Lecture 1

Some revision of basics

Consider building up the cost of a unit of product using conventional costing procedures

Consider the total cost of one unit of product

	£/unit
Direct material	2
Direct labour	3
Prime cost	**5**
Production O/H	4
Cost of production	**9**
Admin. O/H	3
Selling O/H	3
Total cost	**15**
Selling price	20
Profit	**5**

Profit from sale of 2000 units ?

Now consider cost behaviour

Absorption Costing		**v**	**Marginal Costing** (Variable Costs)
	£/unit		£/unit
Direct material	2		2
Direct labour	3		3
Prime cost	**5**		**5**
Production O/H	4		2
Cost of production	**9**		**7**
Admin. O/H	3		
Selling O/H	3		1
Total cost	**15**		**8**
Selling price	20		20
Profit	**5**	Contribution	**12**

Contribution from 2000 units = £24,000

Reminder!

- Variable costs vary in direct proportion to the volume of activity.
- Fixed costs remain constant over wide ranges of activity for a specified time period.

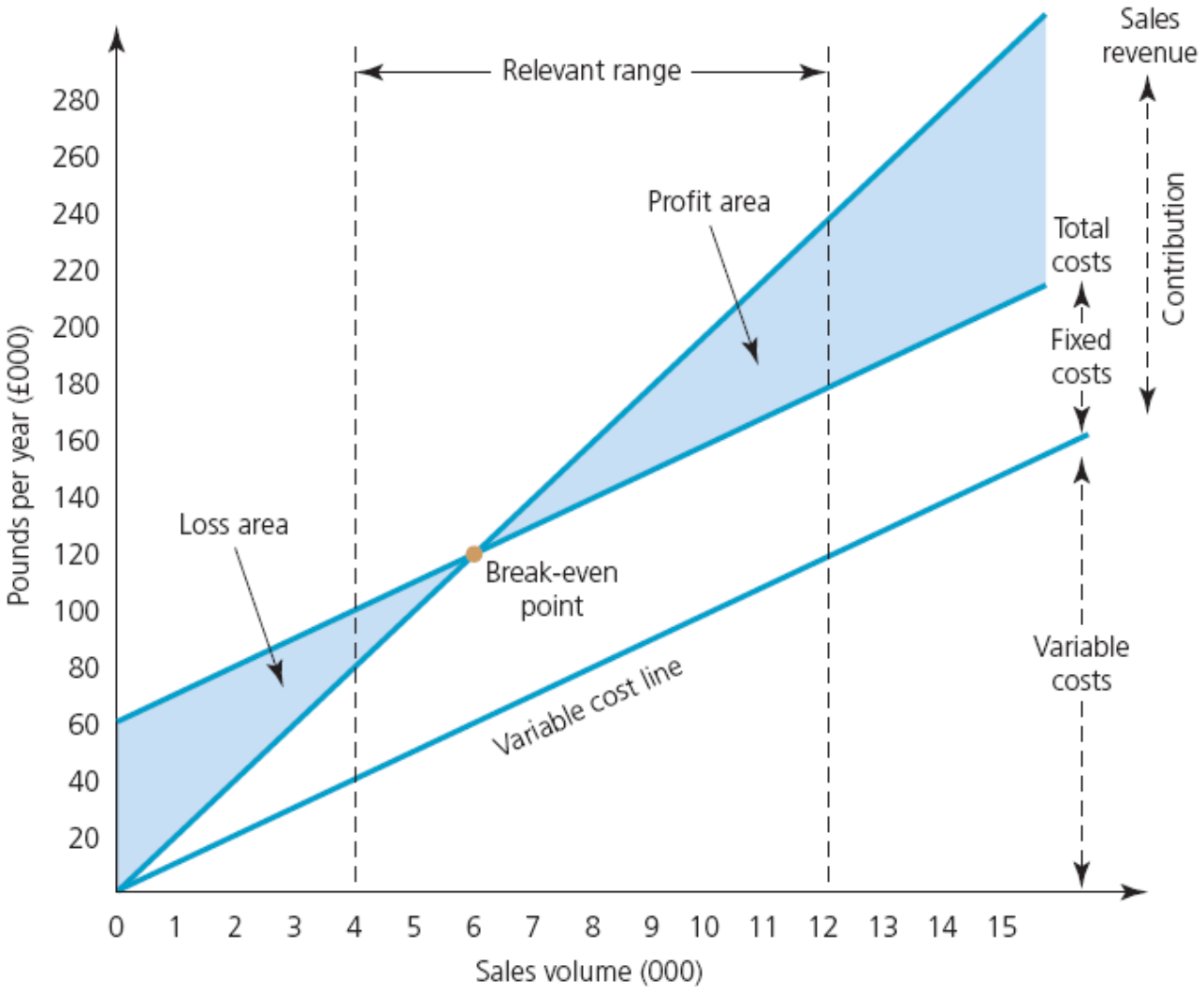

FIGURE 8.6
Contribution chart for Example 8.1

Suppose fixed costs are:

	£
Production O/H	2,000
Admin. O/H	3,000
Selling O/H	2,000
Total	**7,000**

⇒ Budgeted absorption costs are based on

1,000 units

Breakeven Point (BEP)

is the sales level where sales revenue just covers the costs, i.e. there is no profit and no loss

How can this be calculated?

In the above example each unit sold makes a contribution (to fixed costs and profit) of £12.

2 units £24, 3 units £36 etc.

How many units will just cover the fixed costs?

Fixed costs/Contribution per unit

= 7000/12 = $583\ ^{1}/_{3}$ units

A variation – using the same principle

What output gives profit of £3,800?

Required contribution

= 7,000 + 3,800 = 10,800

Output = $^{10,800}/_{12}$ = 900 units

Calculate BEP when physical output unknown

	£
Sales	1,200
Var. Cost	900
Contribution	300
Fixed Cost	180
Profit	120

"inelegant method"

Assume 100 "units" then		£
SP per unit	=	12
V.C. per unit	=	9
Contribution per unit	=	3

BEP = 180/3 = 60 "units"

= £720 (Sales Value)

"more elegant method" based on "Contribution Margin" ratio

Cont'n Margin $= \frac{\text{Contribution}}{\text{Sales}}$

(constant for all volumes = 300/1200 = .25)

$= \frac{\text{Contribution at BEP}}{\text{Sales at BEP}}$

$= \frac{\text{Fixed Costs}}{\text{Sales at BEP}}$

=> Sales at BEP $= \frac{\text{Fixed Cost}}{\text{Cont. Margin}}$

$= \frac{180}{.25} =$ **£720**

"Limiting Factor" Example

£ per unit

Product		A		B
S.P.		20		30
Dir. Mat. (£1 per kg)	2		6	
Dir. Lab.	8		7	
Var. Overhead	6		8	
Fixed Overhead	3	19	5	26
Profit per unit		1		4

Suppose the above are budgeted figures based on supplying the estimated demand of:

9,000 units of A

3,000 units of B

But it has now been learned that available material is restricted to 24,000 kg

- What is the optimal production plan?

- Note that the material needed to meet demand

= 9000 x 2 =18,000 (A)

3000 x 6 =18,000 (B)

36,000kg

So material is a "limiting factor"

Maximising contribution per unit of limiting factor

	A	B
SP per unit	£20	£30
Variable cost per unit	£16	£21
Contribution per unit	£4	£9

Cont. per kg = £4 / 2 = £2 = £9 / 6 = £1.50

Ranking 1st 2nd

Thus produce all you can sell (9,000 units) of A using 18,000kg

and (24000-18000) / 6 = 1,000 units of B using 6,000kg (etc if >2 products)

in order to maximise contribution and therefore profit in the short term

(NB commercial considerations may mean this may not be the best plan for the long term – e.g. consider customer relations)

Remember to rank by contribution per unit of limiting factor

In the above example both contribution per unit

	A	B
SP per unit	£20	£30
Variable cost per unit	£16	£21
Contribution per unit	£4	£9
and contribution margin	20%	30%

are higher for B but it is

cont'n per unit of limiting factor

i.e.	£2	£1.50

that matters.

If more than one limiting factor then linear programming is needed