

(a) Calculate the Selling Price to Maintain Profit

Step 1: Current Profit Calculation

We are given:

- Selling price = £22.50
- Variable costs = £18.00
- Contribution per unit = £22.50 – £18.00 = £4.50
- Number of units sold = 20,000

Total Contribution:

$$20,000 \times 4.50 = £90,000$$

Fixed Costs:

$$40,000$$

Profit:

$$90,000 - 40,000 = £50,000$$

Step 2: Increase in Costs

New costs:

- Direct materials = £9.00
- Labour = £10.50
- Direct costs = £1.50
- Variable costs = £0.75

New Total Variable Costs:

$$9.00 + 10.50 + 1.50 + 0.75 = £21.75$$

Step 3: Increase in Fixed Costs

- Fixed costs increase by 5%:

$$40,000 \times 5\% = £2,000$$

New fixed costs = £40,000 + £2,000 = £42,000

Step 4: New Contribution Needed to Maintain Profit

To maintain profit of £50,000:

$$42,000 + 50,000 = £92,000 \quad (\text{total contribution needed})$$

New contribution per unit:

$$\frac{92,000}{20,000} = £4.10$$

Step 5: New Selling Price

New selling price = New contribution per unit + New variable cost:

$$4.10 + 21.75 = £25.85$$

✅ Answer (a): £25.85

(b) Number of Units to Maintain Profit at £22.50

If the price remains at £22.50, contribution per unit =

$$22.50 - 21.75 = £0.75$$

To maintain profit of £50,000 + fixed costs of £42,000, total contribution needed:

$$42,000 + 50,000 = £92,000$$

Number of units required:

$$\frac{92,000}{0.75} = 122,667 \text{ units}$$

✅ Answer (b): 122,667 units

(c) Impact of Price Change on Sales

1. If price increases to £25.85:

- Fewer units are needed (20,000) to maintain profit due to higher contribution per unit (£4.10).
- However, raising the price might reduce demand depending on market sensitivity.

2. If price stays at £22.50:

- A higher sales volume (122,667 units) would be needed to cover increased costs.
- This may not be realistic if market demand is price-sensitive.

✅ **Answer (c):** Raising the price increases profit per unit but may reduce demand; keeping the price stable requires a big increase in sales.