# 5.2.1 Market structures, concentration and monopoly (cut of 5.2)

Name: _____ Class: _____ Date: _____ **Total: 26 marks**

**KEY WORDS** Nash equilibrium • concentration ratio

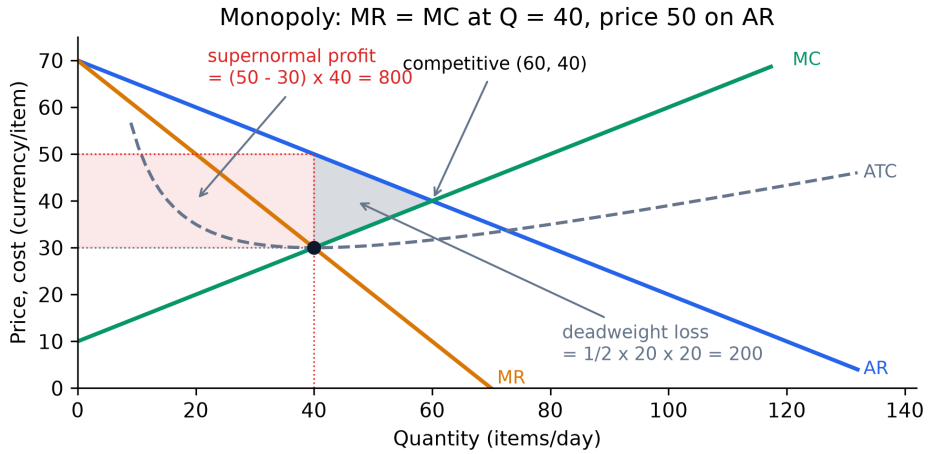
## Market structures, concentration and monopoly

### Objective

Apply the efficiency concepts, calculate concentration ratios, and analyse perfect competition, oligopoly game theory and monopoly profit maximisation with the shared model (spec 3.3.3 rows 1–6, a narrower cut of subtopic 5.2).

### 1 Key knowledge and worked examples

**Structures.** Allocative efficiency: P = MC; productive: output at min ATC; dynamic: innovation funded by profit; X-inefficiency: waste above the cost floor. Perfect competition: price takers, long-run P = min ATC, both static efficiencies. Oligopoly: interdependence; the prisoners' dilemma makes defecting dominant, so both rest at the Nash (2, 2) though collusion (4, 4) pays more. Monopoly on the shared model: MR = MC at Q = 40, P = 50, ATC = 30, supernormal profit 800; competitive benchmark (60, 40); deadweight loss ½ × 20 × 20 = 200.




*Original model; the profit rectangle and the deadweight triangle are computed in the text.*

### 2 Practice

**2.1** Define allocative and productive efficiency. [2]

**2.2** Market shares are 40, 25, 15, 10 and 10 percent. Calculate the four-firm concentration ratio and interpret it. [3]

**2.3** State the four assumptions of perfect competition and the long-run outcome for price and profit. [3]

**2.4** In the game matrix, what is the Nash equilibrium and why is collusion unstable? [3]

**2.5** Name any four barriers to entry from the specification. [2]

## 3 Exam-style questions

**3.1** *(Original.)* On the model AR: $P = 70 - Q/2$, MR: $P = 70 - Q$, MC: $P = 10 + Q/2$: calculate the monopoly output and price, the supernormal profit if ATC $= 30$ at that output, and the deadweight loss against the competitive outcome. [5]

**3.2** *(Original.)* Explain, with a diagram, why a monopolistically competitive firm earns only normal profit in the long run. [4]

**3.3** *(Original.)* What conditions are needed for third-degree price discrimination, and who gains and loses? [4]

## Solutions

**2.1** Allocative: price equals marginal cost ($P = MC$) – output matches what society values. Productive: production at minimum average total cost.

**2.2** CR4 $= 40 + 25 + 15 + 10 = 90\%$: the four largest firms hold 90 percent – a highly concentrated market with substantial market power (caveat: ratios miss imports and potential entry).

**2.3** Many small firms; identical products; perfect information; free entry and exit. Long run: entry drives price to minimum ATC, so only normal profit remains, with both allocative and productive efficiency.

**2.4** The Nash equilibrium is (defect, defect) = (2, 2): whatever the other does, defecting pays more ($6 > 4$ if the other colludes; $2 > 1$ if it defects), so both defect. Collusion (4, 4) is unstable because each has a profitable incentive to cheat – and collusion may be illegal.

**2.5** Any four of: economies of scale; limit pricing; patents; branding; sunk costs; legal barriers.

**3.1** Monopoly: $70 - Q = 10 + Q/2$ gives $60 = 1.5Q$, so $Q_m = 40$; price on AR: $P_m = 70 - 20 = 50$. Supernormal profit $= (P - ATC) \times Q = (50 - 30) \times 40 = 800$ per day. Competitive: $70 - Q/2 = 10 + Q/2$ gives $Q_c = 60$, $P_c = 40$. Deadweight loss $= \frac{1}{2} \times (60 - 40) \times (50 - 30) = \frac{1}{2} \times 20 \times 20 = 200$ – the value of output between 40 and 60 whose marginal benefit (AR) exceeded its marginal cost.

**3.2** Short run: differentiated products give each firm a downward-sloping demand curve; if price exceeds ATC it earns supernormal profit. Entry of close substitutes shifts each firm's demand LEFT and makes it more elastic until the demand curve is tangent to ATC: price equals ATC (normal profit only) but exceeds MC – excess capacity, so not allocatively efficient, and output is below min ATC, so not productively efficient either.

**3.3** Conditions: market power (price-setting ability); separable groups with DIFFERENT price elasticities; no resale between groups (plus a means of separating them). Gainers: the firm (converts consumer surplus into profit; total output may rise). Losers: the inelastic group pays more; the elastic group may pay less – overall, allocative efficiency usually falls.

Local review guidance: the MR = MC equation solved before either price is read; the DWL uses the gap between AR and MC over the lost output; (R1 3.3) gains and losses split BY GROUP, not in aggregate. This is authored classroom guidance.