

LESSON 1

AIM

Upon completion of this lesson, the student will be able to boot in 123 and use basic keystrokes.

NOTATION USED IN THESE LESSONS

<> means perform the keystroke in brackets.
<↵> means press the Enter key

Key names are given with a starting capital letter, for example:

<NumLock> means press the NumLock key
<F1>.....<F12> refers to the "F" (function) keys at the top of the keypad, eg
<F5> means the press the "F5" key NOT <F> and then <5>.

Where 2 or 3 keystrokes are required in sequence, eg:

<Alt> + <F5> means the <Alt> key is pressed first and at the same time the <F5> key is pressed.

DRIVE SELECTION

For example, a: means select drive a.

STARTING UP IN USA's COMPUTER ROOMS

1. Turn computer on
2. Press <↵> or any key until the network's MAIN MENU comes up on screen.
3. Make sure NumLock is OFF. This can be determined by the NumLock light on the top righthand side of the keyboard.
4. Use arrows to highlight "8. Spreadsheets" <↵>
5. Use arrows to highlight " 2. Lotus 1-2-3 Rel 2.04" <↵>
6. Do not select mouse <↵>

The computer will boot into 123. The 123 banner will appear and then a set of gridlines with cell addresses. The 123 template will appear showing:

Columns: A - H Rows: 1-20

MOVING THE CURSOR: The cursor can be moved with the arrow keys from cell to cell.

LESSON 2

USING THE SPREADSHEET

AIM

Lesson 2 aims to introduce the student to the basic elements of the 123 spreadsheet. To start we assume that you know nothing about 123 spreadsheets.

LOOKING AT THE SPREADSHEET

1. The cursor starts at cell A1 (Home). It can be moved about the spreadsheet using the arrow keys.
2. Move cursor to H1 and then to I1
3. At I1 note that Column A has disappeared so that the screen (window) can accommodate Column I. The spreadsheet has scrolled from right to left. At any one time (under normal format) there are 8 columns and 20 rows on a screen or window.
4. You can move back to A1 at any time using <Home>. Move back to A1.
5. Note in 123 that the window is only a small part of the total spreadsheet which is very large, having 8192 rows and 256 columns. It is not likely that you will use anywhere near it's full potential.
6. Instead of using the mouse, the cursor can also be moved using the GOTO key <F5>:

EXAMPLE: To move cursor to AB1000:

```
<F5> AB1000 <←>  
<Home>
```

ENTERING DATA

There are two types of data:

1. Alpha (A-Z) or label
2. Numerical or numbers

If the first letter is alpha then 123 will interpret the input as a LABEL (in computer jargon this is also known as a "string"). If the first letter is a number then 123 will assume that the input is numerical. If you wish to withdraw a keystroke before entering use <Esc>. After entering the input can be edited using <F2>.

RULES FOR GOOD SPREADSHEET CONSTRUCTION 1

1. Allow plenty of space in the spreadsheet. There is no shortage of room!
2. Always "point" cell addresses wherever possible. That is, construct as much of the spreadsheet as possible with either the arrow keys or if available, the mouse.
3. Use COPY and MOVE commands wherever you have to repeat data or a formula
4. Use range names instead of cell addresses - these will be covered later
5. Use "windows" for calculations, notes or data which will not be printed in the final report - windows will be covered later.
6. Save and save often!
7. When using formulae, break up into small parts showing the answer for each part. This will enable easier debugging.

LESSON 3

FORMATTING A DATA DISC CONSTRUCTION OF A SIMPLE CASH FLOW (DCF)

AIM

On completion of this lesson the student will be able to:

1. Format a data disk
2. Use a number of useful spreadsheet commands
3. Construct a simple cash flow.

FORMATTING A DISK IN 123

If you are already in 123 it is not necessary to exit 123 to format a disk. A disk can be formatted in 123 as follows:

1. </> <System> temporarily leaves 123 and goes into DOS
2. Format using the FORMAT a: command
3. When finished you can return to 123 where you left off by typing in EXIT <↵>

CONSTRUCTING A SIMPLE CASH FLOW (DCF)

The following DCF is the DCF covered in Appraisal Two, page 4-3 under the heading "rates of return and investment reports". Always bear in mind the purpose of the DCF. Remember, it is only a means to an end. There 4 main uses in valuation work:

- * To determine the present value of progress payments to determine the "expected cost to build".
- * To determine the "highest and best" use of land which is subject to a number of competing land uses and hence land value (sometimes called "site value") can be found. Also called "hypothetical development" and a "feasibility study".
- * To determine the market value of an investment property (eg CBD office tower) which is subject to a complex rent schedule. This is also known as the "reversionary method" of valuation and is the most popular method for such properties.
- * To prepare an "investment report" over an investment property. This can be either an analysis of past performance eg for portfolio culling purposes or an analysis of expected return on investment.

Often the time period is determined by the client but otherwise should be as short as possible.

RULES FOR GOOD DCF CONSTRUCTION 2

1. Keep the cash flow as short as possible
2. If the expected cash flow is nearly "level" then there is no need for a DCF. A DCF is only used for uneven cash flows.
3. Most cash flows require prediction of amounts in the future. If you cannot predict with reasonable probability any change in a cash flow (eg rent levels) then you must input a level amount. That is, do not input cash flows which show increases or decreases because it will make your cash flow "look good".

You are determining "market value" and it is what the market forecasts that counts, not what you forecast. Future "guesstimates" are too dangerous under current liability law.

Real estate is unique in that the total implied time period of a cash flow is ALWAYS perpetuity:

0 =====>perpetuity
present value of the lease present value of the reversionary period.

In the DCF, the last cash flow is always the END MARKET VALUE (EMV). That is, all cash flows end with the expected selling price or expected market value at the end of the cash flow period. This is determined by the initial yield formula:

$$EMV = EAI * 100/CR$$

Where:

EMV = end market value

EAI = end net annual income

CR = capitalisation rate as a percentage.

Generally, EAI is equal to the last net annual income expected in the cash flow period. The reversionary value or capitalisation rate should be analysed from market transactions eg sales of CBD office blocks using a DCF if the rent schedule is complex.

We will now construct a simple cash flow according to the assumptions in the "initial yield" method of valuation. See Appraisal Two page 4-3.

CONSTRUCTING A SIMPLE CASH FLOW

The following cash flow is based on that shown in diagram 4-3 Appraisal Two.

A1: SIMPLE DISCOUNTED CASH FLOW
D6: (space)\$'000
A8: YEAR - align to the right and underline
B8 to F8: 0,1,2,3,4,5

USE OF COPY COMMAND

To underline 0 to 5 you need only underline 0. Once this has been done:

1. Highlight B9
2. </> <Copy> <←>
3. "Enter range to copy to:

C9 .. G9 <←>

Align to the right with: </> <Range> <Label> <Right> B9..G9 <←>

A11: Starting Market Value:

Note that the label encroaches onto the cash flow period 0. Therefore, it is necessary to widen column A to accommodate the full label.

TO WIDEN A COLUMN

GOTO A11

</> <Worksheet> <Column> <Set-width> Shows:

"Enter column width (1..240): 9"

"9" is called the default column width.

To change the width use the arrow keys. To widen use the right hand arrow until all the label is highlighted (in this case at 16 characters) <←>

SAVE FILE

</> <File> <Save> Enter file name: DCF1 <←>

ENTER CASH FLOW DATA

A12: RENTAL INCOME:
A13: END MARKET VALUE:
B11: -2000
C12: 166
D12: 166
E12: 166
F12: 166
G12: 166

Under the initial yield model, the return on investment or capitalization rate = $166/2000 * 100 = 8.3\%$. Therefore, the end market value is the last rent capitalized at 8.3%:

+ G12 * 100 / 8.3 <↵>

This will show an expected EMV of 2000 which is the same as the starting value. The assumption in the initial yield method that there is no increase in value as the initial rent remains throughout the cash flow. By using the cell address G12 in the formula at G13, if the value in G12 is changed, G13 will automatically change.

EXAMPLE: Change the last net annual income to 200: shows an EMV of 2 410.
Change G12 back to 166.

Underline by copying ALL the cell addresses B9.. G9 to B14.:

</><Copy>Copy what? B9..G9 <↵>
To where? B14<↵>

A15: Totals:

The automatic summation of each column is achieved by using the @SUM() and COPY commands:

B15:@sum(B11..B13) <↵> with experience this can quickly be carried out by pointing with the cursor.

Underline as follows:

On B15: </><Copy><↵> To where? C15..G15

You have completed the cash flow. The cash flow accounts for ALL expected income and benefits to be derived from this property from 0 to (fill in the missing word).

GOOD DCF CONSTRUCTION 3

1. The cash flow is expressed in today's dollars. Therefore, any expected change in value should be measured in real" terms ie after inflation. For example, if you are using a trend line based on rental evidence over the last 5 years to forecast the expected rents in the cash flow it must be analysed in today's dollar.

When previous changes in value are analysed in real terms it is most likely that the expected increases will be very small or nil.

2. During the rent period of an investment building it is unlikely that the forecasted rents will reduce because of the "ratchet" clause in standard form lease agreements. However, after the lease falls due there is no reason why the expected rents cannot fall.

3. For short DCFs such as determining construction costs or a small feasibility study, a better DCF period unit is the quarter. This is a most usual unit and in valuation there is really no need to go to monthly periods because of the inherent errors in the cash flow.

Some valuers use "annuities due" as the payment mode for rents when period is quarterly or less.

SIMPLE DISCOUNTED CASH FLOW

Discount rate % per annum: 8.3 base: 1.083

\$'000

YEAR	0	1	2	3	4	5
Starting market value:	-2000					
Rental income:		166	166	166	166	166
End market value:						2000
Totals:	-2000	166	166	166	166	2166
Discount factors:	1.0000	0.9234	0.8526	0.7873	0.7269	0.6712
Discounted cash flows:	-2000.00	153.28	141.53	130.68	120.67	1453.84
Net present value:	0.00					

SIMPLE DISCOUNTED CASH FLOW

Discount rate % per annum: 8.3 base: 1.083

LESSON 4

DISCOUNTING THE CASH FLOW

AIM

At the end of this lesson the student will be able to discount a cash flow according to discount theory and determine the net present value (NPV) . Some more useful spreadsheet commands are covered.

ENTER THE DISCOUNT DATA

A3: Discount rate at % per annum:

C3: 8.3

E3: base:

F3: $1 + (C3/100)$ < ← >

The base (F3) shows 1.083.

A16: Discount factors:

B16: $1/(F3^B8)$ < ← >

NB: " ^ " = "to the power of"

The discount factor has been calculated using the following PRESENT VALUE OF \$1 formula:

$$PV = 1/((1 + i)^n)$$

Where:

PV = present value of 1

i = interest rate as a decimal

n = period in years.

For B16: $1/(1.083^0) = 1$

NB: the discount rate at period 0 always = 1. However, instead of inputting "1" it is good practice to input the formula and if the resultant value is "1", then you know the formula is correct and you can copy it with confidence.

COPY B16 to C16..G16

We get ERR...ERR (error) Why? Look at the formula in C16: $1/(G3^C8)$ G3 is a blank cell!

RELATIVE CELL ADDRESSES

The COPY command moved ALL cell addresses in the formula by the number of columns between our source address B16 and target address C16. Therefore we have to fix F3 so that it does not change with the COPY command.

FIXED CELL ADDRESSES

B16: <F2> (edit) in the formula change F3 to \$F\$3

This tells 123 to fix cell address F3 when used in a COPY command. COPY B16 again.

Format to 4 decimal places as follows:

`</> <Range> <Format> <Fixed>`

Enter number of decimal places (0..15):2

Change 2 to 4 `<←>`

The discount factors are:

1.0000 0.9234 0.8526 0.7873 0.7269 0.6712

Save file.

NET PRESENT VALUE (NPV)

A18: Discounted cash flow:

B18: `B16*B15`

COPY to C18..G18. Note that in this case we require all the addresses to be relative. FORMAT to 2 decimal places.

A19: Net present value:

B19: `@SUM(B18..G18)` - format to 2 decimal places.

Net present value (NPV) = 0.00.

Save file.

Congratulations! You have just completed a discounted cash flow.

INTERPRETING THE NPV

The NPV in the above DCF = 0. This means that if the cash flow is discounted at 8.3% then the present value of the incomings (rents + EMV) = the starting market value or the purchase price. The above cash flow can be used instead of the initial yield capitalization method but as has been pointed out, unless the cash flow is complex, there is no need to construct a DCF and the capitalization formula can be used instead.

EXERCISES

1. Raise the discount rate to 10% per annum. What happens to the NPV? Why?
2. Lower the discount rate to 7% per annum. What happens to the NPV? Why?
3. Suppose the seller raises the purchase price (starting value) to 2500 (000). What should the new discount rate be showing a NPV = 0.