Chapter 9

E9.9 Sales

Contribution for January = profit + fixed costs

$$= £35,000 + £70,000$$

$$= £105,000$$

£ sales value at break-even point = $\dfrac{\text{fixed costs}}{\text{contribution to sales ratio \%}}$

Contribution to sales ratio % = $\dfrac{\text{fixed costs}}{\text{£ sales value at break-even point}}$

Contribution to sales ratio % = $\dfrac{£70,000}{£140,000}$ x 100% = 50%

Sales = $\dfrac{\text{contribution}}{\text{contribution to sales ratio \%}}$

= £105,000/50%

= £210,000

E9.10 Profit

£ sales value at break-even point   = $\dfrac{\text{fixed costs}}{\text{contribution to sales ratio \%}}$

Contribution to sales ratio % = $\dfrac{\text{fixed costs}}{\text{£ sales value at break-even point}}$

Contribution to sales ratio % = $\dfrac{£80,000}{£320,000}$ x 100% = 25%

Contribution for January = 25% x £400,000

= £100,000

Profit for January = contribution - fixed costs

= £100,000 - £80,000

= £20,000

E9.11 Battersby

(i)

Total costs for January and Februar

	January	February	Difference
Raw materials	£150,000	£180,000	£30,000
Direct labour	£106,000	£123,500	£17,500
Overheads	£209,000	£226,500	£17,500
Total costs	£465,000	£530,000	£65,000

Sales January and February

	January	February	Difference
Units	25,000	30,000	5,000
Sales value at £25/unit	£625,000	£750,000	£125,000

5,000 extra units produced and sold in February incurred additional total costs of £65,000, which must all be variable.

25,000 units have a variable cost of $\frac{£65,000}{5,000}$ x 25,000 = £325,000

Total costs of 25,000 units = £465,000

Fixed costs = total costs – variable costs

£465,000 - £325,000 = £140,000

Contribution = sales - variable costs

£625,000 - £325,000 = £300,000

Contribution to sales ratio % = $\frac{contribution}{sales}$ x 100%

$\frac{£300,000}{£625,000}$ x 100% = 48%

£ sales value at break-even point = $\frac{fixed\ costs}{contribution\ to\ sales\ ratio\ \%}$

£ sales value at break-even point = £140,000/48% = £291,667

Number of units at break-even point = £291,667/£25 = 11,667 units

(ii)

Let's consider the proposed new process

Variable costs per unit in (i) above $= \dfrac{£325,000}{25,000} = £13$ per unit

Sales price per unit	$= £25$
Contribution per unit	$= £12$

If fixed costs are increased by £58,000 to £198,000

Variable costs will be reduced by £4 per unit so the new contribution will be £16 per unit [£12 + £4].

The new contribution to sales ratio % $= \dfrac{£16}{£25} \times 100\% = 64\%$

The new £ sales value at break-even point $=$ **$\dfrac{\text{new fixed costs}}{\text{new contribution to sales ratio \%}}$**

$= £198,000/64\% = £309,375$

Number of units at break-even point $= £309,375/£25 = 12,375$ units

Unless 12,375 units could be sold at £25 per unit for total sales of £309,375 it would not be worth investing in the new process.

(iii)

You should refer to the relevant sections in Chapter 9 to check your solution.

E9.12 West Country

First find the point of indifference by comparing Dozy against the other options

	Extra fixed cost £	Variable cost savings £/unit	Point of indifference units
Beak	3,500	20	175
Mick	10,500	35	300
Tich	17,500	50	350

So, at the lowest volumes

Dozy is the best option and it is not cheaper to move to Beaky until volumes reach 175

Draw cost graphs for each option to see at which volumes total costs are minimised

Total cost curves for Dozy, Beaky, Mick, and Tich
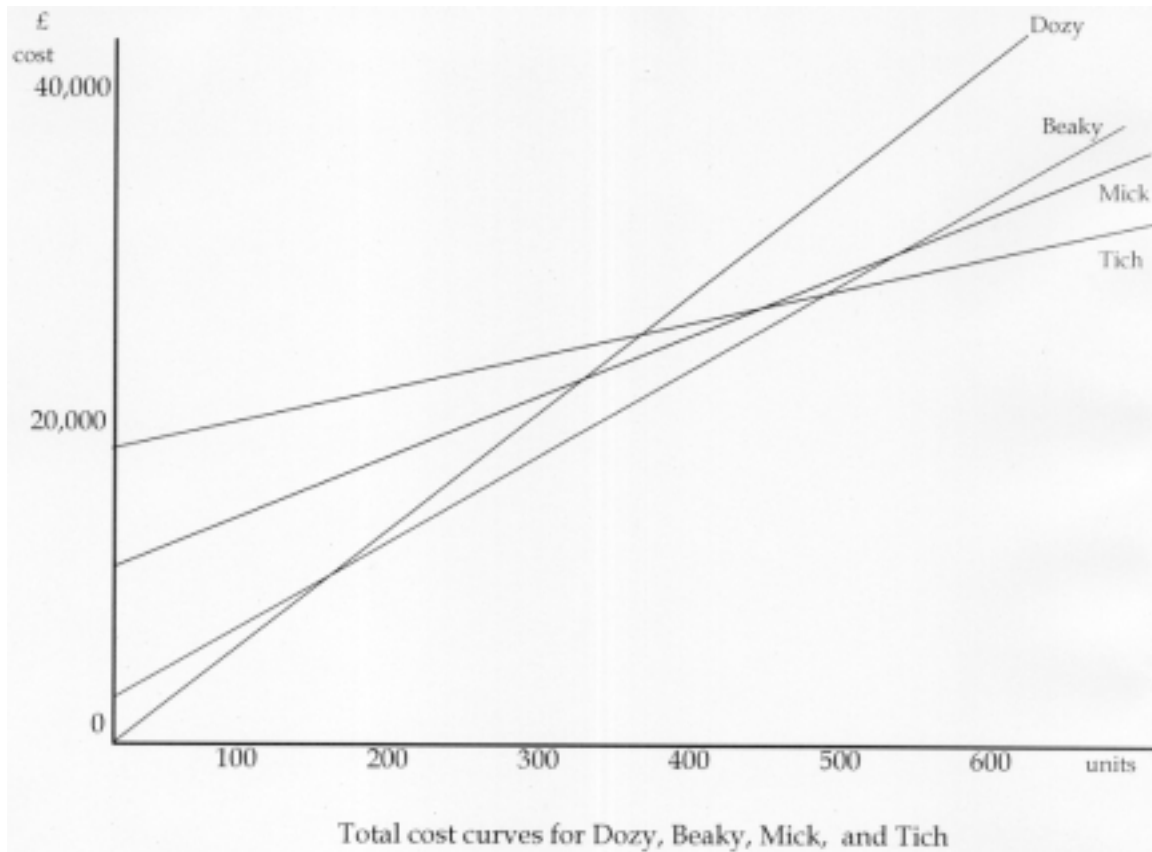
It can be seen from the total cost curves that total costs are minimised under the Dozy option for all volumes up to 175 units

At 175 units

Total costs for the Dozy option are (175 x £70) = £12,250

Total costs for the Beaky option are £3,500 + (175 x £50) = £12,250

Then total costs are minimised under the Beaky option for above 175 units

At 176 units

Total costs for the Dozy option are (176 x £70) = £12,320

Total costs for the Beaky option are £3,500 + (176 x £50) = £12,300

Total costs are minimised under the Beaky option from 175 units up until 466.67 units where th Tich option gives minimum total costs for all volumes above that.

At 466.67 units

Total costs for the Beaky option are £3,500 + (466.67 x £50) = £26,833

Total costs for the Tich option are £17,500 + (466.67 x £20) = £26,833

At 468 units

Total costs for the Beaky option are £3,500 + (468 x £50) = £26,900

Total costs for the Tich option are £17,500 + (468 x £20) = £26,860

It can also be seen that the Mick option is never a viable option at any sales volume.