# Lecture 6 Answers

## Question One

1. Break-even point (BEP) = Fixed Costs

Contribution per Unit

BEP = Fixed costs Selling price – Variable cost

BEP = £90,000 +£150,000 = £240,000 = 16,000 pairs of shoes £40-£25 £15

1. Margin of safety: 24,000 – 16,000 = 8,000

Margin of safety (%)= 8,000 / 24,000 = 33,3%

A break-even model enables the determination of the profit or loss at any level of activity within the range for which the model is valid, and the contribution to sales ratio can indicate relative profitability for different products.

Highlighting the break-even point and the margin of safety, gives managers some indication of the level of risk involved.

It is often difficult to analyse costs into fixed and variable elements.

The assumption that fixed costs are constant is not necessarily valid as fixed costs rise in a "step" function once certain production levels are reached (e.g., fixed costs of new machinery to increase production).

The analysis is only possible for a single product or a constant product mix.

The basic model treats variable costs per unit as constant, which is not always a valid assumption (quantity discounts etc).

## Question Two

1. Breakeven point (BEP) = Fixed Costs

Contribution per Unit

BEP = £5 x 20,000 + £1 x £20,000 £50- (30+5)

BEP = £120,000 = 8,000 commemorative medals £15

1. New break-even point

Fixed costs do not change no matter the level of production so still £120,000.

But additional premises of £210,000

New fixed costs £120,000 + £210,000 = £330,000

BEP = £330,000 = 22,000 commemorative medals £15

## Question Three

Pear Ltd sells high tech watches and has fixed costs of £885,000. Currently each watch sells for £300 and the variable cost of manufacture is £225.

1. Calculate the break-even point for Pear Ltd

Break-even point (in units) = Fixed costs Contribution per unit

Break –even point = £885,000 = £885,000 = 11,800 watches £300-£225 £75

1. Pear Ltd wants to generate a profit of £500,000. How many watches need to be sold?

Break-even point is where the profit is zero. The contribution only covers the fixed costs. If a business wants to make a specific profit, the contribution must cover the fixed costs plus the desired profit. The formula becomes:

Target sales in units = Fixed costs + Target profit Contribution per Unit

Target sales in units= £885,000 +£500,000 = £1,385,000 = 18,467 watches £300-£225 £75

1. In the first year of trading Pear sold 15,000 units. What is the margin of safety that Pear Ltd has achieved?

Margin of safety is the excess number of units sold over break-even point. In this case, the break-even number of units calculated in (1) was 11,800 watches. The actual number of sales was 15,000 watches. This gives a margin of safety of (15,000-11,800) 3,200 watches.

This represents the level sales can fall by and the business still be profitable.

It is perhaps better expressed as a percentage: 3,200/15,000 =21%

Sales can fall by 21% and Pear will still make a profit.

## Question Four

