13.1 Conditions for Efficiency

1. Efficiency is achieved when the allocation of resources maximises total social surplus, which is the sum of consumer surplus and producer surplus.

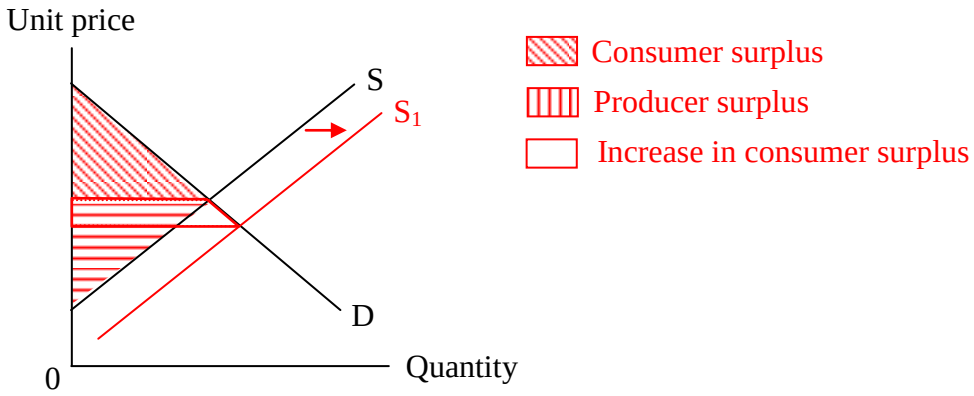
2. The table below shows the total cost schedule of a price-taking firm. There is a fixed cost of $2.

Quantity (units)	Total cost ($)	Marginal cost ($)
1	4	2
2	8	4
3	14	6
4	22	8
5	32	10

(a) Complete the above table.

(b) If the profit-maximising output level is 3 units, the firm's producer surplus is $6.

3. The diagram below shows the demand-supply diagram of good X in a perfectly competitive market.



(a) Indicate the consumer surplus and the producer surplus in the above diagram.

(b) Suppose there is a decrease in production cost. Indicate the change in consumer surplus in the above diagram.

4. When marginal benefit is not equal to marginal cost, the potential gain in total social surplus that is not captured is called a deadweight loss.

5. Prices have two major functions: rationing function (rationing or distributing goods to users with the highest value for the goods) and allocative function (allocating resources in markets).

6. Some paintings are sold through auction and the one who can pay the highest price can get the goods. This illustrates the *(rationing / allocative)* function of price.

© Aristo Educational Press Ltd.

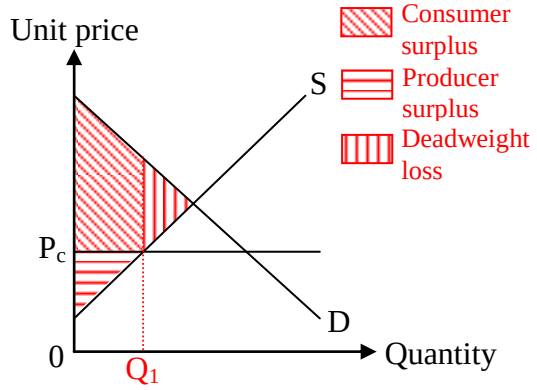
13.2 Deviations from Efficiency

7. Write down the effects of different market interventions in the following table.

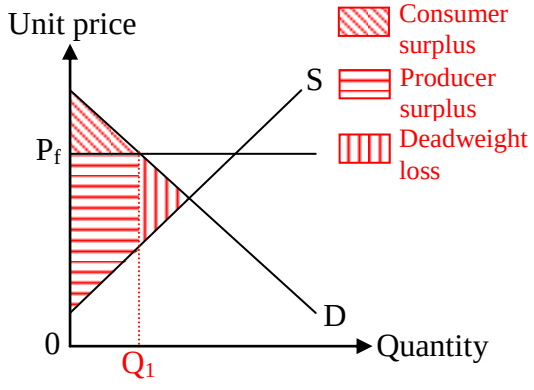
Market intervention	Quantity transacted	Consumer surplus	Producer surplus
Effective price ceiling	decreases	uncertain	decreases
Effective price floor	decreases	decreases	uncertain
Effective quota	decreases	decreases	uncertain
Per-unit tax	decreases	decreases	decreases
Per-unit subsidy	increases	increases	increases

8. Indicate, in each of the following diagrams showing different market interventions, the consumer surplus, producer surplus and deadweight loss after the market intervention is imposed.

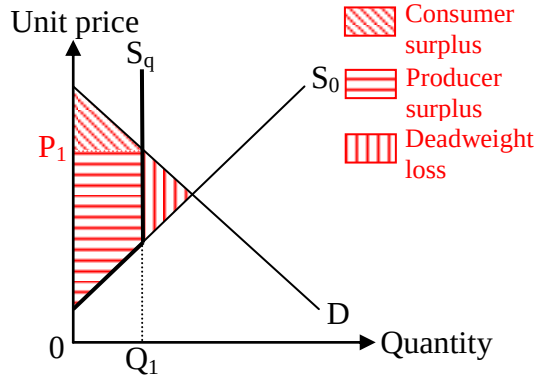
Imposing a price ceiling P_c



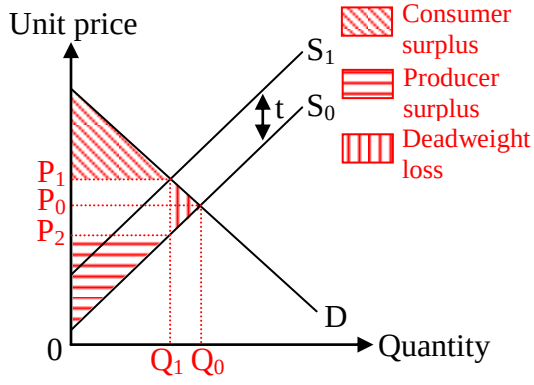
Imposing a price floor P_f



Imposing a quota Q_1

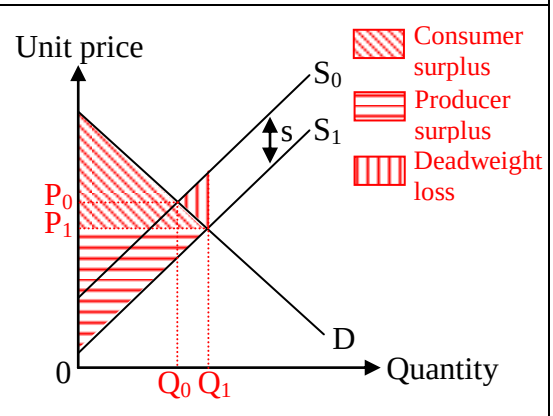


Imposing a per-unit tax (t)



© Aristo Educational Press Ltd.

Providing a per-unit subsidy (s)



9. Determine whether each of the following statements about market interventions is true or false.

Statement	True	False
(a) When an effective price ceiling is imposed, both consumer surplus and producer surplus must decrease.		✓
(b) Firms are worse off when a minimum wage rate is set.		✓
(c) Increasing an effective quota improves economic efficiency.	✓	
(d) When a per-unit tax is imposed, government tax revenue equals the sum of losses in consumer surplus and producer surplus.		✓
(e) The government can improve economic efficiency by raising the per-unit subsidy provided.		✓

13.3 Divergence between Private and Social Costs (Benefits)

10. A negative externality/detrimental externality exists when a person's action imposes costs on other parties, but the person does not give any compensation.

11. When there is a negative externality, the quantity determined in the market (where MPB = MPC) will be *(higher / lower)* than the socially optimal quantity (where MSB = MSC). There is *(over-production / under-production)* of goods. The government may eliminate the externality by *(levying a tax on / providing a subsidy to)* the parties that generate negative externalities.

12. A positive externality/beneficial externality exists when a person's action generates benefits to other parties, but the person does not receive any compensation.

13. When there is a positive externality, the quantity determined in the market (where MPB = MPC) will be *(higher / lower)* than the socially optimal quantity (where MSB = MSC). There is *(over-production / under-production)* of goods. The government may eliminate the externality by *(levying a tax on / providing a subsidy to)* the parties that generate positive externalities.

© Aristo Educational Press Ltd.

14. Which of the following is/are example(s) of a divergence between private and social costs?

☑ A man drives after drinking, which causes danger to other road users but they are not given any compensation.

☐ A child plays with the toys displayed in a shop and he does not pay for that.

☑ A musician always plays guitar in his home and his neighbours feel annoyed, but they are not given any compensation.

© Aristo Educational Press Ltd.