Answers to Questions for Review

12.1 Some people are irrational, in the economic sense of not maximizing their utility. For example, some have learning or age difficulties, and some get addicted to things they would prefer not buy. Pareto-efficiency in consumption requires all consumers to be rational.

12.2 If the $AC$ curve slopes downwards, then the $MC$ curve must be below it; the situation is similar to an extra person coming into a room—if the entry of this extra person reduces the average height, then the height of this extra person must be below the average. A marginal cost pricing rule means setting output where the $MC$ curve intersects the demand or $AR$ curve, and as the $MC$ curve is below the $AC$ curve, $AR$ here must be less than $AC$, leading to a loss. Output must be lower with an average cost pricing rule than with a marginal cost pricing rule, because the $AC$ curve is above the $MC$ curve and so intersects the demand curve at a lower output than the $MC$ curve intersects it. Output will be lower still if the firm faces no rule: Figure 12.5 shows that with an average cost pricing rule, the firm breaks even, while at a range of lower outputs the firm would make a profit with $AR$ being higher than $AC$, so the firm could do better than break even with a lower output.

12.3 The triangle in Figure 12.4 has a base of 10 billion litres and a height of 0.12p (that is 0.30p less 0.18p) per litre; so the surplus is 5 billion times 0.12p, which is £600 million. The triangle in Figure 12.5 for marginal cost pricing has a base of 20 billion and a height of 0.25p (that is 0.30p less 0.05p); so the surplus is 10 billion times 0.25p which is £2,500 million. The triangle in Figure 12.5 for average cost pricing
has a base of 16 billion and a height of 0.20p (that is 0.30p less 0.10p); so the surplus is 8 billion times 0.20p which is £1,600 million.