

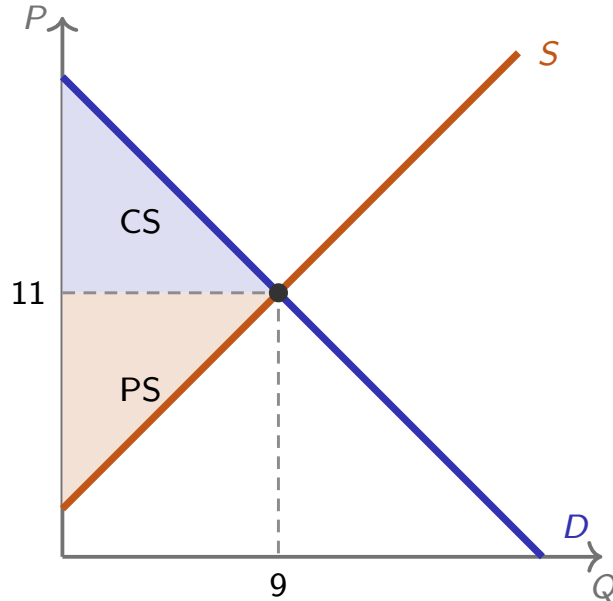
Exercise walk-through

2.6

Market Equilibrium and Consumer and Producer Surplus

AP Microeconomics

Equilibrium, consumer & producer surplus



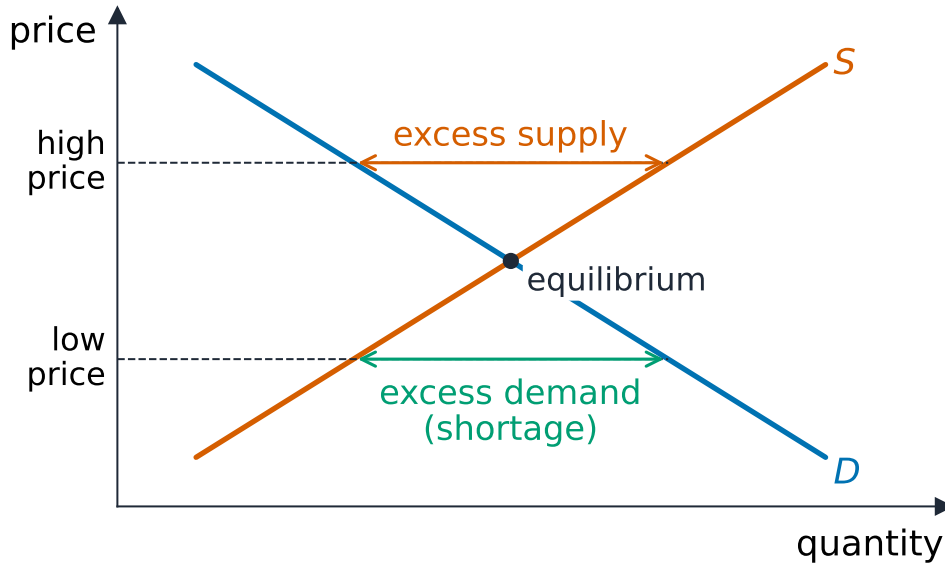
Equilibrium : $Q_d = Q_s$. Here
 $P = 11$, $Q = 9$.

Consumer surplus :
below D , above price.

Producer surplus :
above S , below price.

Competitive equilibrium maximizes surplus when private benefits and costs reflect social benefits and costs.

Above equilibrium there is excess supply; below it



Above equilibrium there is excess supply; below it, excess demand

Worked example – surplus

Fictional competitive market

Demand $P_D = 20 - Q$; supply $P_S = 2 + Q$.

$$P_D = P_S$$

$$20 - Q = 2 + Q$$

$$Q^* = 9, \quad P^* = \$11$$

$$CS = \frac{1}{2} Q^* (P_{D,0} - P^*)$$

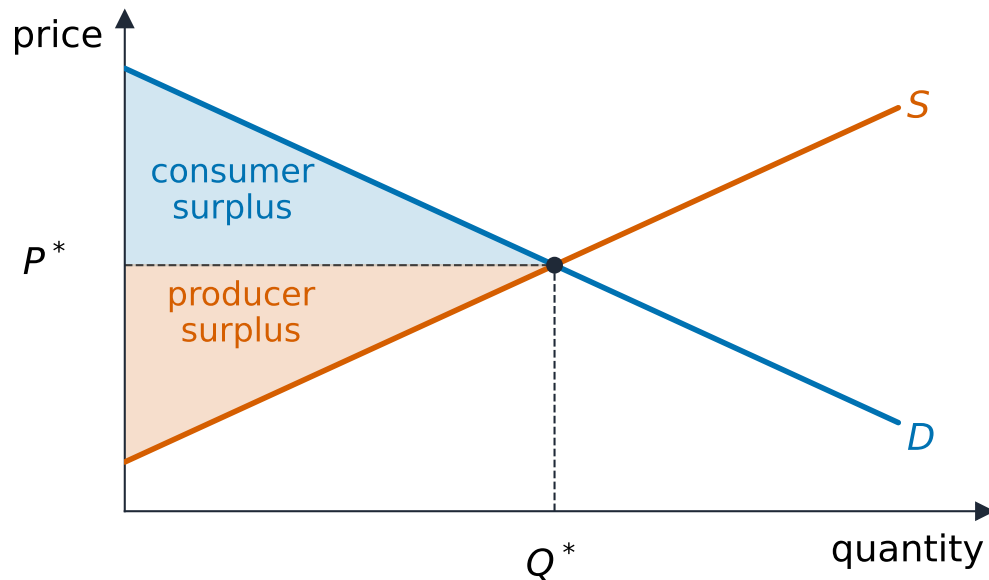
$$CS = \frac{1}{2} (9) (20 - 11) = \$40.50$$

$$PS = \frac{1}{2} Q^* (P^* - P_{S,0})$$

$$PS = \frac{1}{2} (9) (11 - 2) = \$40.50$$

Total surplus = $CS + PS = \$81$. Assume no external costs or benefits. These equations also define the following control and tax examples.

Worked example – surplus, in detail



Consumer surplus and producer surplus at the market equilibrium

Disequilibrium & shifts

Price too high $\Rightarrow$ surplus
 $\rightarrow$ price falls

Price too low $\Rightarrow$ shortage
 $\rightarrow$ price rises

Shift rules: D right $\rightarrow P \uparrow Q \uparrow$; D left $\rightarrow P \downarrow Q \downarrow$; S right $\rightarrow P \downarrow Q \uparrow$; S left $\rightarrow P \uparrow Q \downarrow$. When **both shift**, one result is **indeterminate**.

Exercises 2.1-2.3

2.1 Define consumer surplus.

[1]

2.2 Define producer surplus.

[1]

2.3 A good sells at \$10; a buyer was willing to pay \$16. Find the consumer surplus on that unit.

[1]

Exercises 2.1-2.3

2.1 Define consumer surplus.

[1]

2.1

- the difference between what buyers are willing to pay and what they actually pay
-

2.2 Define producer surplus.

[1]

2.2

- the difference between the price sellers receive and the lowest they would accept
-

2.3 A good sells at \$10; a buyer was willing to pay \$16. Find the consumer surplus on that unit.

[1]

2.3

- $16 - 10 = \$6$

Exercises 3.1-3.2

3.1 Consumer surplus is the area

[1]

☐

A above the demand curve

B below demand and above the price

C below the supply curve

D above the price and below supply

3.2 A competitive market is allocatively efficient where

[1]

☐

A $MB > MC$

B $MB = MC$

C $MB < MC$

D the price is zero

Exercises 3.1-3.2

3.1 Consumer surplus is the area

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A above the demand curve

B below demand and above the price

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D above the price and below supply

3.1 B

- below demand and above the price.

3.2 A competitive market is allocatively efficient where

[1]

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A $MB > MC$

B $MB = MC$

C $MB < MC$

D the price is zero

3.2 B

- $MB = MC$.

Exercise 3.3 (a)

3.3 In a market, the equilibrium price is \$8. On one trade, the seller would accept \$5 and the buyer would pay \$12.

(a) Find the producer surplus on that trade.

[1]

Exercise 3.3 (a)

3.3 In a market, the equilibrium price is \$8. On one trade, the seller would accept \$5 and the buyer would pay \$12.

(a) Find the producer surplus on that trade.

[1]

(a)

- $8 - 5 = \$3$

Exercise 3.3 (b)

3.3 In a market, the equilibrium price is \$8. On one trade, the seller would accept \$5 and the buyer would pay \$12.

(b) Find the consumer surplus.

[1]

Exercise 3.3 (b)

3.3 In a market, the equilibrium price is \$8. On one trade, the seller would accept \$5 and the buyer would pay \$12.

(b) Find the consumer surplus.

[1]

(b)

- $12 - 8 = \$4$

Exercise 3.3 (c)

3.3 In a market, the equilibrium price is \$8. On one trade, the seller would accept \$5 and the buyer would pay \$12.

(c) Find the total surplus.

[1]

Exercise 3.3 (c)

3.3 In a market, the equilibrium price is \$8. On one trade, the seller would accept \$5 and the buyer would pay \$12.

(c) Find the total surplus.

[1]

(c)

- $3 + 4 = \$7$