecasting the probable effect of the following actions on the results in the columns.

In the spaces provided, enter:
 plus (+) to indicate increase
 minus (-) to indicate reduction
 zero (0) to indicate either "no effect" or "cannot forecast".

Item 0 is given as an example.

	Total Water Metered M ³	Total Water Sales \$	Water Sales \$/M ³	Water Cost \$/M ³	Water Sales \$/Conn.	Water Cost \$/Conn.
0. Tariff increased 5%	0	+	+	0	+	0
1. No. of connections increased 5%						
2. Personnel increased 10%						
3. Fuel cost increased 20%						
4. Sales volume increased 10%						
5. Increased production from 60-70% of capacity						
6. Unaccounted-for water decreased from 50-40%						
7. Inflation increased to 20% without tariff change						
8. Fixed assets revalued						
9. New pipeline installed with increased km						
10. Reduction in power/chemical costs 10%						

BILL BROWN - ANSWERS

The probable effect of the following actions on the results in the columns would be:

plus (+) indicates an increase
minus (-) indicates a decrease
zero (0) indicates either "no effect" or "cannot forecast".

	Total Water Metered M ³	Total Water Sales \$	Water Sales \$/M ³	Water Cost \$/M ³	Water Sales \$/Conn.	Water Cost \$/Conn.
0. Tariff increased 5%	0	+	+	0	+	0
1. No. of connections increased 5%	+	+	0	-	0	-
2. Personnel increased 10%	0	0	0	+	0	+
3. Fuel cost increased 20%	0	0	0	+	0	+
4. Sales volume increased 10%	+	+	0	-	+	-
5. Increased production from 60-70% of capacity	+	+	0	-	0	-
6. Unaccounted-for water decreased from 50-40%	0	+	0	-	0	-
7. Inflation increased to 20% without tariff change	0	0	0	+	0	+
8. Fixed assets revalued	0	0	0	+	0	+
9. New pipeline installed with increased km	+	+	0	0	0	0
10. Reduction in power/chemical costs 10%	0	0	0	-	0	-

Score out of 60

(enter score in your diary)

ASSIGNMENT 7.0 - PROGRAMME LEARNING
THE PACKAGE OF ACCOUNTING REPORTS

7.1 INSTRUCTIONS - INDIVIDUAL WORK

- (a) Assemble in new SG.
- (b) Do ASS Chapter 5 in writing.
- (c) Quickly review all the summaries and the glossary.
- (d) List any words that you still do not immediately understand.
- (e) List all financial ratios that you remember.
- (f) Reassemble in MG when the bell rings.

ASSIGNMENT 8.0 - LECTURE

THE PACKAGE OF ACCOUNTING REPORTS (30 MINUTES)

8.1 OBJECTIVES

True and fair view (old idea)
Fair in accordance with accounting concepts (new view)
Materiality
Judgement
Estimates not scientific facts

8.2 THE PACKAGE

Balance sheet at beginning
Income statement for the period
Statement of accumulated profit for the period
Balance sheet at end
Statistical data on population, production, sales (Water Industry)

8.3 STATEMENT OF ACCUMULATED PROFIT

Retained earnings statement
Appropriation account
Connects one balance sheet with another
Balance brought forward plus net profit less dividends equals balance carried forward
Special charges to accumulated profit (i.e. not charged via the income statement) need special investigation!

8.4 METHOD OF FINANCIAL ANALYSIS

Understand the language
Determine the story behind the figures
Compare figures and ratios against standards
Concentrate on material items
Ask significant questions

8.5 LAPP SYSTEM OF FINANCIAL ANALYSIS - GENERAL BUSINESS

(a) Liquidity

	<u>Rough standard</u>
Current assets : current liabilities	2:1
Quick assets : quick liabilities	1 ¹ / ₂ :1
Equity : debt	2:1

(b) Activity

	<u>Expected standard</u>
Sales p.a.	1
$\frac{\text{Cost of sales}}{\text{Inventory}}$ p.a.	2 or better
$\frac{\text{Receivables}}{\text{Sales}} \times 360$ days	Steady or decreasing
$\frac{\text{Payables}}{\text{Cost of sales}} \times 360$ days	Steady or decreasing

(c) Profitability

$\frac{\text{Gross profit}}{\text{Sales}}$	Steady or increasing
$\frac{\text{Net profit}}{\text{Sales}}$	Steady or increasing
$\frac{\text{Net profit}}{\text{Owners equity}}$	Steady or increasing

(d) Potential

- Product
- Market
- Facilities - human and physical
- Management
- Finance

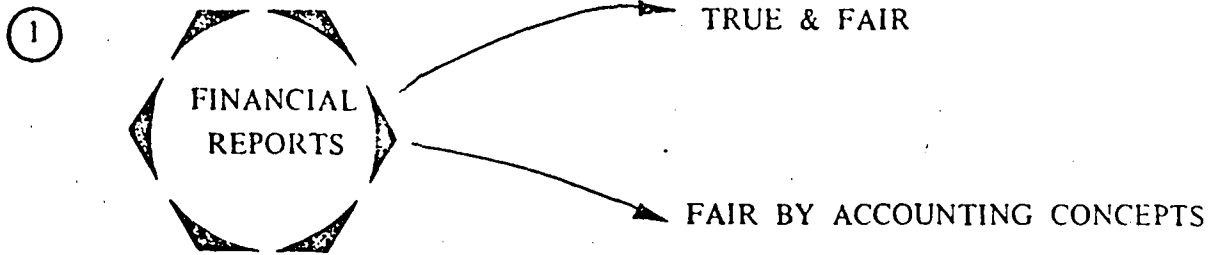
8.6 COMPARISON - KEY TO FINANCIAL ANALYSIS

Compare the amounts and ratios against a standard

- Ask: What is important?
 Did it change?
 Why did it change?
- Standard may be: Past
 Budget
 Industry average

8.7 POTENTIAL FOR THE FUTURE

Forecast forward to show what will happen under a range of specific assumptions.



② PACKAGE

ONE - PROFIT AND LOSS ACCOUNT

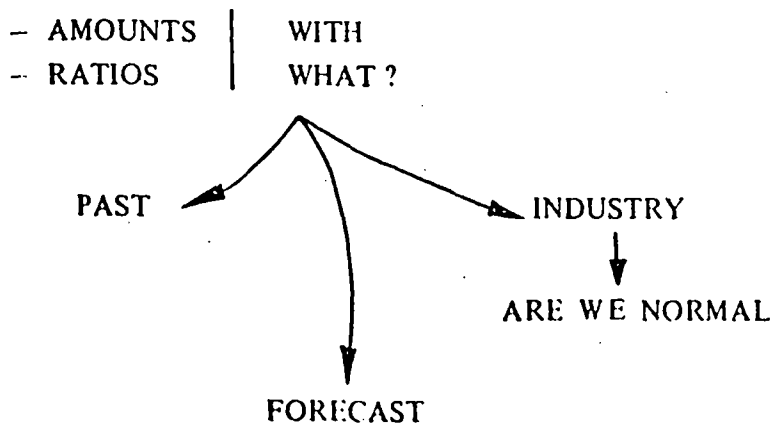
TWO - BALANCE SHEETS

ONE - PROFIT AND LOSS APPROPRIATION ACCOUNT

③

L	A	P	P
2:1	2+	UP	UP

④ COMPARISON



8.9 WATER INDUSTRY PERFORMANCE INDICATOR ANALYSIS

- (a) Liquidity - current ratio (2:1) and quick ratio (1:1) are generally comparable with business norms. However, the E:D ratio varies from 1:1 to 1:3, while still being "healthy" according to the industry (health in financial terms relates to comparability with other organisations in the industry).

However, the main current asset is not inventory but accounts receivable which requires special controls and expediting to provide the critical cash flow. Regular "ageing" of accounts receivable by due date helps to determine which accounts are overdue and require special treatment. The objective is to keep receivables current and avoid the need to cut off supplies, which would reduce future sales volume, especially when the pipe-laying investment has already been incurred. Illegal water connections are a critical problem in many countries and require continuous detection procedures.

- (b) Activity - low ratio of S/A seldom exceeds 0.3 due to the high fixed asset investment, especially when assets are revalued to replacement cost. Days of receivables and payables are useful control measures. Concentrate on the number of connections, related to: sales volume in M³ and sales value and the number of employees.
- (c) Profitability - distinguish OPBD from OPAD by amount and percentage. Consider the interest coverage by the ratio OPAD/interest. Relate water sales and costs to M³.
- (d) Potential - relates to population coverage, capacity working and control of meter production. Recognise that the tariff price of water could affect demand. Although demand is inelastic within certain limits, current studies show resistance to new schemes for water supply which involve higher out-of-pocket expenses than existing water regardless of quality.

Expansion of capacity to improve population coverage must relate to the customers' ability and willingness to pay, since accounts receivable are a major investment of working capital and a major source of both cash flow and potential losses.

8.10 WATER INDUSTRY FINANCIAL FORECASTING

- (a) Horizon - since the working life of the fixed assets may be 10 to 100 years, new major investments require long-term financial forecasting. The value of such forecast depends upon the validity of the underlying key assumptions. Inflation and tariff levels are extremely difficult to estimate over long periods.
- (b) Income statements and balance sheets can be forecast forward using baseline data, ratios and estimates for a 1-5 year period.
- (c) Short-term cash forecasting using ((b) above) and credit term data can indicate receipts and payments over shorter periods of 1-2 years.
- (d) Long-term funds flow statements, however, are vital to show the key major management financing decisions for a 1-20 year period as follows:

SOURCES OF FUNDS:

	<u>Amount</u>	<u>Source</u>
Net income (after deducting depreciation)	37	Income statement
Depreciation (already deducted to compute net income but added back now because it is not paid back in cash)	100	Income statement
New long-term loans	385	Balance sheet
Sale of fixed terms	-	Special data
New capital	-	Balance sheet
Total sources	<u>522</u>	

USES OF FUNDS:

New fixed assets	423	Balance sheet
Dividends paid	33	Statement of accumulated profit
Changes in working capital (below)	66	Balance sheet
Total uses	<u>522</u>	

CHANGES IN WORKING CAPITAL:

	<u>Opening</u>	<u>Closing</u>	<u>Change</u>
Current assets	70	287	Balance sheet
Current liabilities	24	175	Balance sheet
Net working capital	<u>46</u>	<u>112</u>	66

8.10 WATER INDUSTRY FINANCIAL FORECASTING (CONT'D)

- (e) Sources of data for the funds flow statement are: opening and closing balance sheets, income statement for the accounting period, statement of accumulated profit plus other data on changes in fixed assets and long-term financing during the period. The computations can become extremely complex and every effort must be made to simplify the results for easy communication to management.

- (f) Funds flow may be used to analyse past decisions or to forecast the effect of future decisions so that appropriate changes in policy may be made to have funds available when needed, while keeping the financial health of the company to the appropriate level of risk.

8.11 WATER INDUSTRY PERFORMANCE INDICATORS

The performance indicators can be extended and analysed by management functions: liquidity, marketing, collection, production, cost control, profitability and personnel management as outlined in Exhibit 1.

WATER INDUSTRY PERFORMANCE INDICATORS BY MANAGEMENT FUNCTION

<u>No.</u>	<u>Indicator</u>	<u>Measure</u>	<u>Rough standard</u>
<u>Liquidity management</u>			
1.	CA:CL	R	2:1
2.	QA:QL	R	1:1
3.	E : D	R	1:2
4.	OPAD/Interest	times covered	5
<u>Marketing management</u>			
5.	Population served/total population	%	80
6.	No. of connections		
7.	Connection increase (decrease)	%	10
8.	Sales volume M ³ /connection	M ³ /conn.	600
9.	Sales value \$/connection	\$/conn.	\$200
<u>Collection management</u>			
10.	Days of receivables	Days	30
<u>Production management</u>			
11.	Production metered M ³ /production capacity	%	80
12.	Sales volume M ³ /production metered	%	80
13.	Water unaccounted for M ³ /production metered	%	20
<u>Cost control management</u>			
14.	Total oper. exp. before depn./sales vol. M ³	\$/M ³	\$0.20
15.	Total oper. exp. after depn./sales vol. M ³	\$/M ³	\$0.25
16.	Fuel cost/sales volume M ³	\$/M ³	\$0.02
17.	Pumping cost/sales volume M ³	\$/M ³	\$0.03
18.	Personnel cost/sales volume M ³	\$/M ³	\$0.10
19.	Water treatment cost/connection	\$/Conn.	\$10.0
20.	Water transmission and distr. cost/conn.	\$/Conn.	\$10.0
21.	General admin. cost/conn.	\$/Conn.	\$10.0
<u>Profitability management</u>			
22.	OPBD/S	%	50
23.	Depreciation/S	%	15
24.	Interest/S	%	10
25.	NP/S	%	5
26.	NP/OE	%	10
27.	Cash flow/total assets	%	15
<u>Personnel management</u>			
28.	No. employees/conn.	No. conn.	.03
29.	Total payroll/no. employees	\$	3,000
30.	Overtime pay/total payroll	%	10
31.	Population served/employee	No	1,500

Note: The rough standards above are for illustration of data to be developed from industry averages separately for: small, medium and large scale water company operations.

ASSIGNMENT 9.0 - CASE ANALYSIS - SPECIAL SUPPLY COMPANY

9.1 INSTRUCTIONS

(a) Individual and SG work (Exhibits 1-6).

(b) CSG work.

Groups will be combined:

A with E)
B with F) Dealers D, E, F
C with D)

Note: Dealers MUST use the flipcharts to record key points.

For this presentation, consider yourself part of a management team of the company or the bank. The company team may need to convince the bank to continue its loan. The bank may have to convince the company to take some strong management actions.

(c) Reassemble in MG when the bell rings.

SPECIAL SUPPLY COMPANY (SSC)

QUESTIONS

1. Study the case carefully to understand the story behind the figures. Don't miss the obvious things (Exhibits 2-6).
2. Compute the ratios for 1983 (Exhibit 6).
3. Review the health of the company for 1983 in terms of: liquidity, activity, profitability and potential.
4. Which standard of performance (1982 actual or 1983 forecast) should be used to measure:
 - (a) Management effectiveness during 1983
 - (b) General trend of operating in 1983.
5. Is the E:D relationship healthy in 1983?
6. Set out a plan of action for the:
 - (a) Company
 - (b) Bank.

Note: Remember to cover every question in the time allowed.

SPECIAL SUPPLY COMPANY

On 15 January 1984, Mr. Jameson, the Manager of the Standard Bank, was reviewing the \$75,000 loan (overdraft) facility of the Special Supply Company (SSC) which was partly due for repayment (\$25,000) on 31 January 1984. That same day, Mr. Jameson received a letter from SSC enclosing financial statements for the year ended 31 December 1984 and pointing out that "Sales thus far in 1984 are running ahead of those of a year ago, and we hope to make \$700,000 sales volume in 1983".

SSC was formed in 1960 as a private water company to do water pumping, treatment and distribution for the population of Area X. In 1981, a decision was made to expand capacity from M³ 2.0 million per annum to M³ 2.5 million per annum with a capital investment of about \$100,000. It was hoped to expand coverage of the population from 66-73% despite a tariff increase of \$0.25 to \$0.30/M³. It was planned to expand water sales, cut water wastage, maintain accounts receivable at not more than 40 days and keep payables within reasonable limits. Thus, it would improve service and profitability for the company.

In January 1983, SSC officials visited the Standard Bank to discuss with Mr. Jameson the results of 1982 and the forecast for 1983, which indicated a need for a bank loan of \$30,000. SSC had banked with the Standard Bank since its inception and this was the first time they had asked for a loan.

Mr. Jameson agreed to an loan (overdraft) of up to \$75,000 to ensure adequate working capital for the expansion, and suggested a three-year basis calling for a reduction of \$25,000 each year, beginning 31 January 1984.

From time to time, during 1983, SSC officials reported progress and told him that the water engineers had suggested that, for "better economies of scale", the increase in production should be to a capacity of M³ 3.0 million for an additional investment of about \$400,000, which could easily be financed from long-term loans. They reported a very successful increase in sales and profit for 1983.

Mr. Jameson developed comparative financial data (Exhibits 2-5) and computed appropriate water industry operating ratios to help him to analyse the SSC situation and decide what the Bank should do now.

82	83	31.1.84	
			TIME
	Jan '83	Today	
		15.1.84	

SPECIAL SUPPLY COMPANY

STATISTICAL DATA ON POPULATION, PRODUCTION AND SALES

	<u>1982 Actual</u>	<u>1983 Forecast</u>	<u>1983 Actual</u>
<u>Population (000)</u>			
Served	20	22	25
Not Served	<u>10</u>	<u>8</u>	<u>5</u>
Total	<u>30</u>	<u>30</u>	<u>30</u>
<u>No. of Connections (000)</u>			
Standpipes			
Private		Detail omitted	
Industrial			
Government			
Total	<u>2.0</u>	<u>2.2</u>	<u>2.5</u>
New (lost) connections		+0.2	+0.3
<u>Tariffs (\$/M³)</u>			
Standpipes			
Private		Detail omitted	
Industrial			
Government			
Average of total	<u>\$.25</u>	<u>\$.30</u>	<u>\$.30</u>
<u>Production (000 M³)</u>			
Metered and sold	800	1,000	1,666
Metered and unaccounted for	800	600	334
Subtotal	<u>1,600</u>	<u>1,600</u>	<u>2,000</u>
Unused capacity	400	900	1,000
Total capacity	<u>2,000</u>	<u>2,500</u>	<u>3,000</u>
<u>Employees</u>			
Total number	8	10	18
Total cost (000 \$)	<u>\$ 45</u>	<u>\$ 55</u>	<u>\$ 110</u>
<u>Water sales (000 M³)</u>			
Standpipes			
Private		Detail omitted	
Industrial			
Government			
Total	<u>840</u>	<u>800</u>	<u>1,666</u>
<u>Water sales (000 \$)</u>			
Standpipes			
Private		Detail omitted	
Industrial			
Government			
Total	<u>\$ 200</u>	<u>\$ 240</u>	<u>\$ 500</u>

SPECIAL SUPPLY COMPANY

INCOME STATEMENT

Years Ended 31 December

	1982 Actual \$000	1983 Forecast \$000	1983 Actual \$000
<u>INCOME</u>			
Water sales	200	240	500
Other sales	-	-	-
Total	<u>200</u>	<u>240</u>	<u>500</u>
<u>OPERATING COSTS</u>			
Personnel	45	55	110
Power	8	9	22
Chemicals	13	15	40
Maintenance, Other	16	16	28
Indirect Administrative Expenditure	14	10	60
Total	<u>96</u>	<u>95</u>	<u>260</u>
OPERATING PROFIT BEFORE DEPRECIATION (OPBD)	104	145	244
DEPRECIATION	30	40	100
OPERATING PROFIT AFTER DEPRECIATION (OPAD)	74	105	144
NON-OPERATING EXPENSES - Interest	<u>30</u>	<u>35</u>	<u>70</u>
NON-OPERATING INCOME	44	70	74
PROFIT BEFORE TAXES	<u>44</u>	<u>70</u>	<u>74</u>
TAXES	<u>22</u>	<u>35</u>	<u>37</u>
NET PROFIT	22 ===	35 ===	37 ===

STATEMENT OF ACCUMULATED PROFIT

Year Ended 31 December

Opening balance	134	136	136
Add: Net profit for the year	22	35	37
	<u>156</u>	<u>171</u>	<u>173</u>
Less: Dividends	20	33	33
Closing balance	<u>136</u> ===	<u>138</u> ===	<u>140</u> ===

SPECIAL SUPPLY COMPANY

BALANCE SHEET

As at 31 December

	1982 Actual \$000	1983 Forecast \$000	1983 Actual \$000
<u>Assets</u>			
Current assets:			
Cash	33	-	-
Accounts receivable	21	25	227
Other	16	30	60
Total	<u>70</u>	<u>55</u>	<u>287</u>
Fixed assets:			
Cost	597	692	1,020
Accumulated depreciation	107	147	207
Net	<u>490</u>	<u>545</u>	<u>813</u>
Total assets	560 ===	600 ===	1,100 =====
<u>Liabilities and Owners' Equity</u>			
Current liabilities:			
Accounts payable	12	9	80
Accrued expenses	12	9	20
Overdraft (loan)	-	30	75
Total current liabilities	<u>24</u>	<u>48</u>	<u>175</u>
Long-term liabilities	276	266	510
Total liabilities	<u>300</u>	<u>314</u>	<u>685</u>
Owners' equity:			
Capital	100	100	100
Retained earnings	136	138	140
Total	<u>236</u>	<u>238</u>	<u>240</u>
Total liabilities and owners' equity	560 ===	600 ===	1,100 =====

SPECIAL SUPPLY COMPANY

PERFORMANCE INDICATORS **

<u>No.</u>	<u>Std.</u>	<u>Item</u>		<u>1982</u> <u>Actual</u>	<u>1983</u> <u>Forecast</u>	<u>1983</u> <u>Actual</u>
- <u>LIQUIDITY</u>						
L1	2:1	CA:CL		3:1	1:1	
L2	1:1	QA:QL		2:1	1:2	
L3	1:2	E : D		1.3:1	1:1.3	
- <u>ACTIVITY</u>						
A1	.4	S/A	- times	.3	.4	
A2	30	Days - Receivables	- days	38	38	
A3	30	Days - Payables	- days	85	54	267
A4	-	Connections - No.	- no.	2,000	2,200	2,500
A5	10	Conn. (new)/Conn. No.	- %	-	+10	+25
A6	600	Sales vol. M ³ /Conn. No.	- M ³ /conn.	400	363	
A7	200	Sales vol. \$/Conn. No.	- \$/conn.	\$ 100	\$ 109	
A8		Conn. No/employee	- conn/no.	250	220	
A9	1500	Population served/employee	- no.	2,500	2,200	
- <u>PROFITABILITY</u>						
P1	50	OPBD/S	- %	51	60	
P2	5	NP/S	- %	11	15	
P3	10	NP/OE	- %	8	13	
P4	15	Cash flow/Total assets %	- %	9	11	
P5	5	OPBD/Interest	- times	2	3	
P6	\$.20	Oper. cost \$/Sales vol. M ³	- \$/M ³	\$.09	\$.12	
P7	\$.25	Total cost \$/Sales vol. M ³	- \$/M ³	\$.13	\$.13	
P8	\$.33	Sales val. \$/Sales vol. M ³	- \$/M ³	\$.25	\$.30	\$.30
<u>POTENTIAL</u>						
O1	80	Pop. served/Total pop.	- %	66	73	
O2	80	Prod. metered/Prod. capacity	- %	80	64	
O3	80	Sales vol./Prod. metered	- %	50	62	
O4	20	Water unacctd./Prod. metered	- %	50	38	

** See page D.39 in Diary for definitions

Note: The above are only rough standards. More useful standards relate to such factors as: size, technology, location, etc., and the effects of inflation.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

ASSIGNMENT 10.0 - LECTURE
SPECIAL SUPPLY COMPANY

10.1 STORY OF THE CASE

SSC has been the water supply company for Area X since 1960 and by 1981 served about 66% of the population (30,000). In 1982, the company planned to expand the capacity from M³ 2.0 million per annum to M³ 2.5 million to provide higher sales and service to the community with increased profitability. The company forecasted a need for working capital of \$30,000. However, the Standard Bank provided a loan of \$75,000 over three years. Results of 1983 showed increased capacity to M³ 3.0 million per annum financed by a long-term loan increase of \$400,000. There were increased sales and profits, but accounts receivable were very high and the payables were stretched. Since the profits reached the forecasted level, dividends were paid as planned. Now the equity:debt relationship is weaker, cash is short and \$25,000 is due to the bank on 31 January 1984. Was the expansion really worthwhile?

10.2 OPERATING RATIOS

See Exhibit 1.

10.3 HEALTH OF THE COMPANY (ACTUAL 1983 COMPARED WITH FORECAST 1983)

- (a) Liquidity - poor. Current ratio higher (1:1 to 1.6:1). Quick ratio higher (2:1) but this depends upon receivables which are long overdue. Payables are high. No cash available to pay the bank. Dividends have taken up most of the profit.
- (b) Activity - S/A ratio (0.4) maintained but receivables increased (from 38 to 165 days) some important customers, who should pay their water bills within 30 days, must not be paying at all, possible bad debts not provided for. Payables stretched (54-267 days). The company seems to be refusing to pay its suppliers and might be bankrupt. Number of connections increased (2,200-2,500) with increased sales and volume (M³ 363-666) in dollar value (\$109-200).
- (c) Profitability - sales volume substantially increased (M³ 800-1,666) despite tariff increase (\$0.25-0.30), OPBD/S decreased (60-49%) and NP/S only 7% (forecast 15%). NP/OE stable, and CF/TA 13% but all of this depends upon the figure of profit which is subject to bad debts from the extended accounts receivable (\$227,000). Even a 30% loss in receivables would eliminate the net profit for the year.
- (d) Potential - substantial increase in capacity financed by long-term loans and a lower E:D ratio. Population coverage increased (73-83%) with only 64% of production capacity used. Metered water controlled to reduce water loss to only 20%. However, with cash problems, a weak equity base and doubtful receivables, SSC is in a critical financial position.

SPECIAL SUPPLY COMPANY
PERFORMANCE INDICATORS

<u>No.</u>	<u>Std.</u>	<u>Item</u>		<u>1982</u> <u>Actual</u>	<u>1983</u> <u>Forecast</u>	<u>1983</u> <u>Actual</u>
- <u>LIQUIDITY</u>						
L1	2:1	CA:CL		3:1	1:1	1.6:1
L2	1:1	QA:QL		1:1	1:1	2:1
L3	1:2	E : D		1:1.3	1:2.8	1:3.6
- <u>ACTIVITY</u>						
A1	.4	S/A	- times	.3	.4	.4
A2	30	Days - Receivables	- days	38	38	165
A3	30	Days - Payables	- days	85	54	267
A4	-	Connections - No.	- no.	2,000	2,200	2,500
A5	10	Conn. (new)/Conn. No.	- %	-	+10	+25
A6	600	Sales vol. M ³ /Conn. No.	- M ³ /conn.	400	363	666
A7	200	Sales vol. \$/Conn. No.	- \$/conn.	\$ 100	\$ 109	\$ 200
A8	150	Conn. No/employees	- conn/no.	250	220	138
A9	1500	Population served/employer	- no	2,500	2,200	1,388
A10		(000) M ³ /employee	- M ³	105	80	92
A11		(000)\$ sales/employee	- \$	25	24	28
- <u>PROFITABILITY</u>						
P1	50	OPBD/S	- %	51	60	49
P2	5	NP/S	- %	10	15	7
P3	10	NP/OEquity	- %	8	13	13
P4	15	Cash flow/Total assets %	- %	9	11	12
P5	5	OPBD/Interest	- times	2	3	2
P6	\$.20	Oper. cost \$/Sales vol. M ³	- \$/M ³	\$.09	\$.12	\$.17
P7	\$.25	Total cost \$/Sales vol. M ³	- \$/M ³	\$.13	\$.13	\$.25
P8	\$.33	Sales Val. \$/Sales Vol. M ³	- \$/M ³	\$.25	\$.30	\$.30
<u>POTENTIAL</u>						
O1	80	Pop. served/Total pop.	- %	66	73	83
O2	80	Prod. metered/Prod. capacity	- %	80	64	66
O3	80	Sales vol./Prod. metered	- %	50	62	80
O4	20	Water unacctd./Prod. metered	- %	50	38	20

Note: The above are only rough standards. More useful standards relate to such factors as: size, technology, location, etc., and the effects of inflation.

10.4 STANDARDS OF PERFORMANCE

Compare the actual 1983 with the forecast 1983 to measure management performance. Compare actual 1982 with actual 1983 to measure the trend of operations, and to see whether management is in better control.

10.5 EQUITY:DEBT POSITION AND FUNDS FLOW

Change of the E:D ratio from 1:1.4 to to 1:2.8 indicates debt capacity used up by rapid expansion. If sales are to increase further, the need for cash will rise despite the unhealthy E:D ratio.

Cash and E:D ratios are serious financial problems, although the industry averages would need to be consulted to determine if they are, in fact, "unhealthy". Increase in fixed assets (financed by long-term debt) will generally involve an increase in sales and thus an increase in current assets. These must both be provided for, in financial planning for the expansion.

A funds flow statement (Exhibit 2) indicates management's key financial decisions. New funds of \$522 were available from net profits, depreciation and long-term loans. They were used for dividends, fixed assets and working capital. A forecast of funds flow over 1-10 years ahead would be a necessary part of financial planning for expansion to ensure that funds are available as needed.

It may not be to wise to pay dividends during a cash crisis. However, this depends upon the total financial policy of the company.

10.6 PLAN OF ACTION

- (a) SSC
Postpone bank repayment \$25,000 and negotiate a longer term loan to meet the immediate cash crisis
Expedite collection of receivables. Discipline delinquent customers. Perhaps the company can also "factor" its receivables my borrowing cash against them
Hold dividends during expansion to preserve the equity base
Make ten-year financial forecasts to plan the future sources and uses of funds
Control expansion to financial limits
Increase the productivity of the employees through training or incentives.
- (b) Bank - decide if SSC is a worthwhile client or not and if the longer term loan is appropriate; would another bank give the loan anyway?
Then as above.

Note: The expansion was probably not justified by the increased risk. The causes of financial difficulty are: excess capacity and sales expansion with poor receivable collection. Failure to make long-term financial forecasts. Need to control dividends when the cash is short to preserve the equity base.

10.7 LEARNING POINTS

- (a) Increased sales lead to increased receivables.
- (b) Increased sales at falling margins may not necessarily improve profit but do increase the need for financial resources.
- (c) Increased capacity, connections and coverage, financed by long-term loans, may lead to short-term working capital difficulties.
- (d) Technical expansion to achieve "economies of scale" may not be good financial policy.
- (e) Operating ratios by connection/M³/capacity help to analyse the causes of financial problems.
- (f) Dividends may not be healthy in times of expansion when cash is extremely short.
- (g) Compare financial statements against budget or forecast to measure management performance.
- (h) Compare financial statements against the previous year to measure the trend of the company's activities.
- (i) Expanding sales at low profit levels emphasise the need for a bigger equity base (more capital).
- (j) Number of days sales in receivables and the number of days of operating costs in payables are useful measures of activity and control.
- (k) Need to forecast future income statements, balance sheet and funds flow to measure the forward effect of higher production and sales.

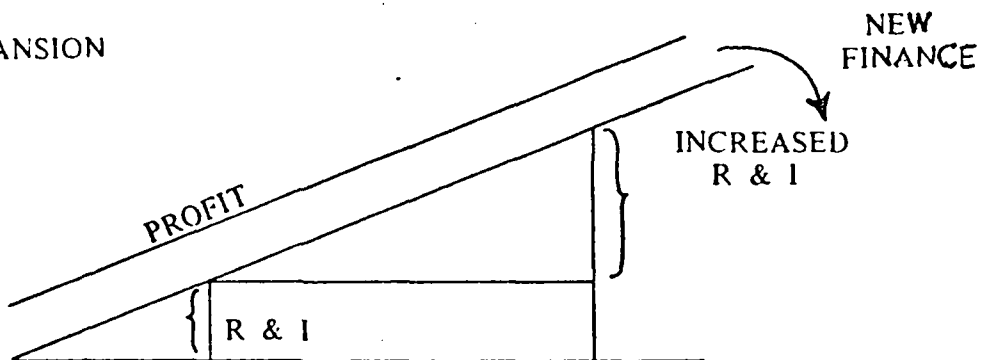
Note: Did you notice the error? The bank loan \$75,000 is strictly not all current liability since only \$25,000 is due within one year. Does it make any difference to your decisions.

SPECIAL SUPPLY COMPANY

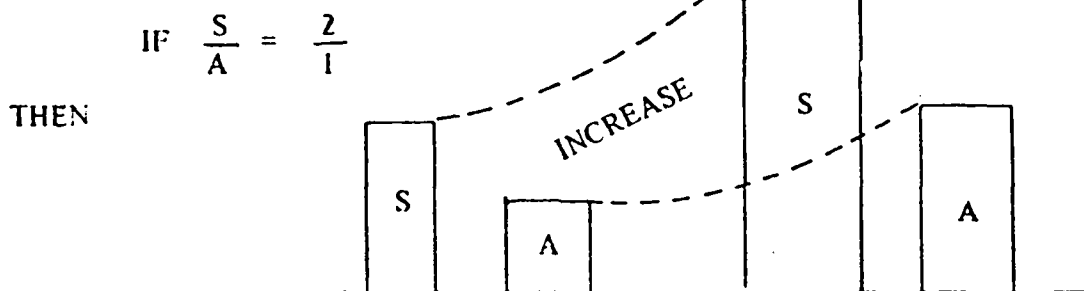
FUNDS FLOW

	1982 Actual \$000	1983 Forecast \$000	1983 Actual \$000
<u>Sources</u>			
Net profit	22	35	37
Depreciation	30	40	100
	<u>52</u>	<u>75</u>	<u>137</u>
New long-term loans	-	14	385
Total sources	<u>104</u>	<u>89</u>	<u>522</u>
 <u>Uses</u>			
Dividends	20	33	33
Fixed assets	-	95	423
Changes in working capital (+/-)	32	(39)	66
	<u>52</u>	<u>89</u>	<u>522</u>
 <u>Working capital</u>			
Current assets	70	55	287
Current liabilities	24	48	175
Net working capital	<u>46</u>	<u>7</u>	<u>112</u>

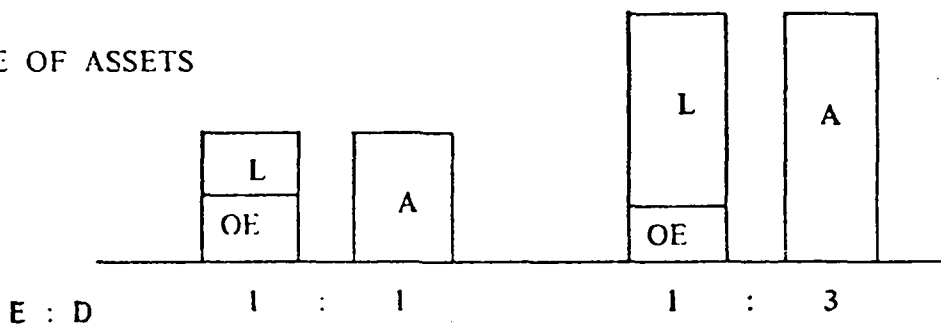
① EFFECT OF EXPANSION



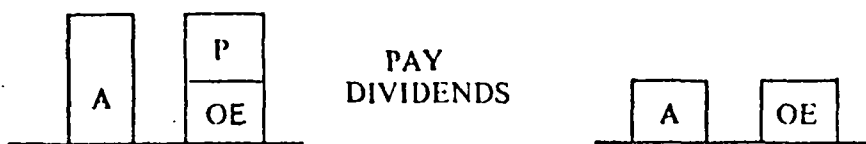
② SALES & ASSETS



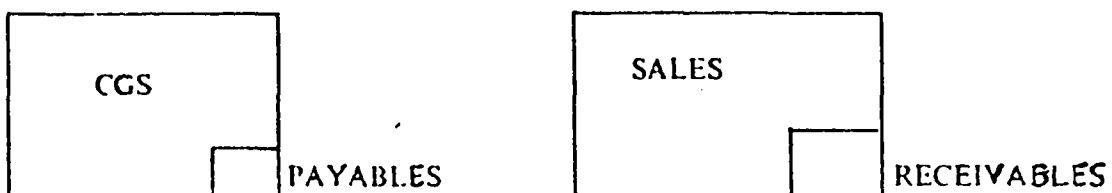
③ FINANCE OF ASSETS



④ PROFIT & OE & DIVIDENDS



⑤ DAYS



AUTONOMOUS GROUP LEARNING (AGL)

No. 11: FINANCIAL MANAGEMENT FOR THE WATER INDUSTRY

EXERCISES

(QUESTIONS WITH ANSWERS)

To be Retained

Boland/Wallace/ILO 1984/3

EXERCISES ON FINANCIAL ARITHMETIC - 13 QUESTIONS

(Time allowed - 90 minutes)

Some skills in basic arithmetic may be developed from this short quiz. Consult the answers provided after each question (pages E-10/14)

QUESTION

1. Depreciation - a machine costs \$1,000 and is depreciated on a straight line basis for a five-year economic life.

- (a) What is the depreciation in year 1?
- (b) What is the net book value after three years?
- (c) If sold for \$200 after three years, what is the profit or loss on the sale?

2. Depreciation - a machine costs \$1,000 and is depreciated on a diminishing balance basis of 30% per annum.

- (a) What is the depreciation in year 1?
- (b) What is the net book value after two years?
- (c) If sold for \$200 after two years, what is the profit or loss on the sale?

3. Depreciation - a fixed asset cost \$20,000 and was depreciated on diminishing balance method at 50% annually. After three years, it was sold for \$8,000. What was the profit or loss on the sale?

4. Cash flow - from the following data, compute the cash flow for years 2 and 3:

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Sales	100	100	100
Cost of goods sold	80	50	40
Gross profit	<u>20</u>	<u>50</u>	<u>60</u>
Operating expenses	10	20	40
Net profit	<u>10</u>	<u>30</u>	<u>20</u>
Depreciation charged	40	40	30
Cash flow	<u>50</u>	<u>40</u>	<u>30</u>
	===	===	===

5. Cash flow - from the following data, complete the cash forecast and compute the cash balance at 31 March:

	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>
Receipts	20 (Dec.)		
Payments -			
Purchases	10 (Nov.)		
Other	25 (Jan.)		
Difference	<u>(15)</u>	---	---
Opening balance	20	5	---
Closing balance	<u>5</u>	<u>5</u>	<u>---</u>
	===	===	===

Data: Sales (net 30 days)	Dec. 20	Jan. 40	Feb. 60
Purchases (net 60 days)	Nov. 10	Dec. 20	Jan. 15
Expenses	Jan. 25	Feb. 15	Mar. 25

6. Cash flow - from the following data, compute the cash balance at the end of year 1:

Opening cash	210
Sales on credit	55
Receipts from debtors	80
Expenses incurred	20
Purchases	200
Payments to creditors for purchases and expenses	240
Fixed assets purchased for cash	55
Dividends paid	25
Mortgage received	100

7. Forecasting - from the following data, forecast the income statement and balance sheet for year 2:

	<u>Year 1</u>	<u>Year 2</u>	<u>Assumptions</u>
Sales	200	300	given
Cost of goods sold	<u>100</u>	—	difference
Gross profit	100	—	40% sales
Operating expenses	<u>40</u>	—	20% sales
Net profit	<u>60</u>	—	
	===	===	
Assets:			
Cash	10	—	difference
Receivables	50	—	25% sales
Inventory	60	—	30% sales
Fixed assets	<u>100</u>	—	plus 10
	<u>220</u>	—	
	===	===	
Payables	40	—	40% CGS
Owners equity	<u>180</u>	—	last year's OE plus new NP
	220	—	
	===	===	

8. Earnings per share - from the following data, compute for years 2 and 3:

- (a) Earnings per ordinary (common) share
 (b) Dividends per ordinary (common) share
 (c) Dividend cover
 (d) Cash flow per ordinary (common) share

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 2</u>
Net profit	80	120	170
Dividend on preferred stock	10	20	20
Ordinary (common) dividend	20	40	50
Number of ordinary (common) shares	100	100	200
Depreciation charged	30	50	100
Earnings per ordinary (common) share	.70		
Dividends per ordinary (common) share	.20		
Dividend cover times	3.50		
Cash flow per ordinary (common) share	1.00		

9. Earnings per share - from the following data, what would be the effect on "EPS" and "Dividend Cover" of issuing 20,000 more ordinary (common) shares?

	<u>Before</u>	<u>After</u>
Net profit	150,000	170,000
Preference dividend	70,000	
Number of ordinary (common) shares	40,000	
Ordinary (common) dividend per share	.50	
EPS	2.0	
Dividend cover times	4.0	

10. Cover - from the following data, determine how the "cover" of debenture interest and preference dividends has changed from year 1 to year 2:

	<u>Year 1</u>	<u>Year 2</u>
Profit before interest	100	200
Debenture interest	40	60
	<u>60</u>	<u>140</u>
Taxation	30	70
Net profit	<u>30</u>	<u>70</u>
	===	===
Preference dividend	20	50
Interest cover (times)	2.5	
Preference dividend cover (times)	1.5	

11. Financial analysis - from the balance sheet and income statement which follow, answer the following questions:

- (a) Net working capital is
- (b) Owners equity is
- (c) Net book value of fixed assets is
- (d) Assets financed by creditors are
- (e) Par value of one ordinary (common) share is
- (f) Book value of one ordinary (common) share is
- (g) Gross profit % to sales is
- (h) Net profit % to sales is
- (i) Net profit % to owners equity is
- (j) Market value of one ordinary (common) share is
- (k) Ratio of CA:CL is about
- (l) Ratio of QA:QL is about

- (m) Ratio of E:D is about
- (n) Number of days sales in receivables
- (o) Number of days purchases in payables

BALANCE SHEET AS AT 31 DECEMBER 1982

<u>CURRENT ASSETS</u>				<u>CURRENT LIABILITIES</u>	
Cash	7,600			Creditors (payables)	18,000
Debtors (receivables)	36,000			Bank loan	20,000
Inventory at cost or lower market value	<u>16,500</u>	60,100		Income tax due	<u>2,300</u>
					40,300
 <u>FIXED ASSETS</u>				 <u>LONG-TERM LIABILITIES</u>	
Land	8,000			Mortgage loan	21,400
Buildings	27,000				
Equipment	<u>2,100</u>			 <u>OWNERS EQUITY</u>	
	37,100			Capital stock (15,000 shares)	15,000
Less accumulated depreciation	<u>10,500</u>	<u>26,600</u>		Retained earnings	<u>10,000</u>
					25,000
		86,700			86,700
		=====			=====

Note: Dividends paid 1,500

INCOME STATEMENT - YEAR ENDED 31 DECEMBER 1982

Sales	\$50,000
Cost of goods sold	<u>35,000</u>
GROSS PROFIT	15,000
Selling and administrative expenses	<u>9,300</u>
OPERATING PROFIT	5,700
Non-operating expenses	<u>700</u>
PROFIT BEFORE TAXES	5,000
Income tax	<u>2,000</u>
NET PROFIT	<u>\$ 3,000</u>
	=====

12. Water industry - from the following income statement and balance sheet, answer the following questions for 1982, using rough calculations only.

- (a) Current assets are
- (b) Current liabilities are
- (c) Net working capital (CA-CL) is
- (d) Net book value of fixed assets is
- (e) Replacement value of fixed assets is
- (f) Owners equity is
- (g) Assets financed by creditors are
- (h) Revaluation reserve is
- (i) The profit/loss accumulated to date is
- (j) OPBD % sales is
- (k) NP/S is
- (l) Current ratio is about
- (m) Quick ratio is about
- (n) E:D ratio is about
- (o) NP/OE is about ...
- (p) Days receivable are about
- (q) Cash flow (NP + D) % total assets is about
- (r) OPAD/interest times covered is about

12. Water industry

STANDARD BALANCE SHEET AT 31 DECEMBER 1982

	<u>\$000</u>
<u>ASSETS</u>	
<u>Current assets</u>	
Cash	2
Accounts receivable	146
Inventory	78
Other	175
Total	<u>401</u>
<u>Fixed assets</u>	
Cost/revaluation	5,831
Accumulated depreciation	<u>1,165</u>
Net	4,666
Construction in progress	30
Total	<u>4,696</u>
<u>Other assets</u>	
Investments	32
Other	<u>116</u>
Total	<u>148</u>
TOTAL ASSETS	5,245 =====
 <u>LIABILITIES AND OWNERS EQUITY</u>	
<u>Current liabilities</u>	
Accounts payable	115
Accrued expenses	77
Other	25
Total	<u>217</u>
<u>Long term liabilities</u>	
Bonds	2,522
Other	<u>896</u>
Total	<u>3,418</u>
<u>Owners equity</u>	
Capital stock	214
Revaluation reserve	899
Accumulated profit	497
Total	<u>1,610</u>
TOTAL LIABILITIES AND OWNERS EQUITY	5,245 =====

12. Water industry

STANDARD INCOME STATEMENT
YEAR ENDED 31 DECEMBER

	<u>Actual 1982</u>		<u>Forecast 1983</u>	
	Amount \$000	%	Amount \$000	%
<u>INCOME</u>				
Water sales	1,420	100	2,000	100
Other sales	-	-	-	-
Total	<u>1,420</u>	<u>100</u>	<u>2,000</u>	<u>100</u>
<u>OPERATING COSTS</u>				
Personnel	405	28		
Power	75	5	Detail	
Chemicals	125	9	omitted	
Maintenance, Other	115	8		
Indirect Administrative Expenditure	153	11		
Total	<u>873</u>	<u>61</u>	<u>1,200</u>	<u>60</u>
OPERATING PROFIT BEFORE DEPRECIATION (OPBD)	547	39	800	40
DEPRECIATION	87	6	100	5
OPERATING PROFIT AFTER DEPRECIATION (OPAD)	<u>460</u>	<u>33</u>	<u>700</u>	<u>35</u>
NON-OPERATING EXPENSES - Interest	<u>309</u>	<u>22</u>	<u>400</u>	<u>20</u>
	151	11	300	15
NON-OPERATING INCOME	21	1	-	-
PROFIT BEFORE TAXES	<u>172</u>	<u>12</u>	<u>300</u>	<u>15</u>
TAXES	71	5	150	8
NET PROFIT	<u>101</u>	<u>7</u>	<u>150</u>	<u>7</u>
	=====	===	=====	===

WATER INDUSTRY - STATEMENT OF ACCUMULATED PROFIT YEAR ENDED 31 DECEMBER

Opening balance	471	
Add: Net profit for the year	<u>101</u>	Detail omitted
	572	
Less: Dividends	<u>85</u>	
Closing balance	<u>497</u>	
	=====	

13. Water Industry Operating Ratios - use the statistical data on population, production and sales (in association with the income statement of question 12) to complete the operating ratios for 1983 (items a-o), comparable with those already completed for 1982.

SPECIAL OPERATING RATIOS FOR THE WATER INDUSTRY

<u>No.</u>	<u>Std.</u>	<u>Item</u>		<u>Actual</u> <u>1982</u>	<u>Forecast</u> <u>1983</u>
<u>LIQUIDITY</u>					
L1	2:1	CA:CL		-	-
L2	1:1	QA:QL		-	-
L3	1:2	E : D		-	-
<u>ACTIVITY</u>					
A1	.4	S/A	- times	-	-
A2	30	Days - Receivables	- days	-	-
A3	30	Days - Payable	- days	-	-
A4	-	Connections - No.	- no. conn.	10,000	(a)
A5	+10	Conn. (new)/Conn. no.	- %	10	(b)
A6	600	Sales Vol. M ³ /Conn. No.	- M ³ /conn.	400	(c)
A7	\$200	Sales Vol. \$/Conn. No.	- \$/conn.	\$ 140	(d)
A8	.03	Employees No./Conn. No.	- no. employees	.02	(e)
A9	1500	Population served/employer	- no.	1,750	(f)
<u>PROFITABILITY</u>					
P1	50	OPBD/S %	- %	39	(g)
P2	5	NP/S %	- %	7	(h)
P3	10	NP/OE %	- %	-	-
P4	15	Cash Flow/Total Assets %	- %	-	-
P5	5	OPBD/Interest	- times	1.3	(i)
P6	\$.20	Oper. Cost \$/Sales Vol. M ³	- \$/M ³	\$.24	(j)
P7	\$.25	Total Cost \$/Sales Vol. M ³	- \$/M ³	\$.32	(k)
P8	\$.33	Sales Val. \$/Sales Vol. M ³	- \$/M ³	\$.35	(l)
<u>POTENTIAL</u>					
O1	80	Pop. served/Total Pop. %	- %	70	(m)
O2	80	Prod. Metered/Prod. Cap. %	- %	60	(n)
O3	80	Sales Vol./Prod. Met. %	- %	81	(o)
O4	20	Water Unacctd./Prod. Met. %	- %	19	(p)

13. Water Industry Operating Ratios (Cont'd)

WATER INDUSTRY - STATISTICAL DATA ON POPULATION, PRODUCTION AND SALES

	<u>Actual</u> <u>1982</u>	<u>Forecast</u> <u>1983</u>
<u>Population (000)</u>		
Served	70	90
Not Served	30	10
Total	<u>100</u>	<u>100</u>
<u>No. of Connections (000)</u>		
Standpipes		
Private		Detail omitted
Industrial		
Government		
Total	<u>10</u>	<u>20</u>
New (lost) connections		
<u>Tariffs per M³</u>		
Standpipes		
Private		Detail omitted
Industrial		
Government		
Average of total	<u>.35</u>	<u>.40</u>
<u>Production (000 M³)</u>		
Metered and sold	4,000	5,000
Metered and unaccounted for	500	1,000
Subtotal	4,500	6,000
Unused capacity	2,500	4,000
Total capacity	<u>7,000</u>	<u>10,000</u>
<u>Employees</u>		
Total number	40	50
Total cost (000\$)	405	500
<u>Water sales volume (000 M³)</u>		
Standpipes		
Private		Detail omitted
Industrial		
Government		
Total	<u>4,000</u>	<u>5,000</u>
<u>Water sales value (000\$)</u>		
Standpipes		
Private		Detail omitted
Industrial		
Government		
Total	<u>1,400</u>	<u>2,000</u>

ANSWERS TO EXERCISES ON FINANCIAL ARITHMETIC - 13 ANSWERS

ANSWER

1. Depreciation

(a) Depreciation in year 1 $\frac{1,000}{5} = 200$

(b) Net book value after three years = $1,000 - 200 - 200 - 200 = 400$

(c) Loss on sale after three years = $400 - 200 = 200$ loss

2. Depreciation

(a) Depreciation in year 1 : $1,000 \times 30\% = 300$

(b) Net book value after two years = $1,000 - 300 - 210 = 490$

(c) Loss on sale after two years = $490 - 200 = 290$ loss

3. Depreciation

Sales price after three years 8,000

Net book value after three years:

$20,000 - 10,000 - 5,000 - 2,500 = 2,500$

Profit on sale $8,000 - 2,500 = 5,500$

4. Cash flow

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Net profit	10	30	20
Depreciation	40	40	30
Cash flow	<u>50</u>	<u>70</u>	<u>50</u>
	===	===	===

5. Cash flow

	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>
Receipts	20	40	60
Payments:			
Purchases	10	20	15
Other	25	15	25
Difference	<u>(15)</u>	<u>5</u>	<u>20</u>
Opening balance	20	5	10
Closing balance	<u>5</u>	<u>10</u>	<u>30</u>
	===	===	===

Note: Balance 31-30 March

6. Cash flow

Opening cash balance		210
Receipts:		
Debtors from debtors	80	
Mortgage	<u>100</u>	<u>180</u>
Payments:		
Creditors	240	
Fixed assets	55	
Dividends	<u>25</u>	<u>320</u>
Cash balance at end of year 1		70

7. Forecasting

	<u>Year 1</u>	<u>Year 2</u>	<u>Assumptions</u>
Sales	200	300	given
Cost of goods sold	<u>100</u>	<u>180</u>	difference
Gross profit	<u>100</u>	<u>120</u>	40% sales
Operating expenses	<u>40</u>	<u>60</u>	20% sales
Net profit	<u>60</u>	<u>60</u>	
	===	===	
Assets:			
Cash	10	37	difference
Receivables	50	75	25% sales
Inventory	60	90	30% sales
Fixed assets	<u>100</u>	<u>110</u>	plus 10
	<u>220</u>	<u>312</u>	
	===	===	
Payables	40	72	40% CGS
Owners equity	<u>180</u>	<u>240</u>	balance plus NP
	<u>220</u>	<u>312</u>	
	===	===	

8. Earnings

	per	<u>Year 1</u>	<u>Year 2</u>	share
				<u>Year 2</u>
Net profit		80	120	170
Preference dividend		10	20	20
Ordinary (common) dividend		20	40	50
Number of ordinary (common) shares		100	100	200
Depreciation charged		30	50	100
(a) Earnings per ordinary (common) share	$\frac{70}{100} = .70$	$\frac{100}{100} = 1.00$	$\frac{150}{200} = .75$	
(b) Dividends per ordinary (common) share	$\frac{20}{100} = .20$	$\frac{40}{100} = .40$	$\frac{50}{200} = .25$	
(c) Dividend cover (times)	$\frac{70}{20} = 3.50$	$\frac{100}{40} = 2.50$	$\frac{75}{25} = 3.0$	
(d) Cash flow per ordinary (common) share	$\frac{100}{100} = 1.00$	$\frac{150}{100} = 1.50$	$\frac{250}{200} = 1.25$	

9. Earnings per share

	<u>Before</u>	<u>After</u>
Net profit	150,000	170,000
Preference dividend	70,000	70,000
Number of shares	40,000	60,000
Ordinary (common) dividend per share	.50	.80
EPS	$\frac{80,000}{40,000} = 2.0$	$\frac{100,000}{60,000} = 1.66$
Cover (times)	4.0	3.3

10. Cover

	<u>Year 1</u>	<u>Year 2</u>
Profit before interest	100	200
Debenture interest	<u>40</u>	<u>60</u>
	60	140
Taxation	<u>30</u>	<u>70</u>
	30	70
	===	===
Preference dividend	20	50
Cover: interest (times)	$\frac{60}{30} = 2.5$	$\frac{200}{60} = 3.3$
Preference dividend (times)	$\frac{30}{20} = 1.5$	$\frac{70}{50} = 1.4$

11. Financial analysis based on the balance sheet and income statement on page E4:

(a) Net working capital is: (60,100 - 40,300)	19,800
(b) Owners equity is:	25,000
(c) Net book value of fixed assets is:	26,600
(d) Assets financed by creditors are: (40,300 + 21,400)	61,700
(e) Par value of one ordinary (common) share is:	1.00
(f) Book value of one ordinary (common) share is: (25,000/15,000)	1.66
(g) Gross profit % to sales is: (15,000/50,000)	30
(h) Net profit % to sales is: (3,000/50,000)	6
(i) Net profit % to owners equity is: (3,000/25,000)	12
(j) Market value of one ordinary (common) share is not known	-
(k) Ratio of CA:CL is about: (43,600 : 20,300)	1.5:1
(l) Ratio of QA:QL is about (43,600: 20,300):	2:1

- (m) Ratio of E:D is about: (25,000 : 61,700) 1:2.5
- (n) Number of days sales in receivables: $\frac{36,000}{50,000} \times 365 = 260$ days
- (o) Number of days purchases in payables: $\frac{18,000}{35,000} \times 365 = 185$ days

12. Water company

- (a) Current assets are: 401
- (b) Current liabilities are: 217
- (c) Net working capital (CA-CL) is: 184
- (d) Net book value of fixed assets is: 4,696
- (e) Replacement value of fixed assets is not known
- (f) Owners equity is: 1,610
- (g) Assets financed by creditors are: (3,418 + 217) 3,735
- (h) Revaluation reserve is: 899
- (i) The profit/loss accumulated to date is: 497
- (j) OPBD % sales is: 39
- (k) NP/S % is: 7
- (l) Current ratio is about: (401:217) 2:1
- (m) Quick ratio is about: (148:217) .7:1
- (n) E:D ratio is about: (1,610:3,635) 1:2
- (o) NP/OE is about: (101/1,610) 6
- (p) Days receivable are about: $(146/1,420) \times 365 = 36$ days
- (q) Cash flow (NP + D) % total assets is about: $(101 + 87) / 5,245 = 4$
- (r) OPAD/interest times covered is about: (460:309) 1.5

13. Water industry operating ratios

SPECIAL OPERATING RATIOS FOR THE WATER INDUSTRY

<u>No.</u>	<u>Std.</u>	<u>Item</u>		<u>Actual</u> <u>1982</u>	<u>Forecast</u> <u>1983</u>	
<u>LIQUIDITY</u>						
L1	2:1	CA:CL		-	-	
L2	1:1	QA:QL		-	-	
L3	1:2	E : D		-	-	
<u>ACTIVITY</u>						
A1	.4	S/A	- times	-	-	
A2	30	Days - Receivables	- days	-	-	
A3	30	Days - Payable	- days	-	-	
A4	-	Connections - No.	- no. conn.	10,000	20,000	(a)
A5	+10	Conn. (new)/Conn. no. %	- %	10	100	(b)
A6	600	Sales Vol. M ³ /Conn. No.	- M ³ /conn.	400	250	(c)
A7	\$200	Sales Vol. \$/Conn. No.	- \$/conn.	\$ 140	\$ 100	(d)
A8	.03	Employees No./Conn. No.	- no. employees	.02	.01	(e)
A9	1500	Population served/ employer	- no.	1,750	1,800	(f)
<u>PROFITABILITY</u>						
P1	50	OPBD/S %	- %	39	40	(g)
P2	5	NP/S %	- %	7	7	(h)
P3	10	NP/OE %	- %	-	-	
P4	15	Cash Flow/Total Assets %	- %	-	-	
P5	5	OPBD/Interest	- times	1.3	1.7	(i)
P6	\$.20	Oper. Cost \$/Sales Vol. M ³	- \$/M ³	\$.24	\$.26	(j)
P7	\$.25	Total Cost \$/Sales Vol. M ³	- \$/M ³	\$.32	\$.34	(k)
P8	\$.33	Sales Val. \$/Sales Vol. M ³	- \$/M ³	\$.35	\$.40	(l)
<u>POTENTIAL</u>						
O1	80	Pop. served/Total Pop. %	- %	70	90	(m)
O2	80	Prod. Metered/Prod. Cap. %	- %	60	60	(n)
O3	80	Sales Vol./Prod. Met. %	- %	81	83	(o)
O4	20	Water Unacctd./Prod. Met. %	- %	19	17	(p)