

Crash Course in Economics

(Alma Mater Studiorum – Università di Bologna – Rimini Campus)

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- Materials and link to the recorded lessons:

Microsoft Teams platform:

[***https://teams.microsoft.com/meet/338216212406989?p=DV9LIwHsm4RQqWuy7N***](https://teams.microsoft.com/meet/338216212406989?p=DV9LIwHsm4RQqWuy7N)

Lesson 10

Consumer and Producer Surplus

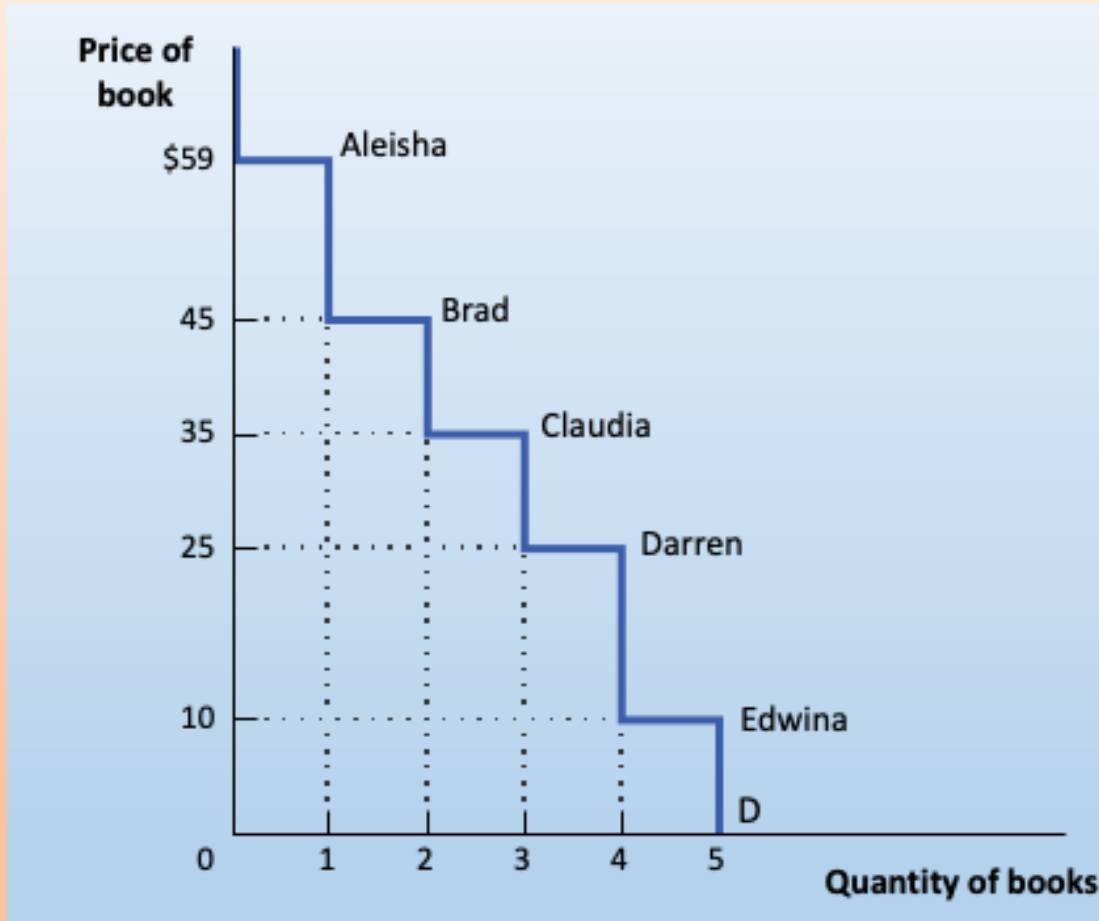
Measuring Market Efficiency

- *Markets are (usually) efficient: we can measure their benefit to society by measuring:*

- *Consumer Surplus*
- *Producer Surplus*



The Demand Curve

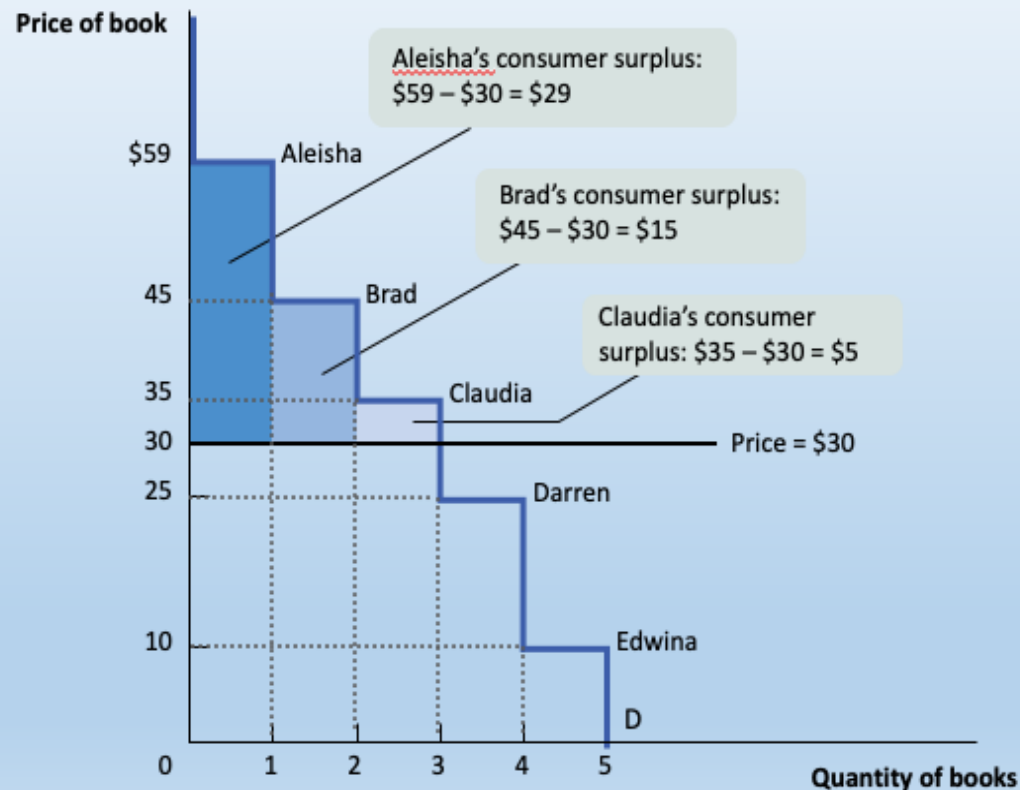


Potential buyers	Willingness to pay
Aleisha	\$59
Brad	45
Claudia	35
Darren	25
Edwina	10

A consumer's *willingness to pay for a good* is the *maximum price at which he or she would buy that good*.

Consumer Surplus

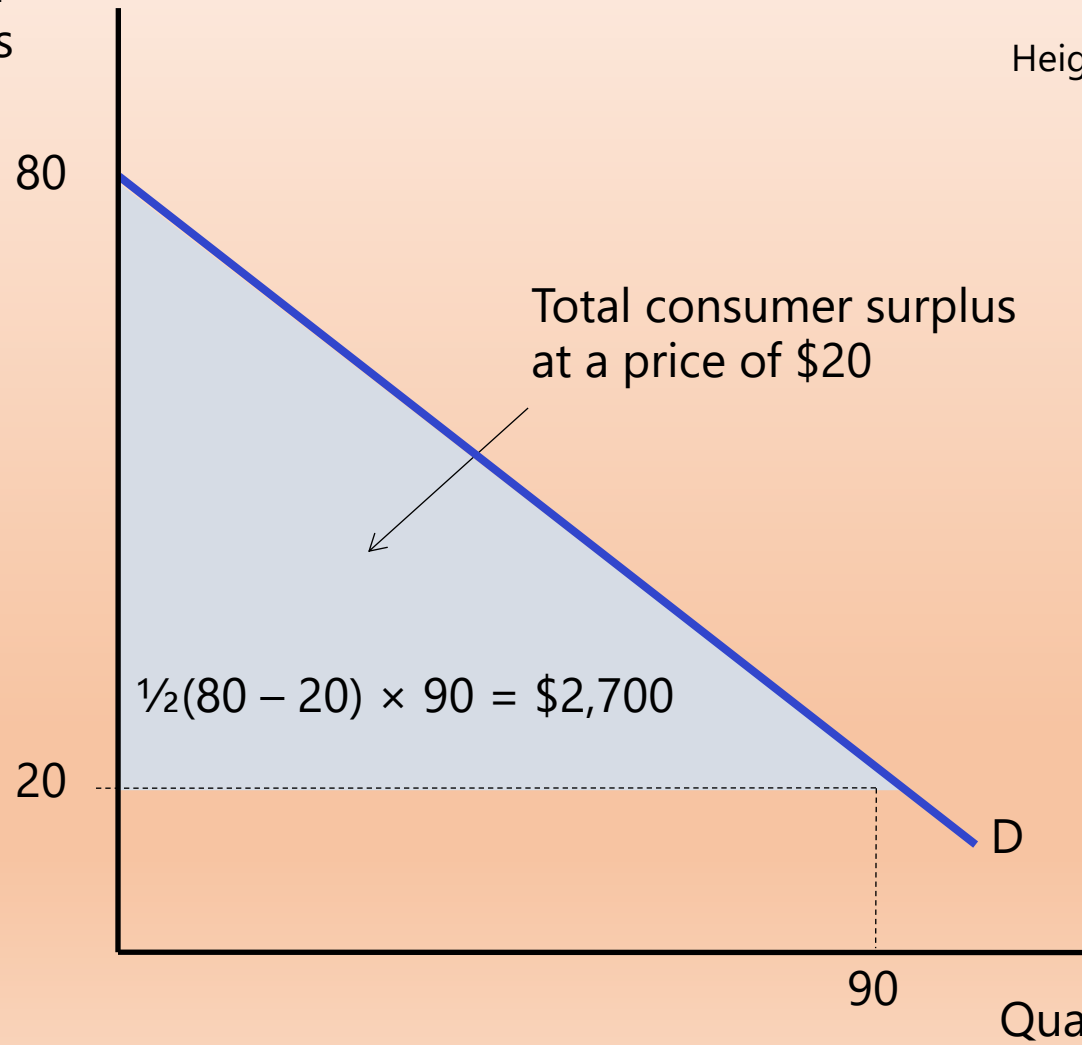
- **Consumer surplus**: the difference between market price and what consumers (as individuals or the market) would be willing to pay.



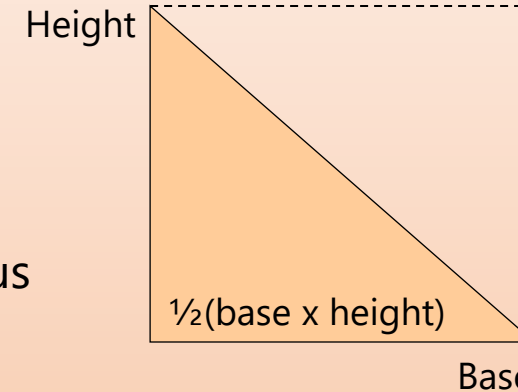
- The ***total consumer surplus*** is the entire shaded area: the sum of the individual consumer surpluses of Aleisha, Brad, and Claudia ($\$29 + \$15 + \$5 = \49).

Consumer Surplus

Price of widgets



Area of triangle

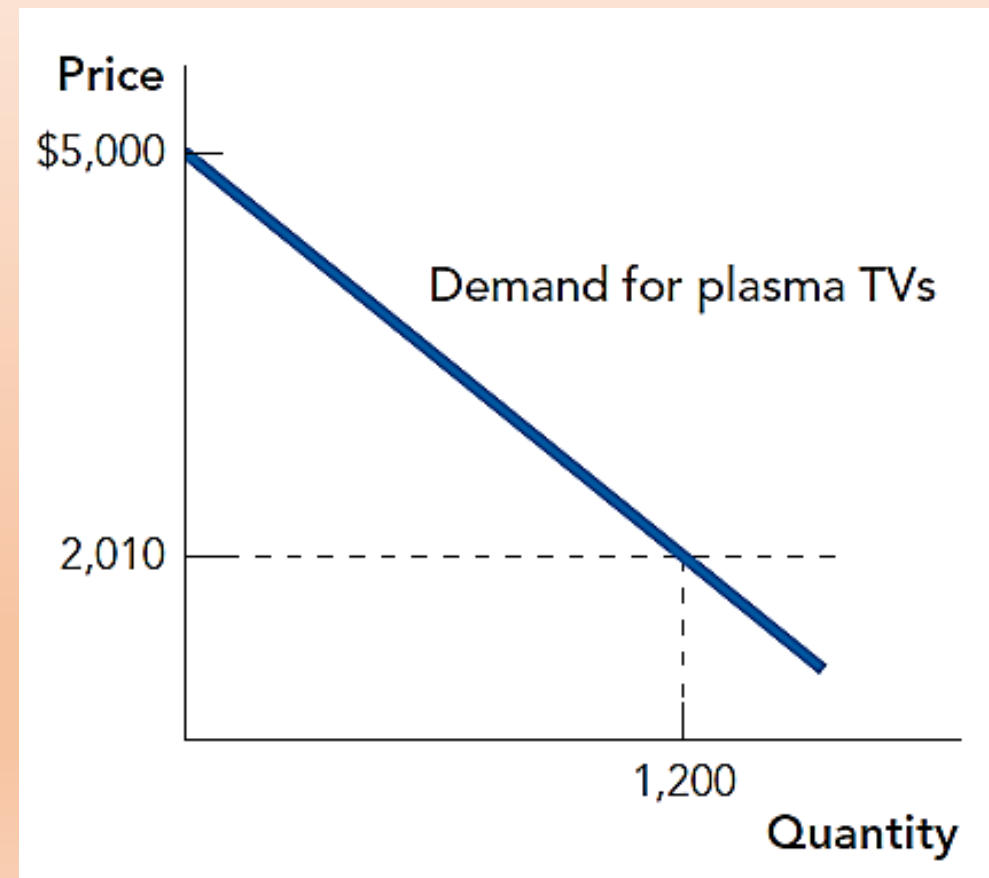


- Consumer surplus is the area beneath *the demand curve* and *above the price*.

Practice Learning

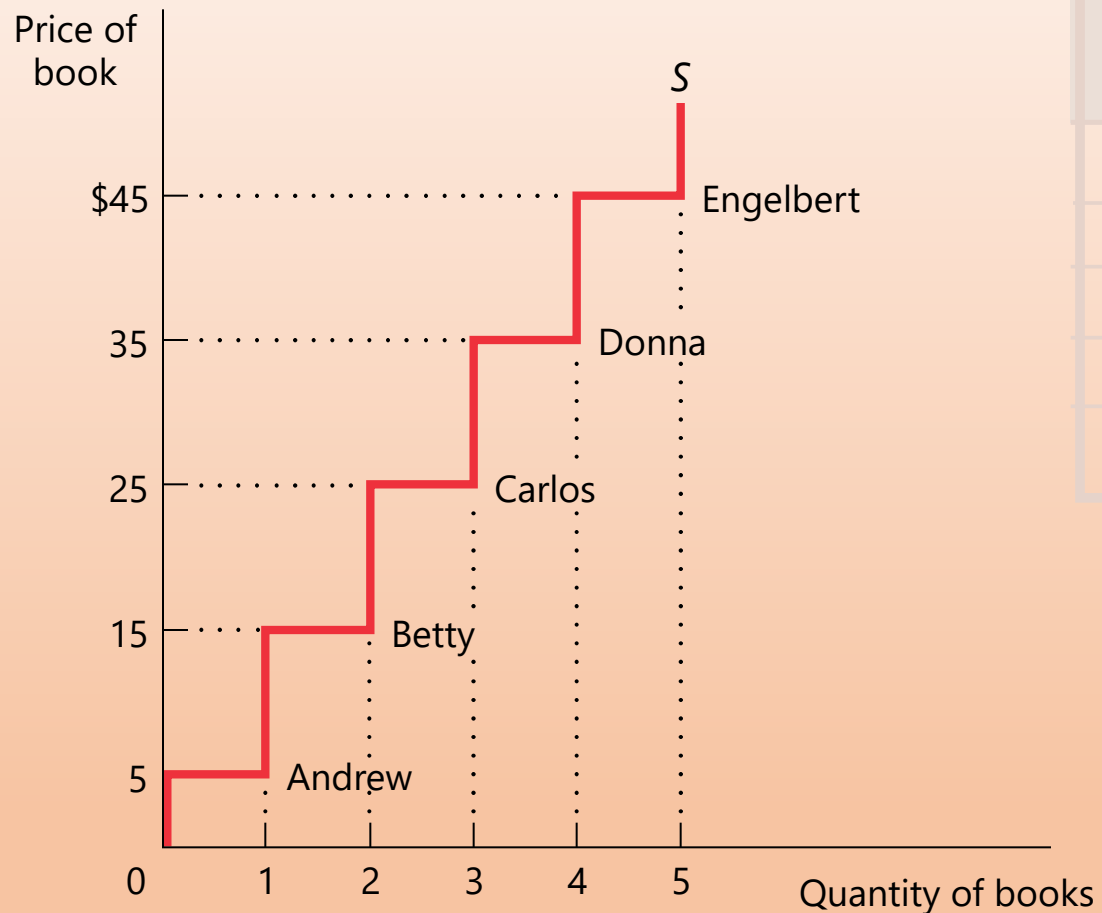
If the price market is \$2010, what is the consumer surplus?

- a) \$3.588 million
- b) \$1.794 million
- c) \$6 million
- d) \$3 million



Solution: $\frac{1}{2} (5000 - 2010) \times 1200$

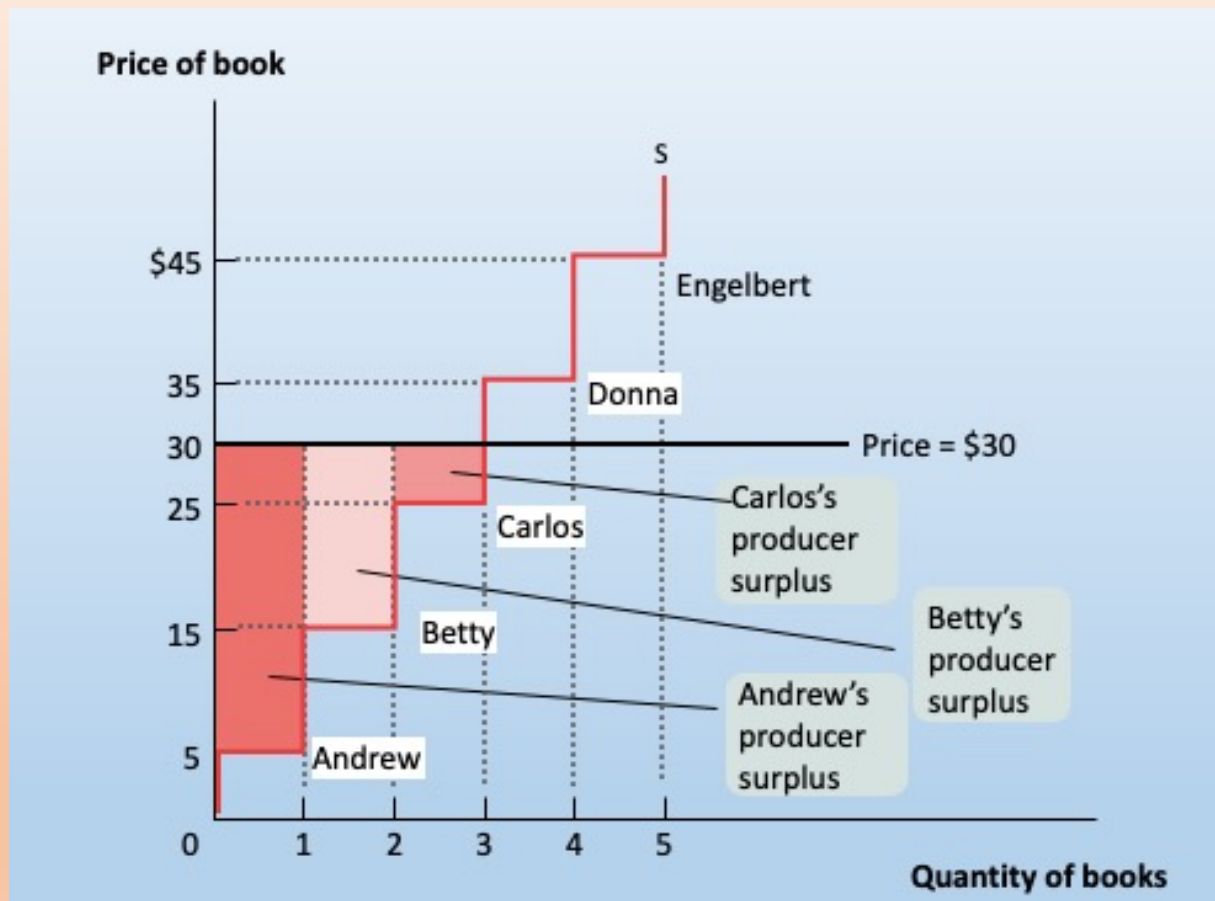
The Supply Curve



Potential sellers	Cost
Andrew	\$5
Donna	15
Carlos	25
Betty	35
Engelbert	45

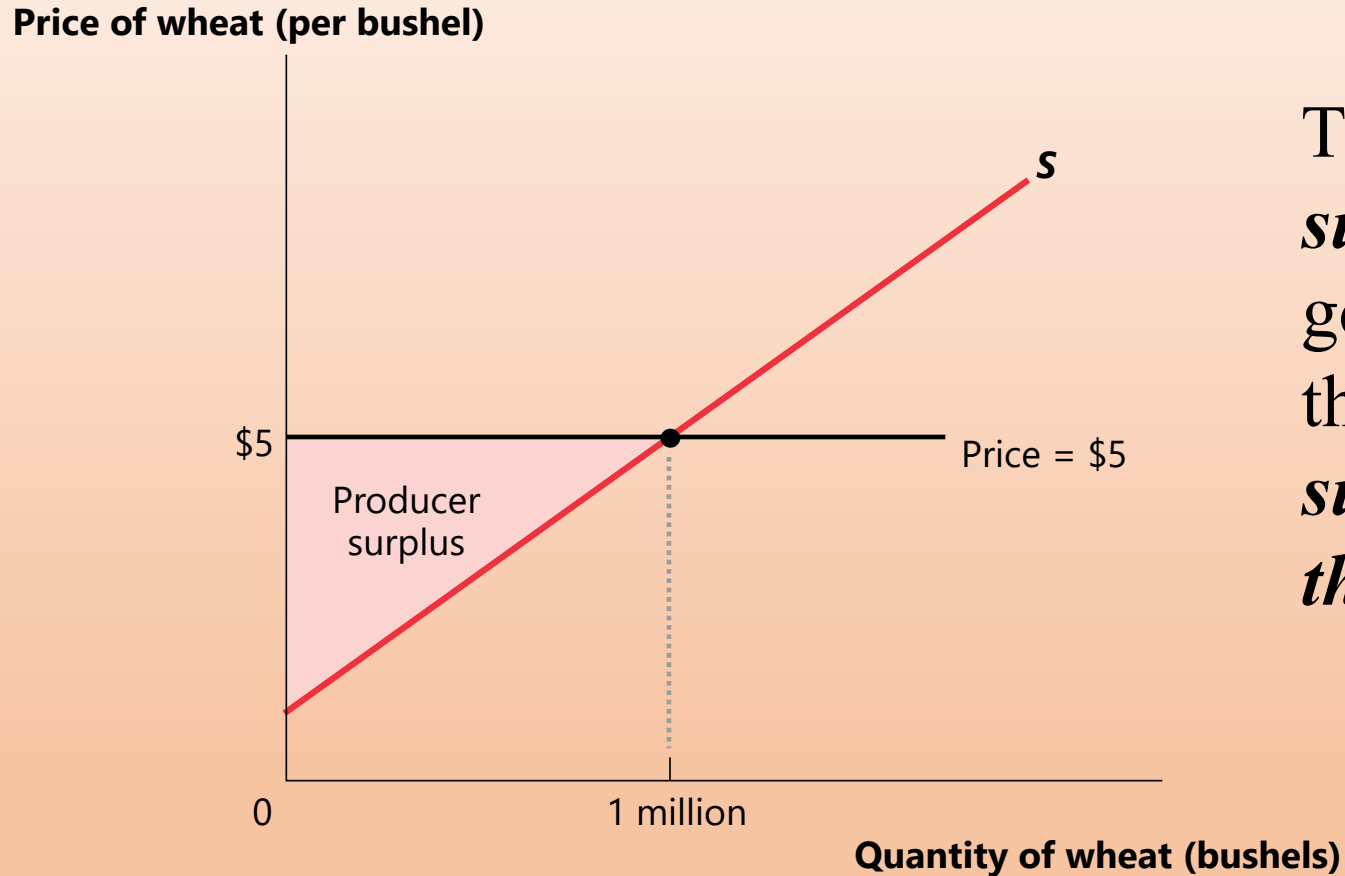
A firm's *willingness to supply a good* is the *minimum price at which it would sell that good*.

Producer Surplus



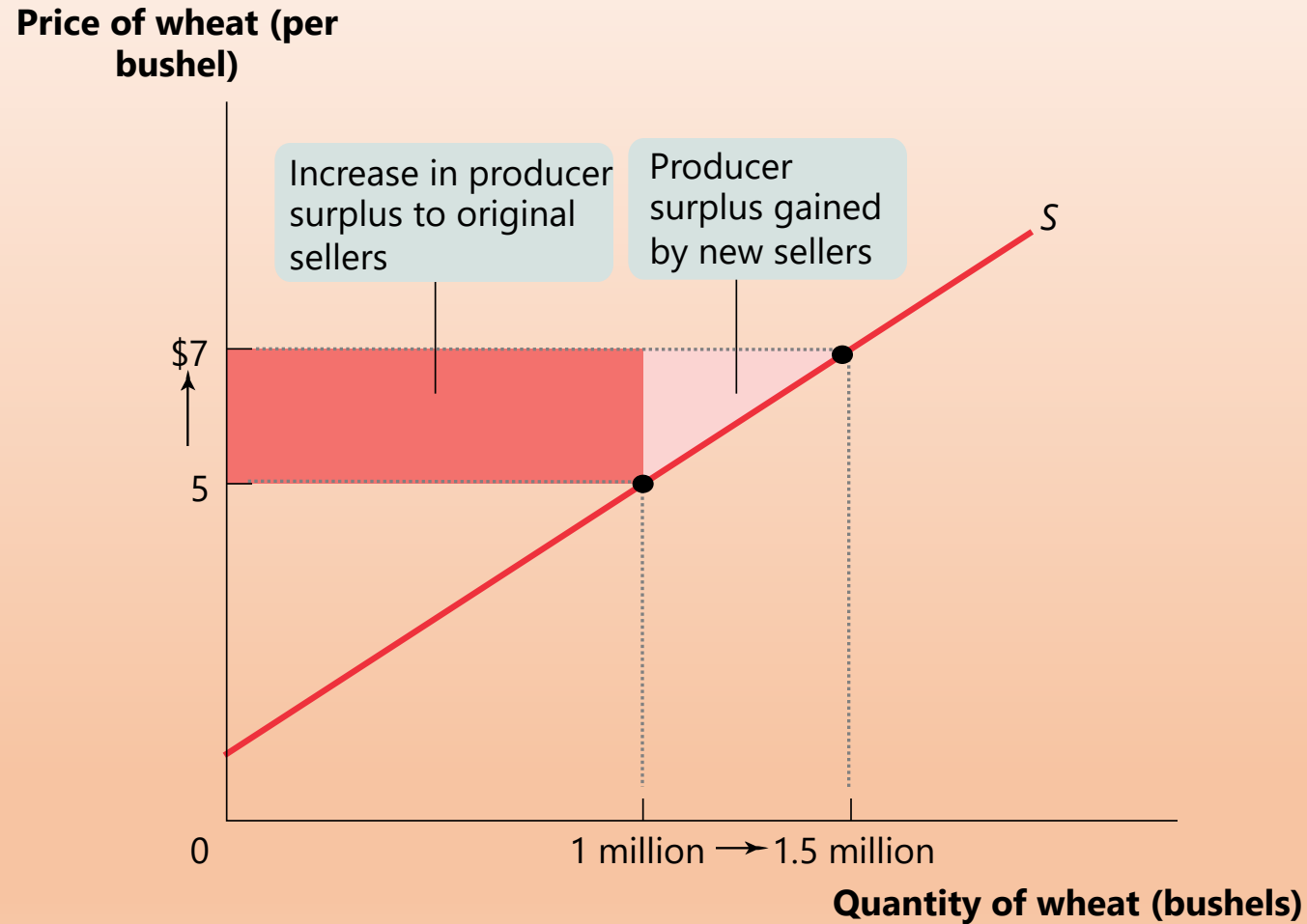
Producer surplus: the difference between market price and the price at which firms are willing to supply the product.

Producer Surplus



The *total producer surplus* from sales of a good at a given price is the *area above the supply curve but below that price*.

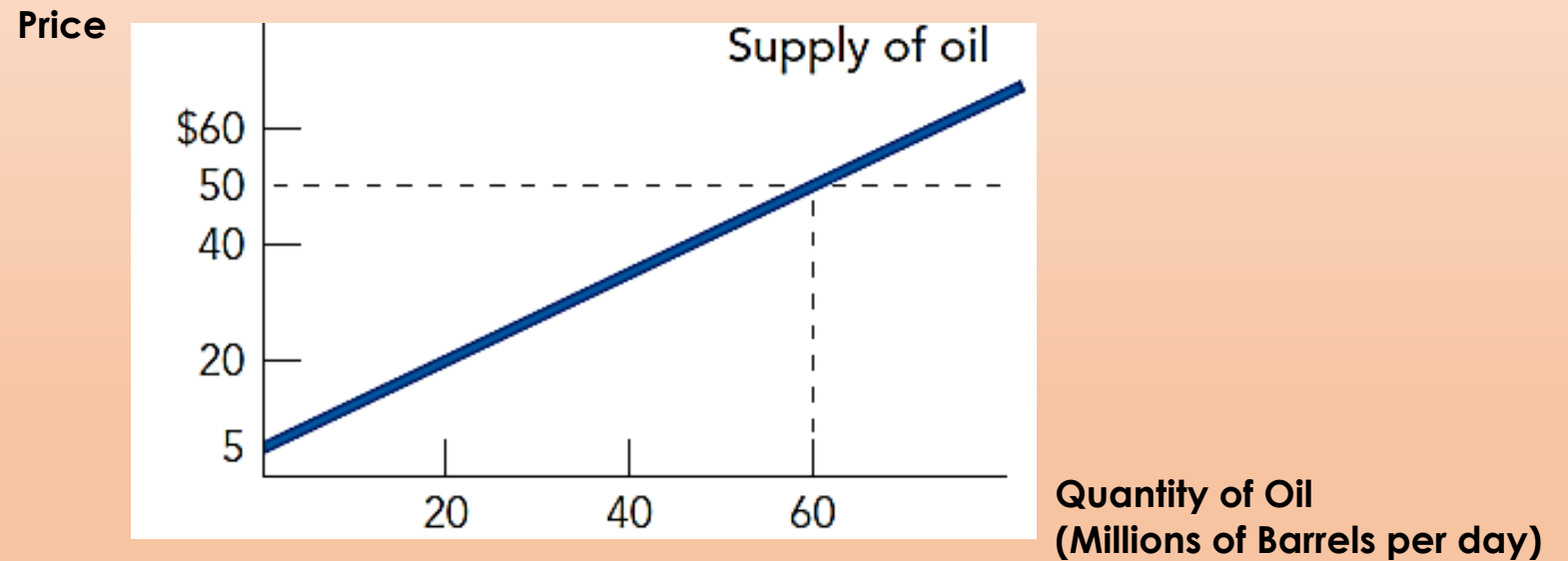
Producer Surplus Rises if the Price Increases



Practice Learning

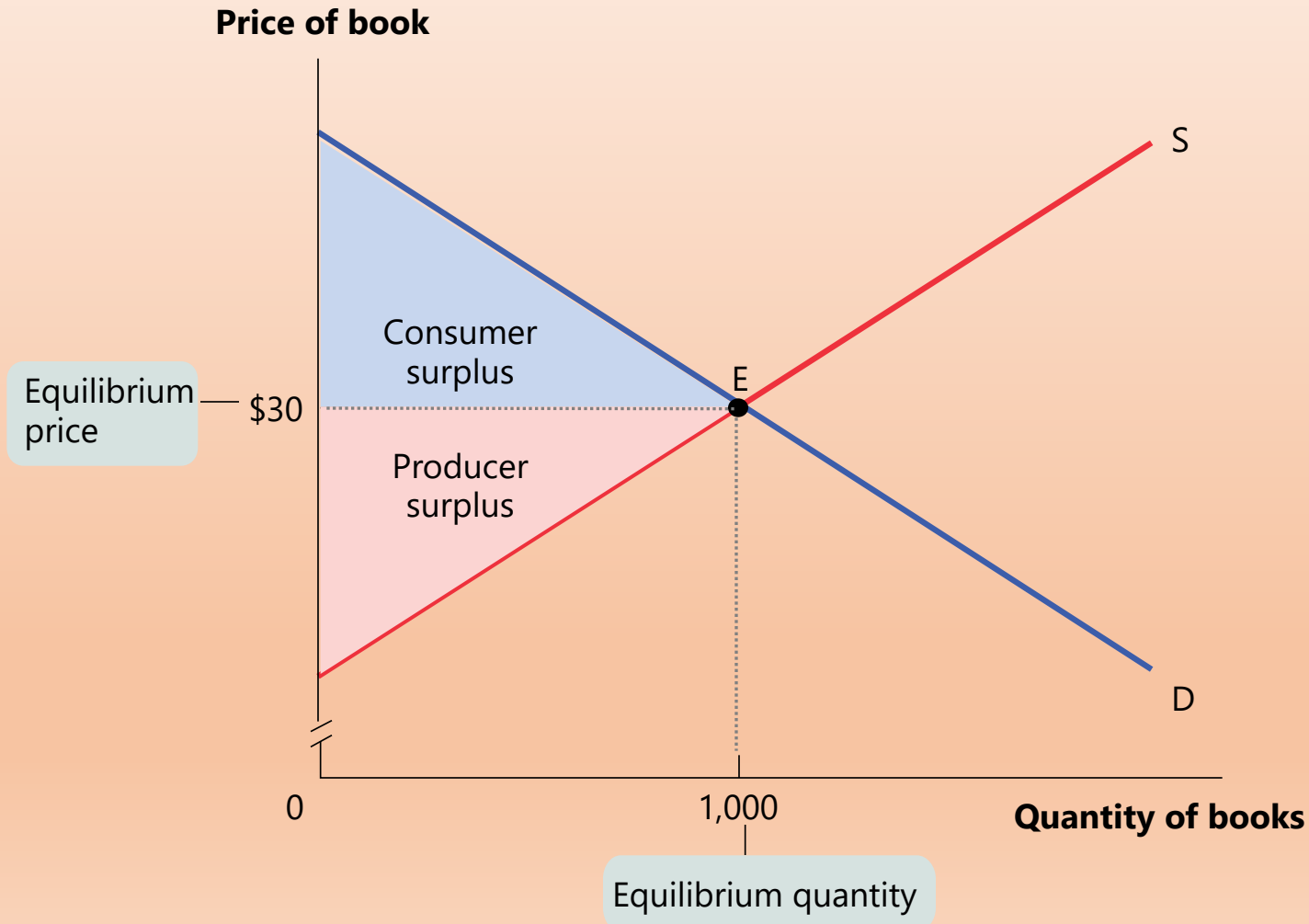
Using the following diagram, calculate total producer surplus if the price of oil is \$50 per barrel.

- a) 0
- b) \$45
- c) \$1,350
- d) \$2,700



Solution: $\frac{1}{2} (50-5) \cdot 60$

Surplus Maximized at Market Equilibrium

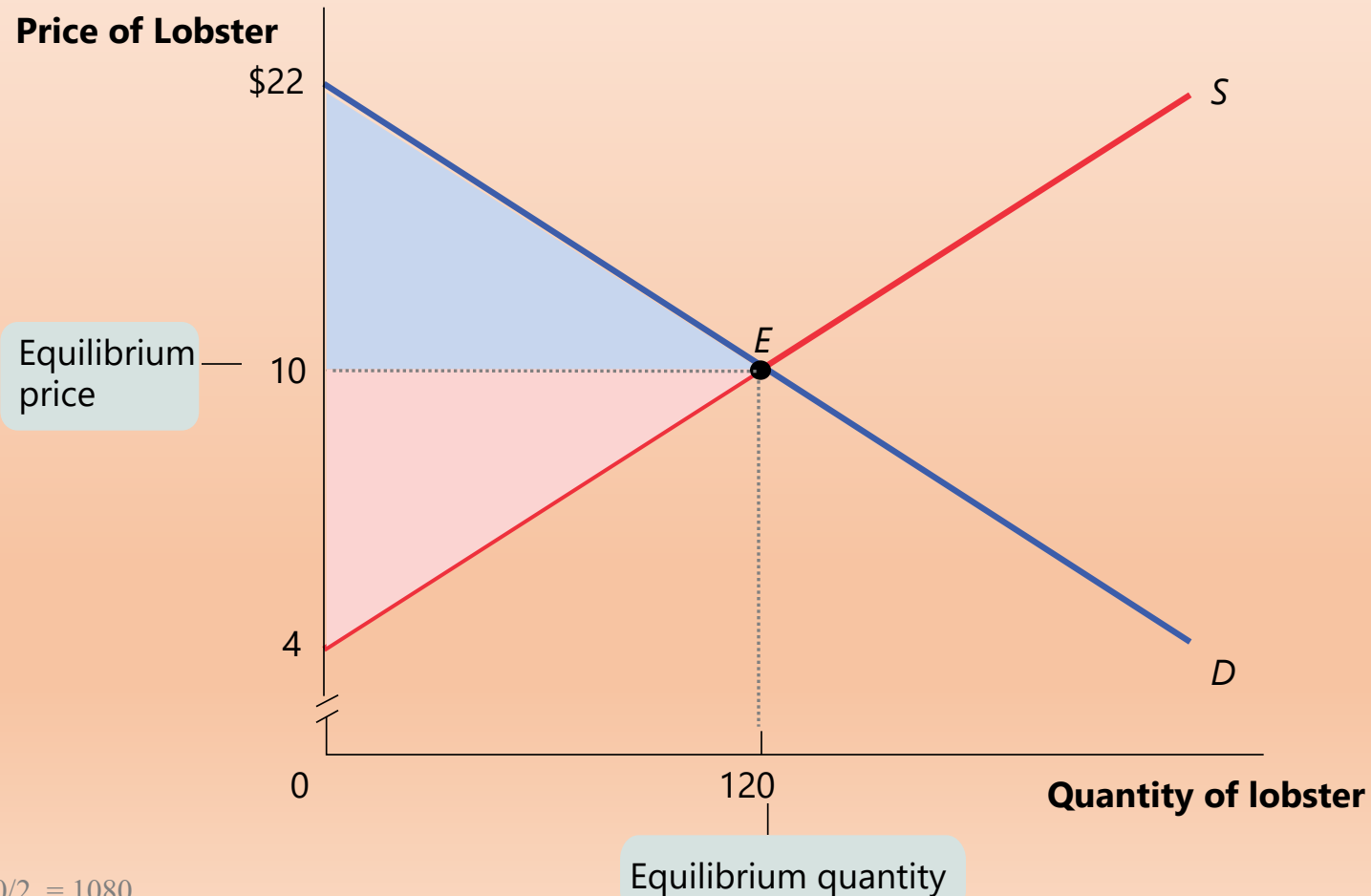


- *Total surplus: the sum of the producer and consumer surpluses.*

Practice Learning

What is the total surplus when price is at equilibrium?

- a) \$480
- b) \$720
- c) \$1,080
- d) \$1,440



Solution: $c \frac{(22-10) \cdot 120}{2} + \frac{(10-4) \cdot 120}{2} = 1080$

The Efficiency of Markets

- *Competitive markets* are usually *efficient*:
 1. They *allocate consumption of the good* to the *potential buyers* who most value it.
 2. They *allocate sales* to the *potential sellers* who most value the right to sell the good (e.g., who have the lowest cost).
 3. They ensure that *all transactions are mutually beneficial*: every consumer who makes a purchase values the good more than every seller who makes a sale.



Equity and Efficiency

- Sometimes societies choose to have *governments intervention in markets* to *increase efficiency*.
- *Efficiency* is important, but *society also cares about equity*.



Inefficiency

Inefficiency: opportunities are missed, some people could be made better off without making other people worse off.

- *Markets aren't always efficient, sometimes they fail.*



Interference in Markets: Consequences

- If *prices are distorted*, they cannot give good information to buyers and sellers.
- Distorted price signals cause *resources to be misallocated*.



Price Controls

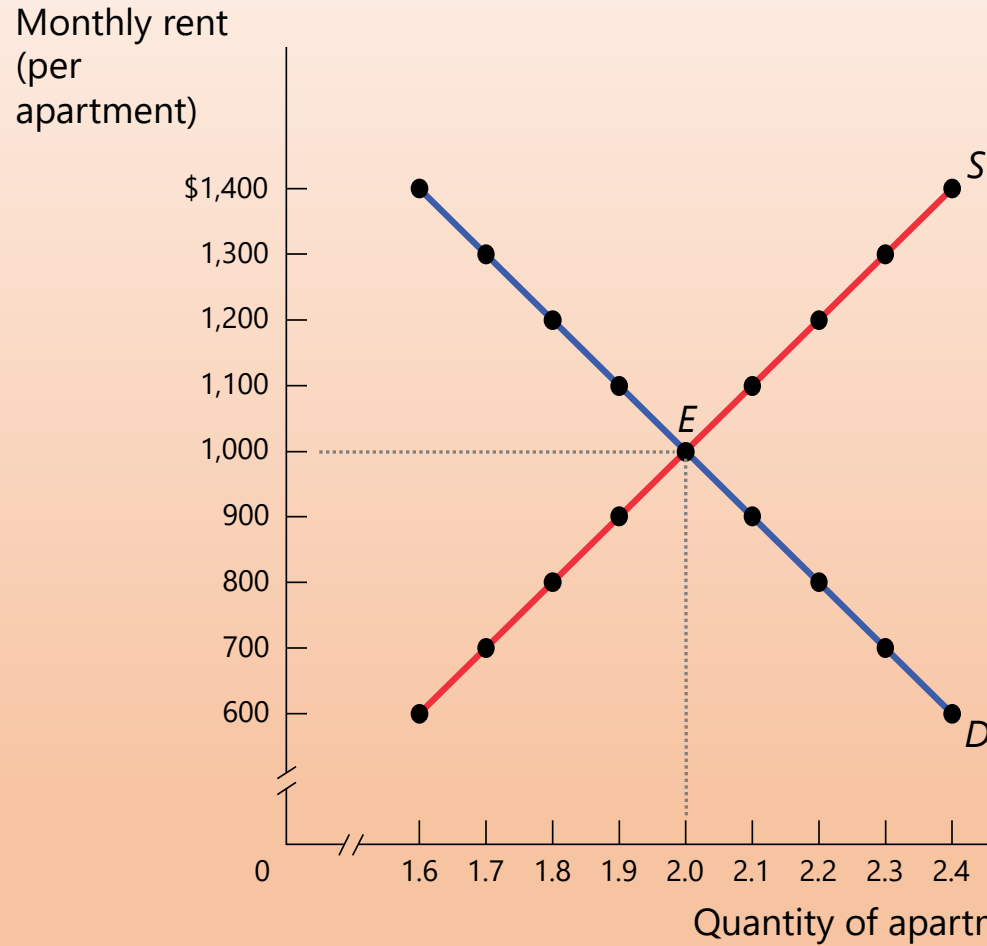
Price controls are legal restrictions on how high or low a market price may go.

There are two main types:

1. ***Price ceiling***: a ***maximum price*** sellers are allowed to charge for a good or service (*usually set **BELOW** equilibrium*).
2. ***Price floor***: a ***minimum price*** buyers are required to pay for a good or service (*usually set **ABOVE** equilibrium*).



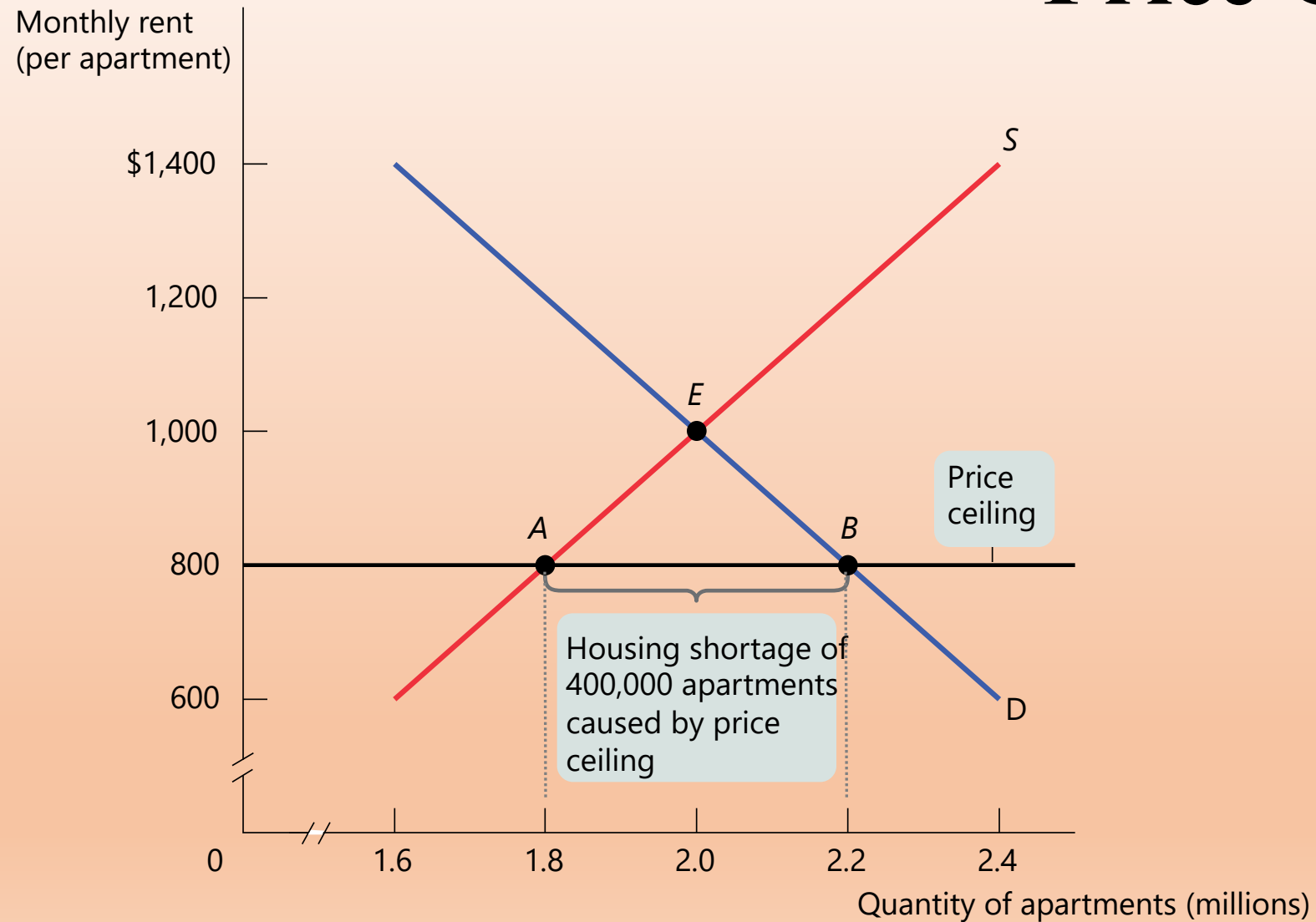
Market for Apartments



Monthly rent (per apartment)	Quantity of apartments (millions)	
	Quantity demanded	Quantity supplied
\$1,400	1.6	2.4
1,300	1.7	2.3
1,200	1.8	2.2
1,100	1.9	2.1
1,000	2.0	2.0
900	2.1	1.9
800	2.2	1.8
700	2.3	1.7
600	2.4	1.6

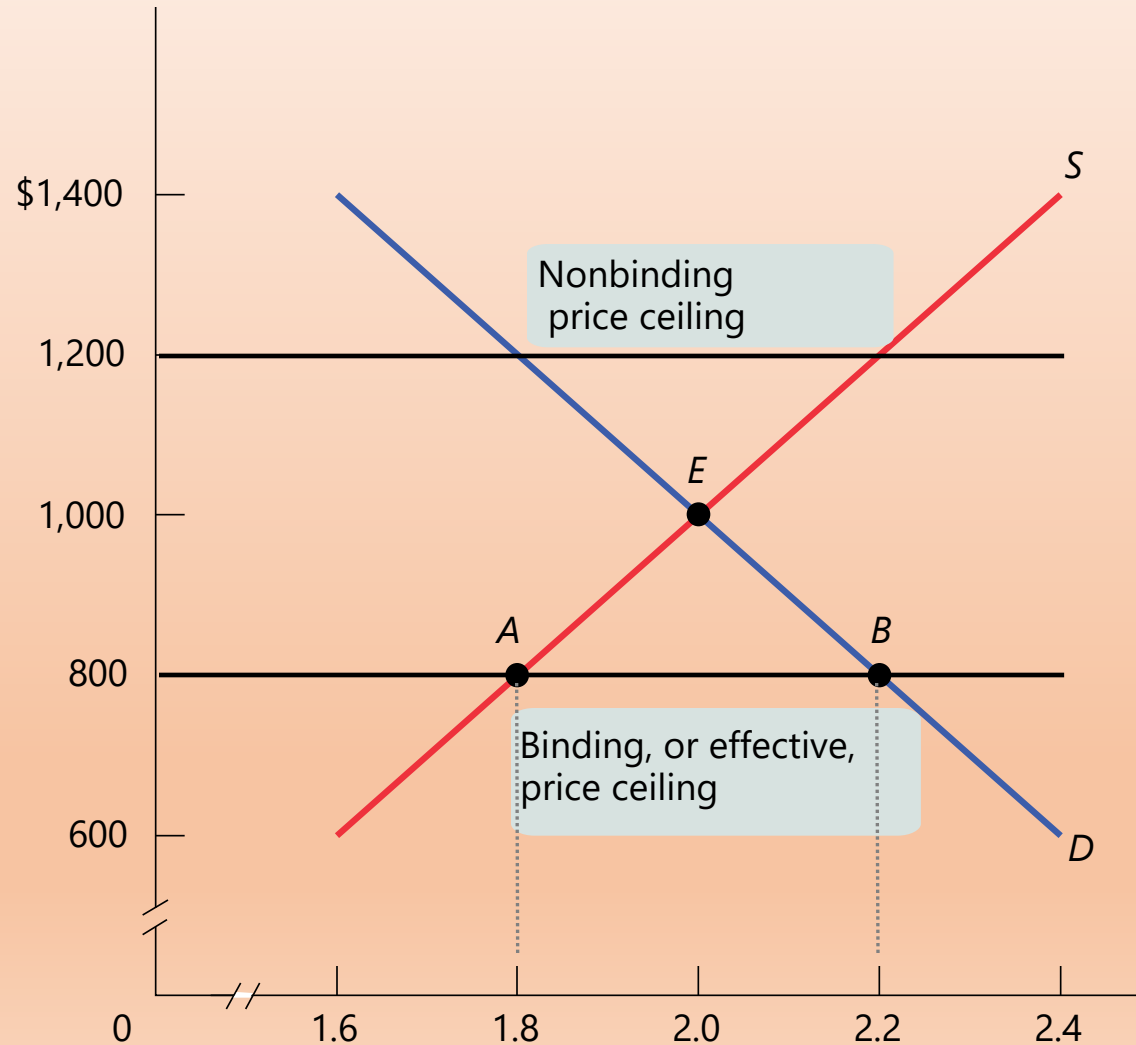
- *Absence of Government Controls*

Price Ceiling



Binding or Effective Price Ceilings

Monthly rent
(per apartment)

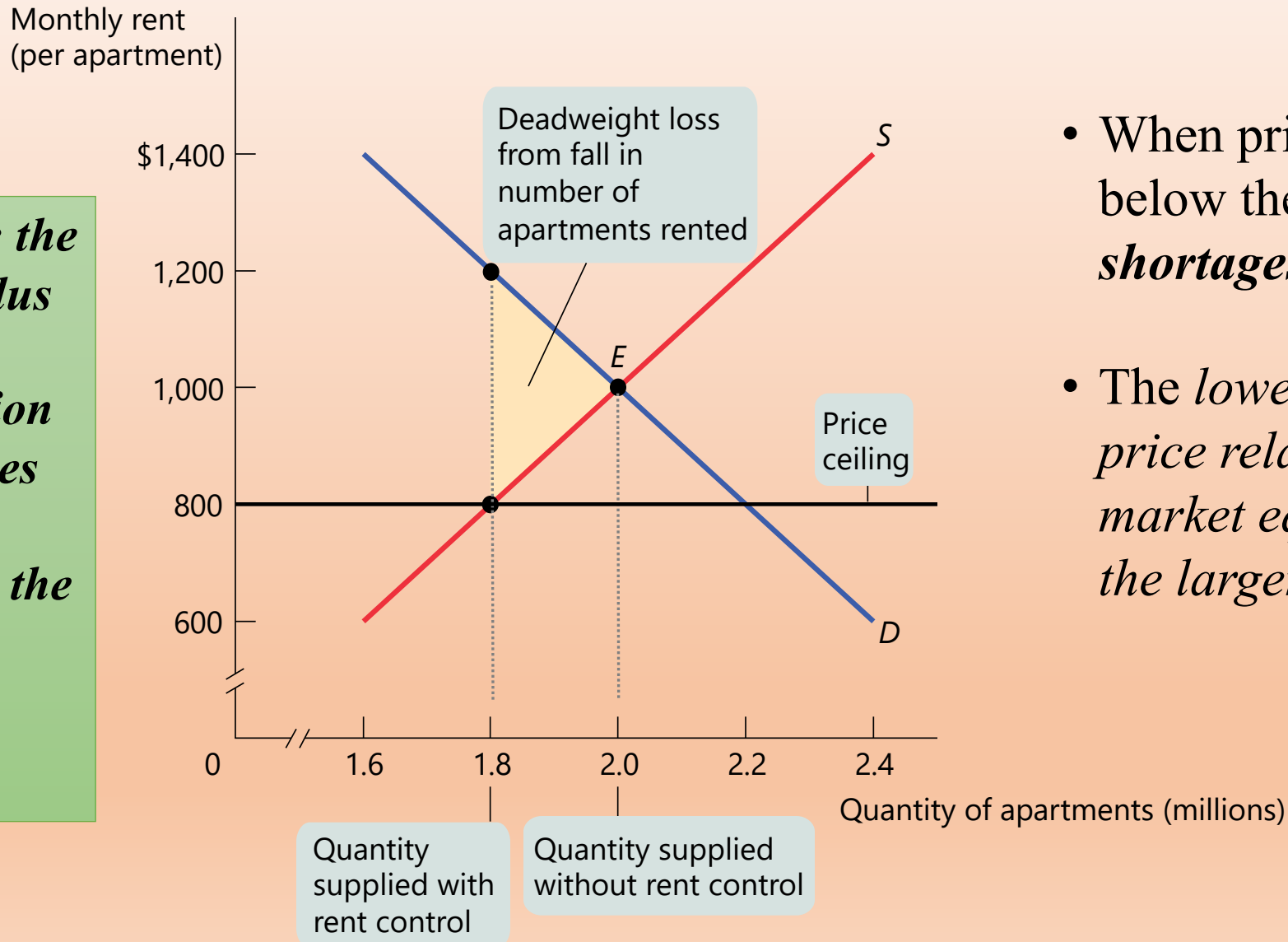


Quantity of apartments (millions)

- If a price ceiling is set *above equilibrium*, it will have *no effect* (called *nonbinding*).
- Only a price ceiling that forces price *below equilibrium* will have any *effect* (called *binding or effective*).

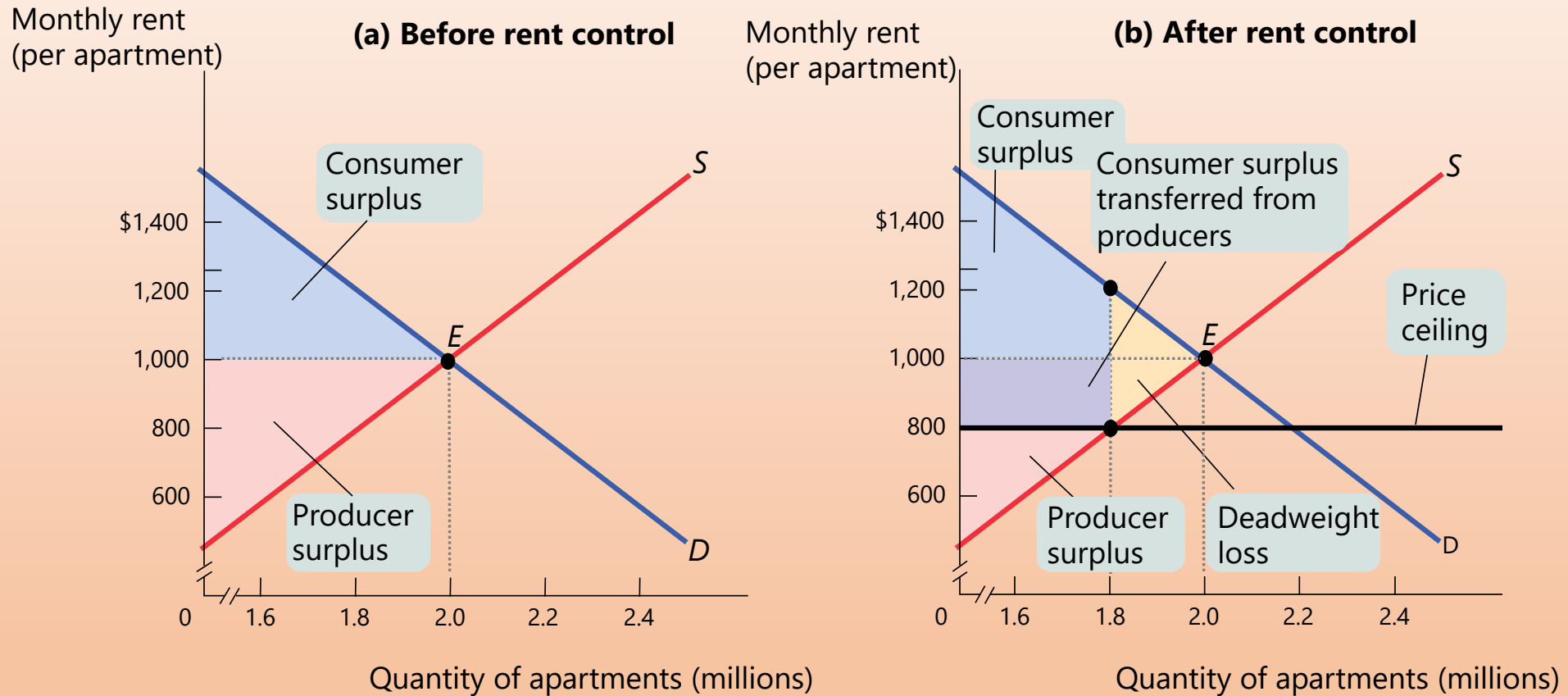
Inefficiently Low Quantity

Deadweight loss: the loss in total surplus that occurs whenever an action or a policy reduces the quantity transacted below the efficient market equilibrium quantity.



- When prices are held below the market price, **shortages** are created.
- The *lower the controlled price relative to the market equilibrium price, the larger the shortage.*

Winners and Losers from Rent Control



- *Producers lose; some lucky renters gain; and some unlucky but willing renters don't get a place at all.*

Price Ceilings Consequences

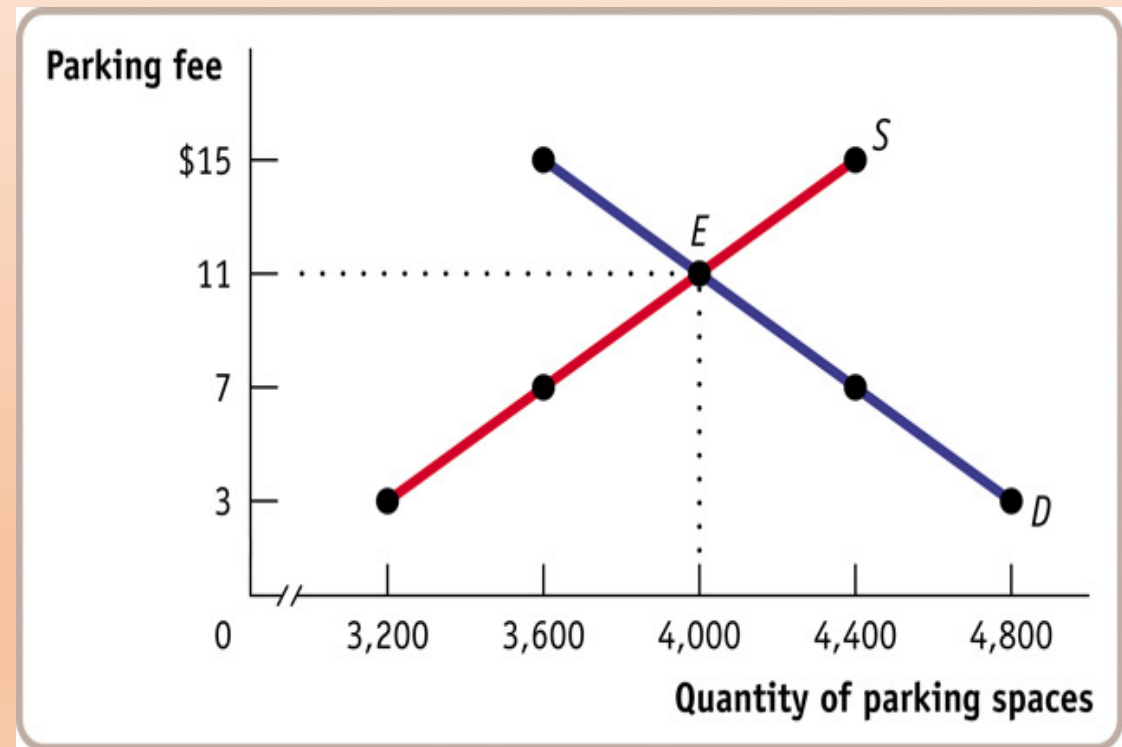
- Price ceilings cause *predictable side effects*:
 - *Inefficiently low quantity*
 - *Inefficient allocation to customers*
 - *Wasted resources*
 - *Black markets*



Practice Learning

- Find the amount of deadweight loss caused by a price ceiling of \$7.

- a) \$1,600
- b) \$4,400
- c) \$25,200
- d) \$60,000

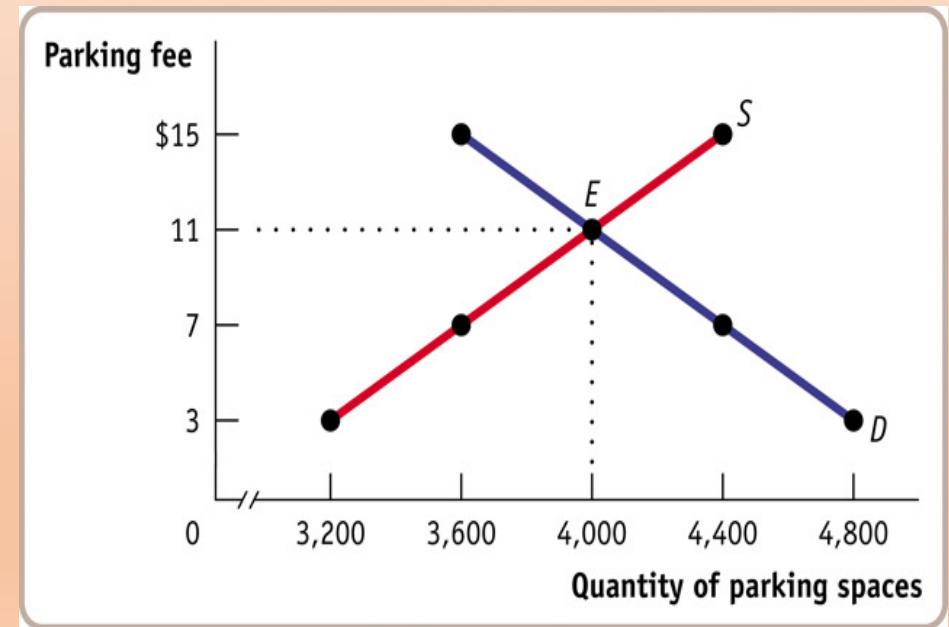


Solution: a $(15-7) \times (4000-3600) \times 2 = 1600$

Practice Learning

- If the government imposed a maximum parking fee of \$7, you would expect there to be a(n) _____ of parking spaces.

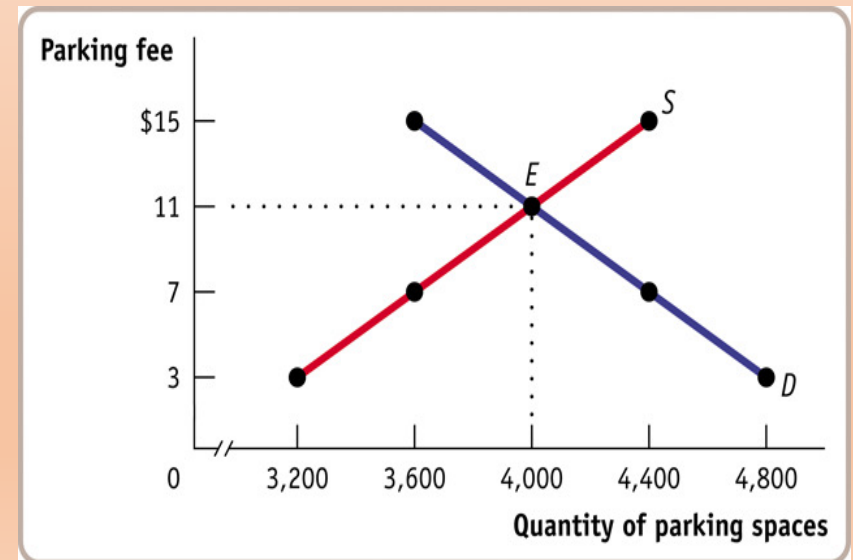
- a) shortage
- b) surplus
- c) equilibrium number



Practice Learning

- *Friends of homeowners near the stadium regularly attend games, even if they aren't big fans. But some serious fans have given up because of the parking situation caused by the imposition of a \$7 price ceiling. What would you call this?*

- a) inefficient allocation of goods*
- b) wasted resources*
- c) inefficiently low quality*
- d) black markets*

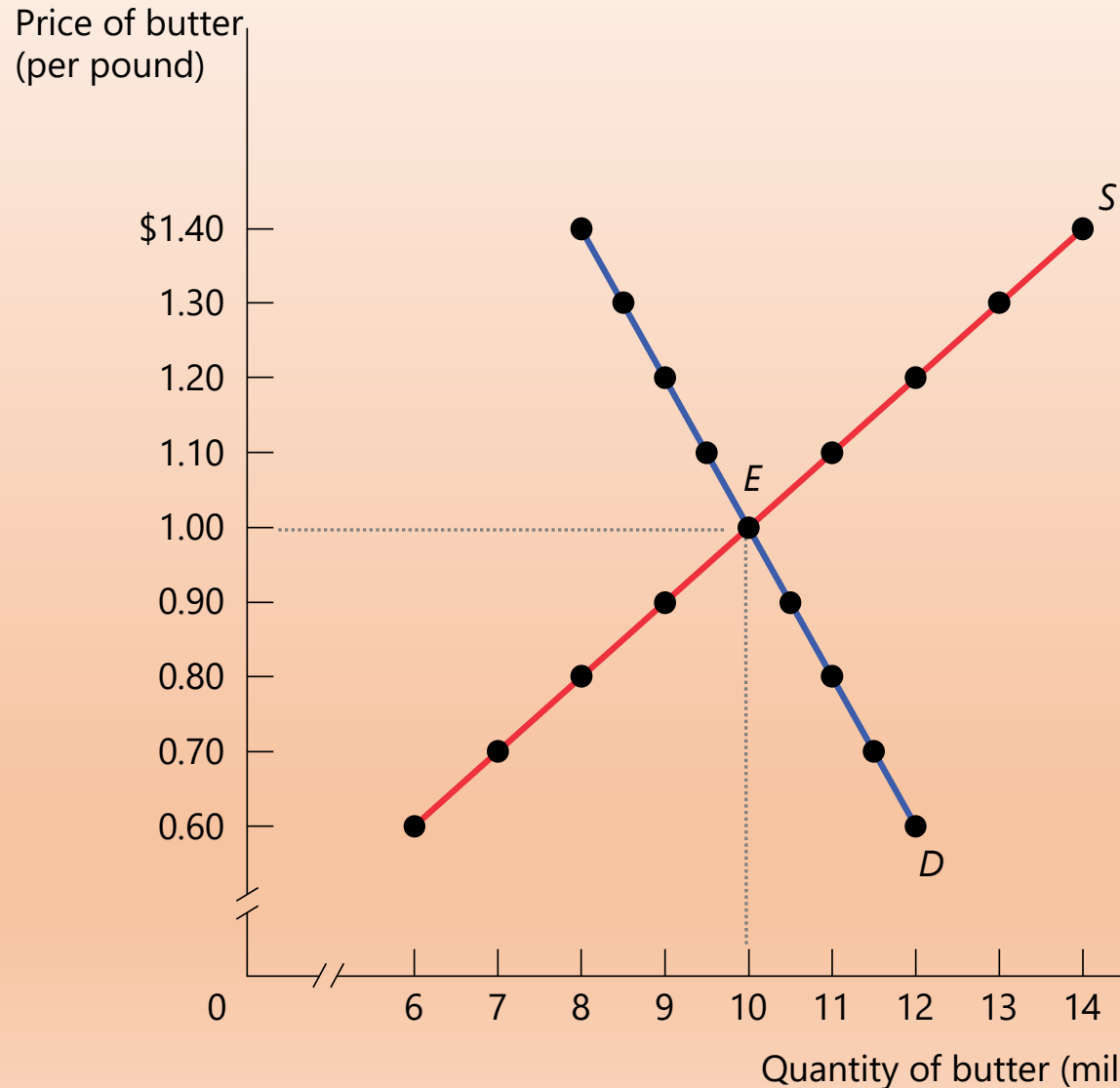


Price Floors

- Sometimes *governments intervene* to push *market prices up* instead of down.
 - *The generous minimum wage in many European countries has contributed to a high rate of unemployment and the flourishing of an illegal labor market.*



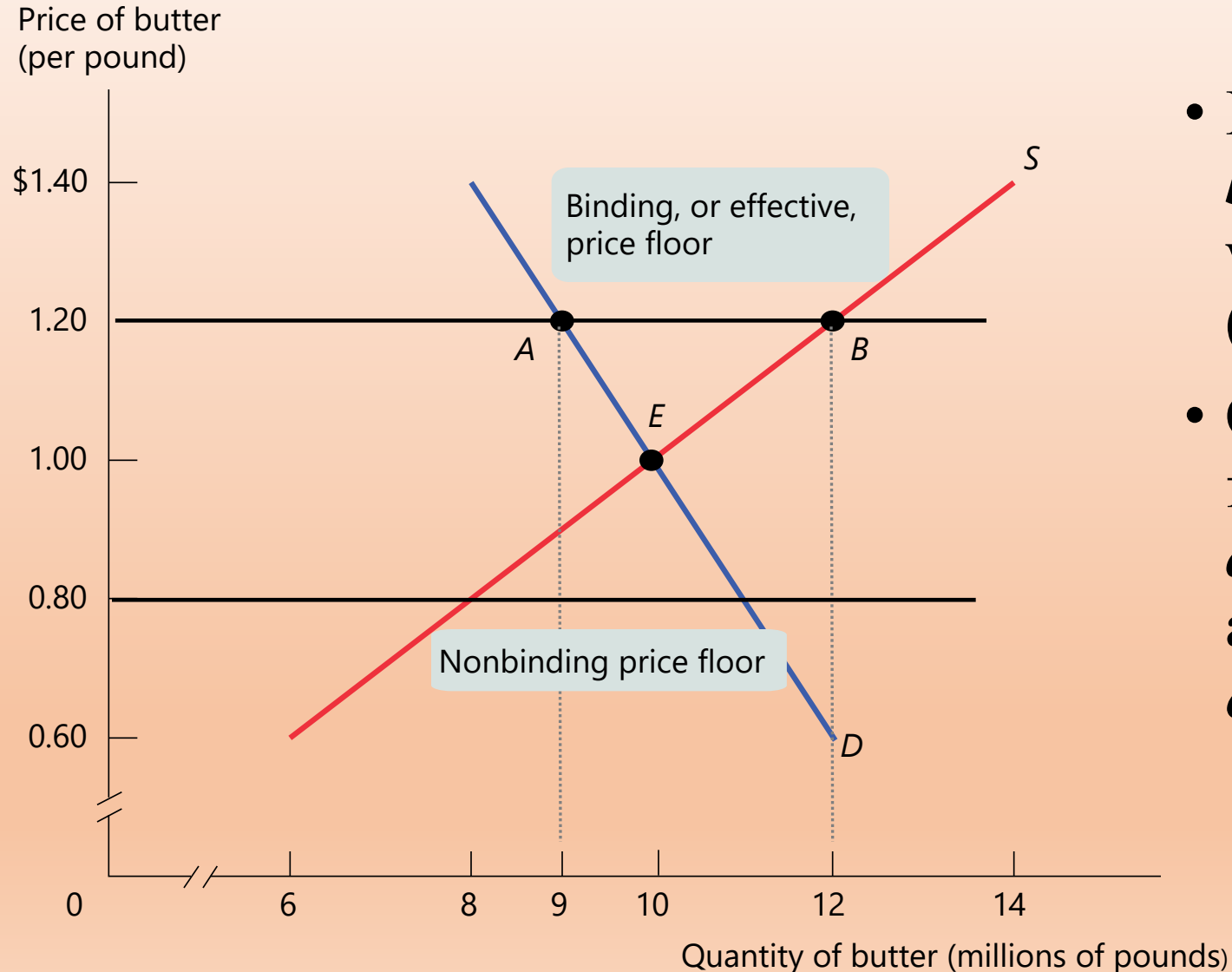
Market for Butter



Price of butter (per pound)	Quantity of butter (millions of pounds)	
	Quantity demanded	Quantity supplied
\$1.40	8.0	14.0
\$1.30	8.5	13.0
\$1.20	9.0	12.0
\$1.10	9.5	11.0
\$1.00	10.0	10.0
\$0.90	10.5	9.0
\$0.80	11.0	8.0
\$0.70	11.5	7.0
\$0.60	12.0	6.0

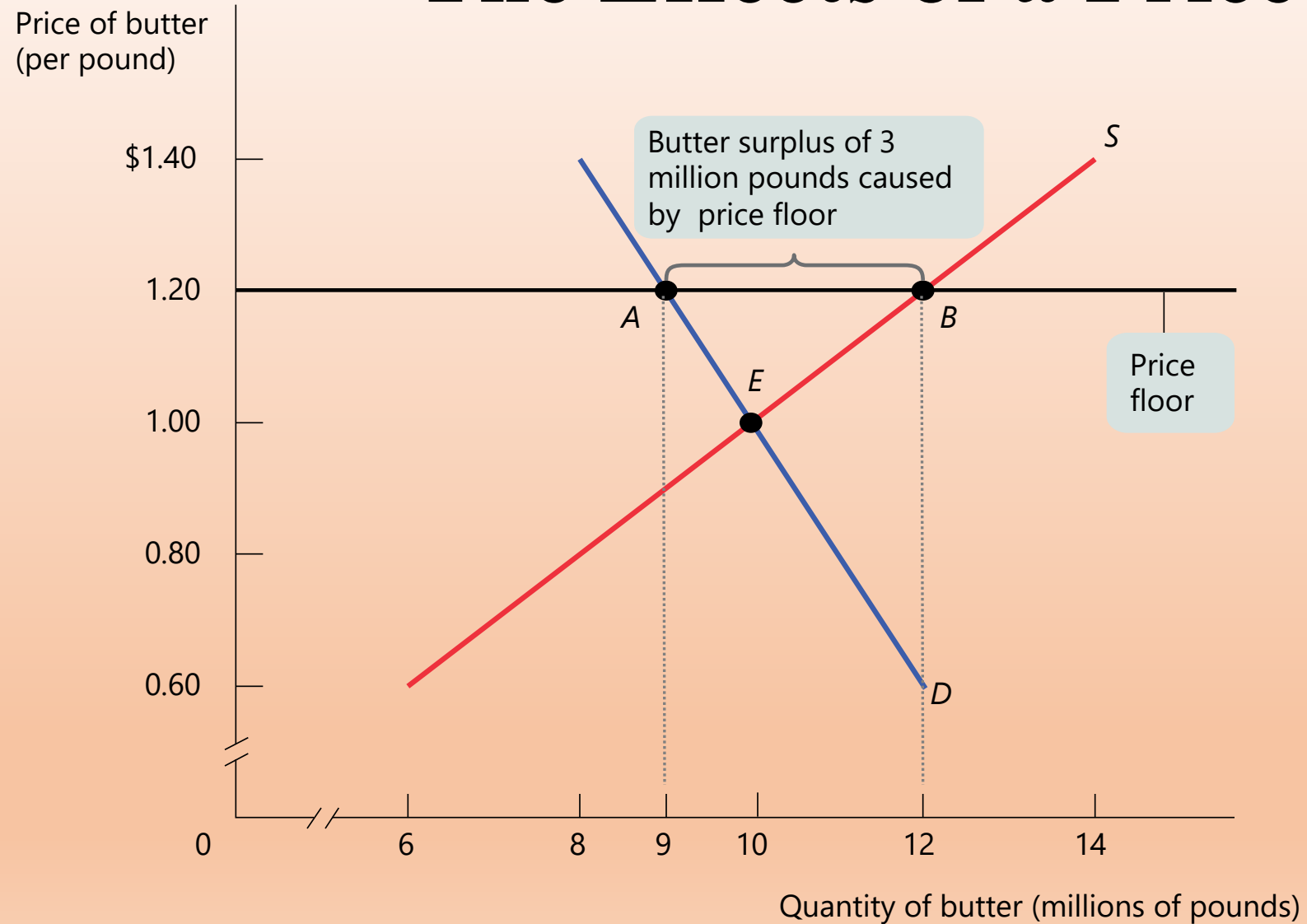
- *Absence of Government Controls*

Binding or Effective Price Floors

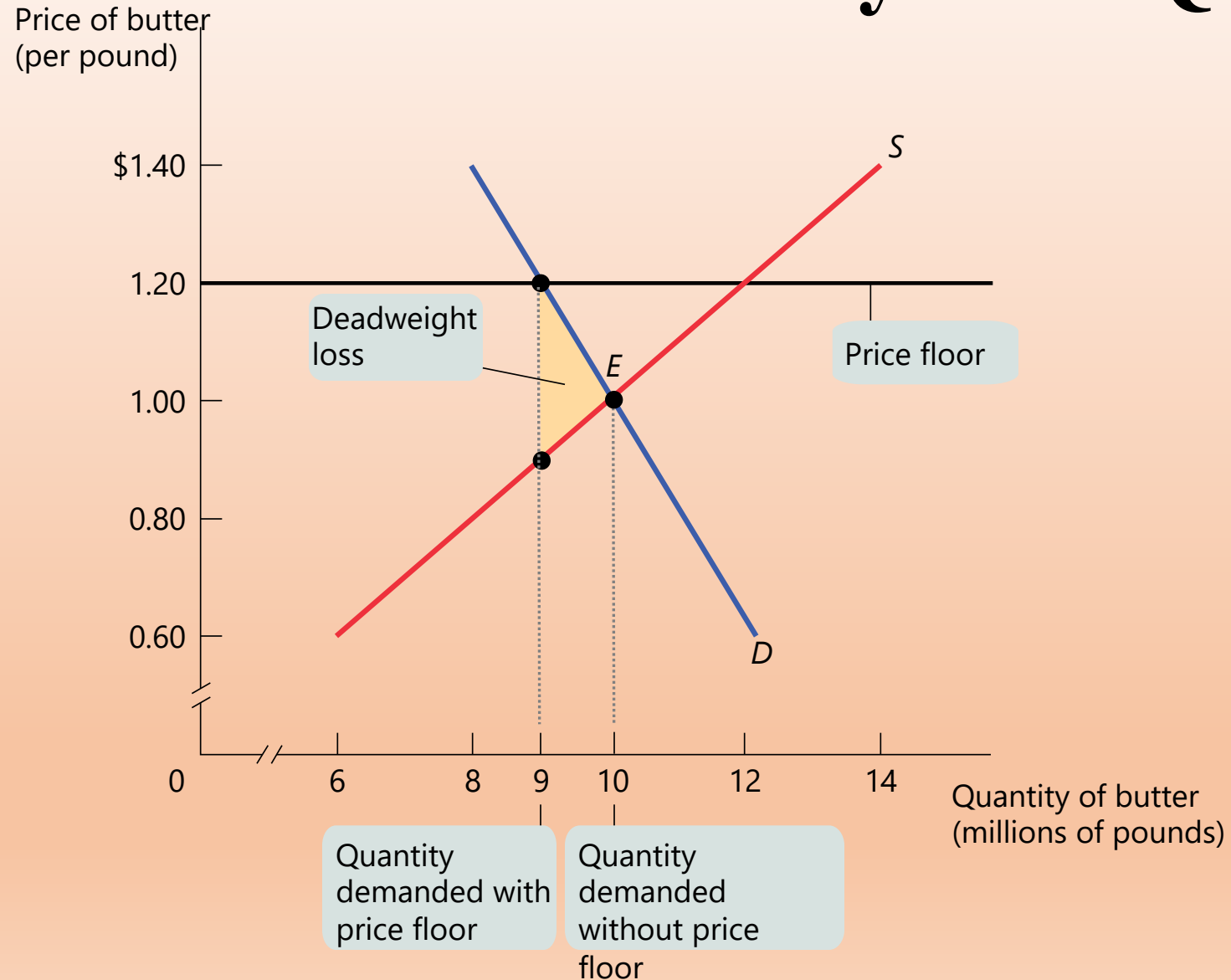


- If a price floor is set *below equilibrium*, it will have *no effect* (called *nonbinding*).
- Only a price floor that forces price *above equilibrium* will have any effect (*binding or effective*).

The Effects of a Price Floor



Inefficiently Low Quantity

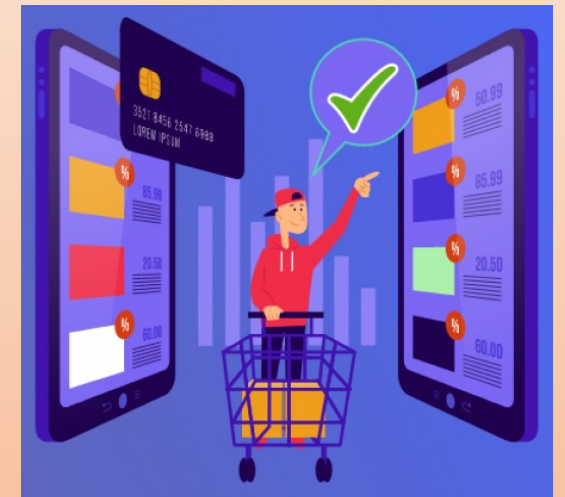


Price Floor Consequences

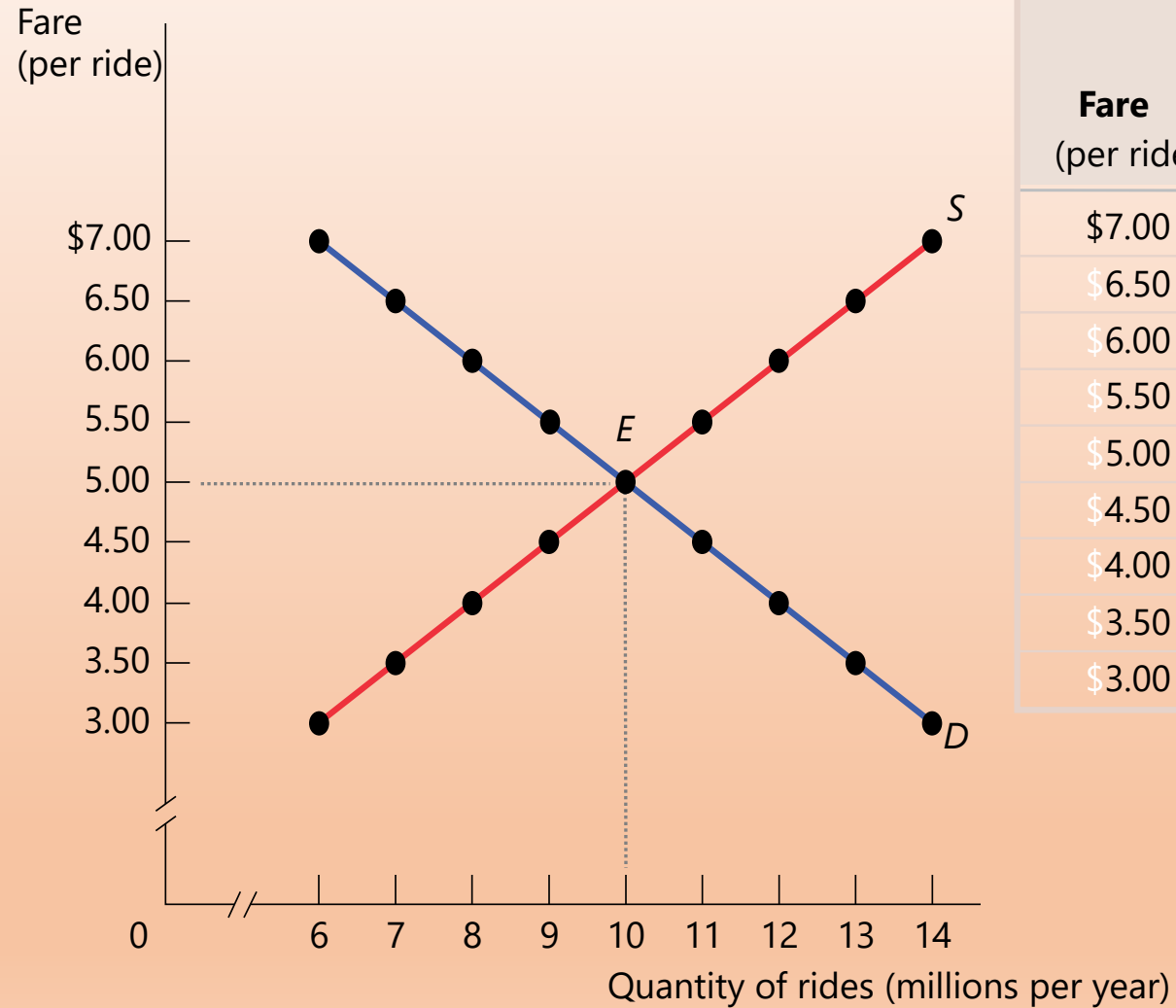
- Price floors cause *predictable side effects*:
- *Deadweight loss from inefficiently low quantity*
- *Inefficient allocation of sales among sellers*
- *Wasted resources*
- *Inefficiently high quality*
- *Temptation to break the law by selling below the legal price*

Quantities Controls

- Governments sometimes *control quantity* instead of price.
 - **Quota**: an *upper limit*, set by the government, on the *quantity of some good that can be bought or sold*; also referred to as a *quantity control*.
 - **Quota limit**: the *total amount of a good under a quota or quantity control* that can be legally transacted.
 - **License**: the *right*, conferred by the government, to *supply a good*.



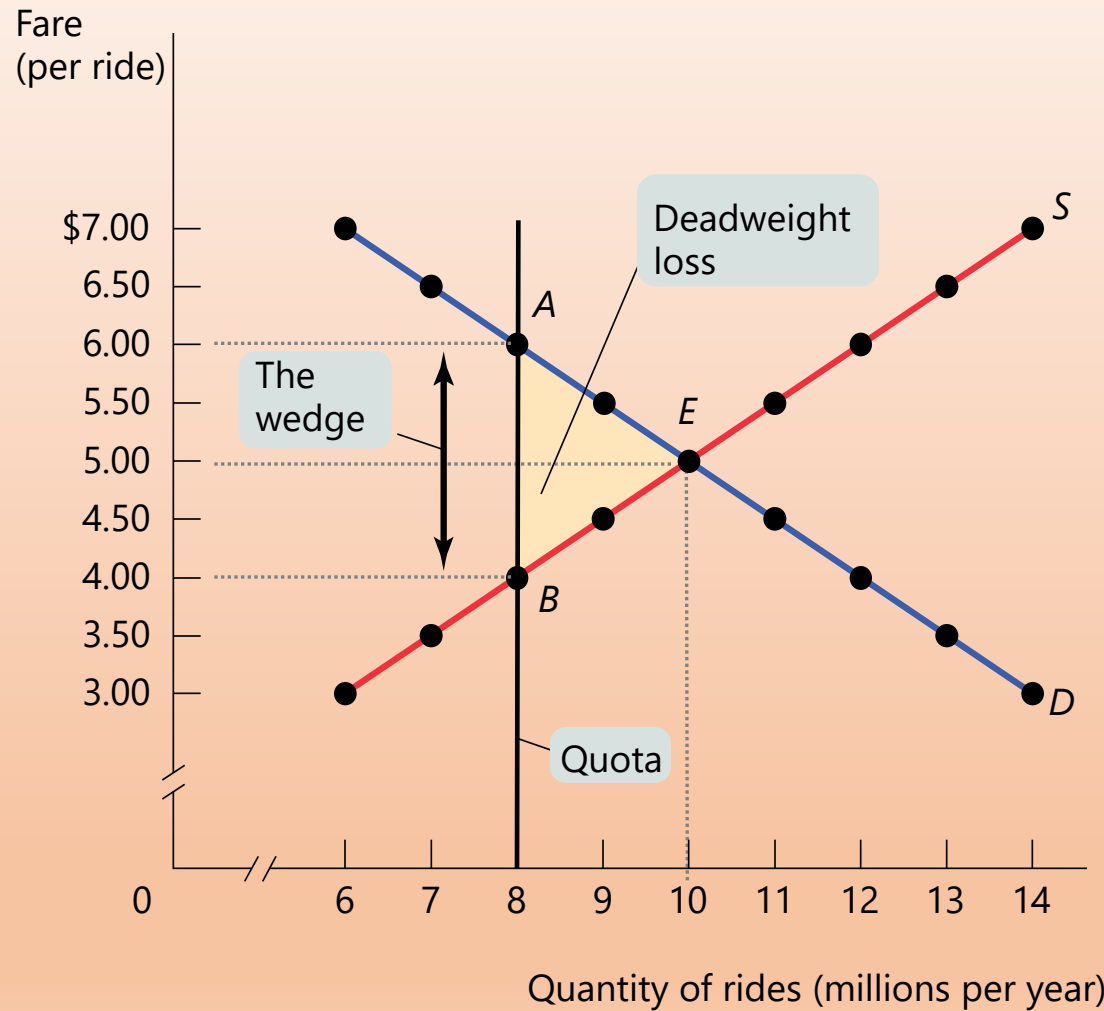
Market for Taxi Rides



Fare (per ride)	Quantity of rides (millions per year)	
	Quantity demanded	Quantity supplied
\$7.00	6	14
\$6.50	7	13
\$6.00	8	12
\$5.50	9	11
\$5.00	10	10
\$4.50	11	9
\$4.00	12	8
\$3.50	13	7
\$3.00	14	6

- *Absence of Government Controls*

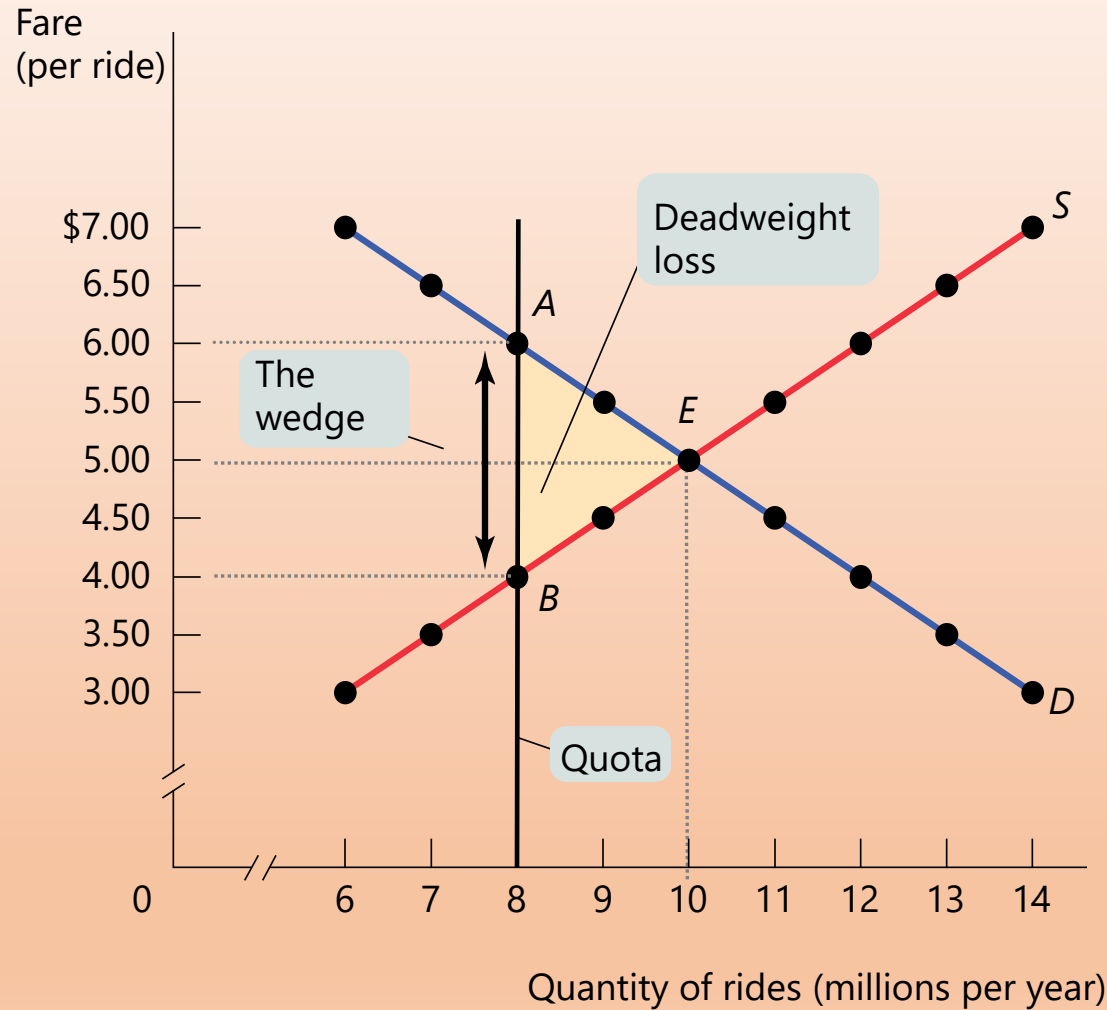
Effect of a Quota



Fare (per ride)	Quantity of rides (millions per year)	
	Quantity demanded	Quantity supplied
\$7.00	6	14
\$6.50	7	13
\$6.00	8	12
\$5.50	9	11
\$5.00	10	10
\$4.50	11	9
\$4.00	12	8
\$3.50	13	7
\$3.00	14	6

- **Demand price:** the price of a given quantity at which consumers will demand that quantity.
- **Supply price:** the price of a given quantity at which producers will supply that quantity.

Effect of a Quota



Wedge or Quota: the difference between the demand price and the supply price at the quota limit.

- The *quota equal to the market price of the license* when the license is *traded*.

Quantity Controls Consequences

- Like price controls, *quotas impose losses* on society.
 - *Deadweight loss* (some mutually beneficial transactions don't occur).
 - *Incentives for illegal activities.*



Government Controls

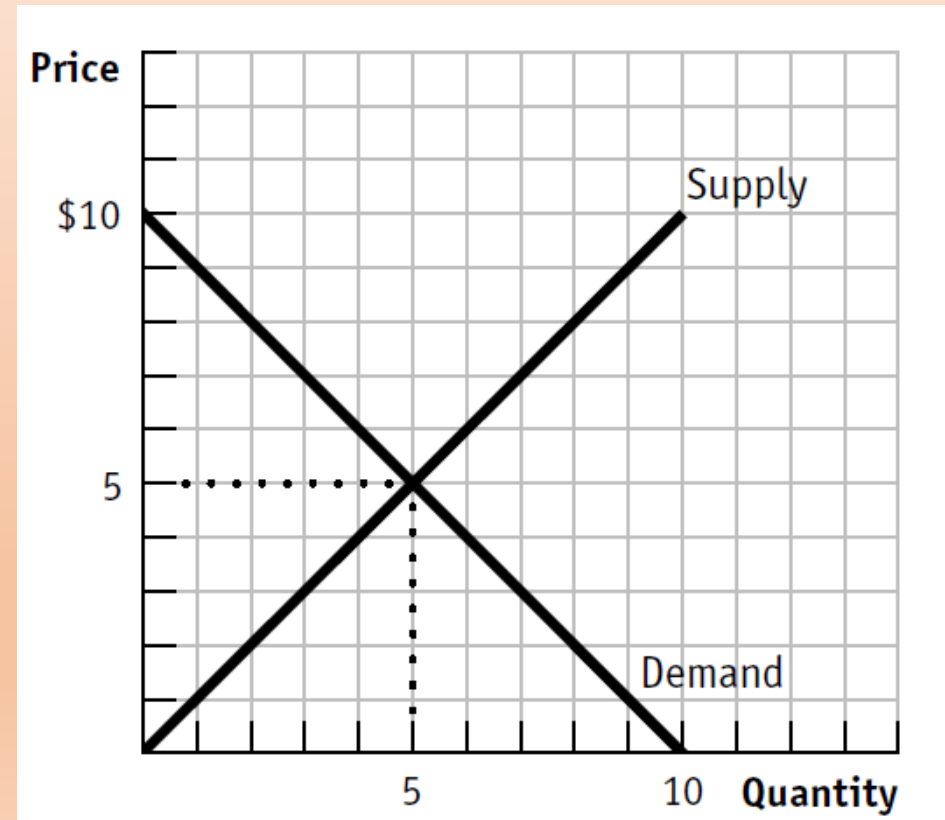
- Price ceilings, floors and quotas all *decrease the amount traded* and therefore create *deadweight loss*.
 - A *price ceiling* pushes the *price of a good down*; *fewer sellers* will want to sell.
 - A *price floor* pushes the *price of a good up*; *fewer buyers* will want to buy.
 - A *quota*, by definition, *reduces sales*.



Practice Learning

- *What is the consumer surplus if the market is allowed to be at equilibrium?*

- a) \$50
- b) \$25
- c) \$12.50
- d) \$5

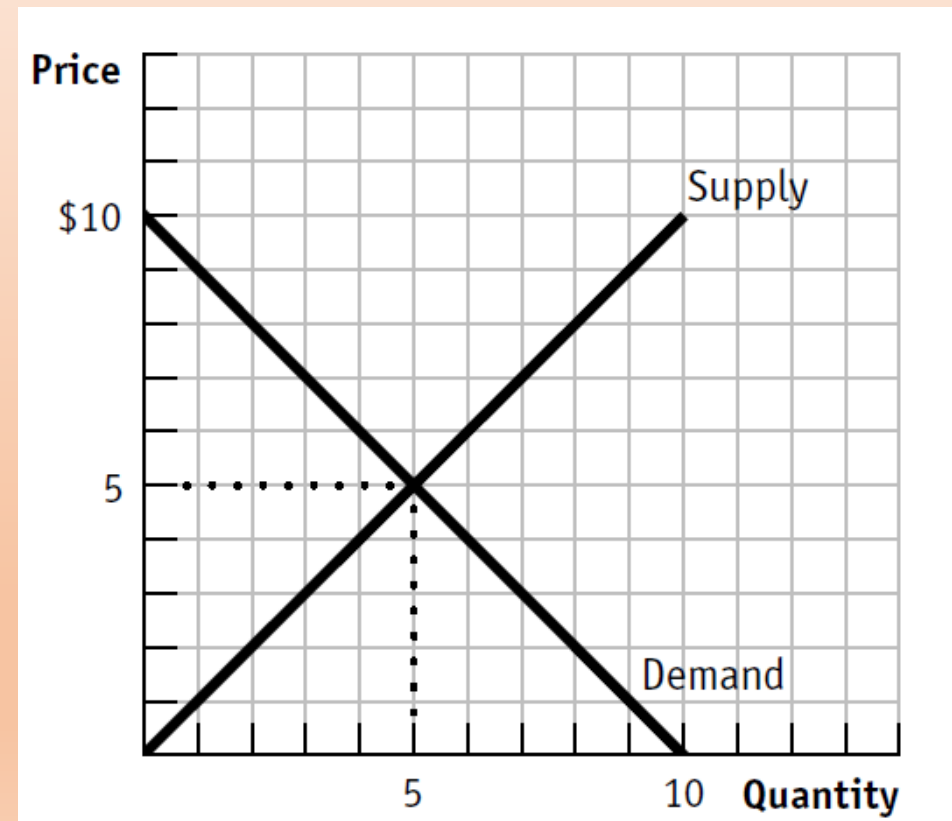


Solution: c $((10-5)*5)/2$

Practice Learning

- *What is the producer surplus if the market is allowed to be at equilibrium?*

- a) \$50
- b) \$25
- c) \$12.50
- d) \$5

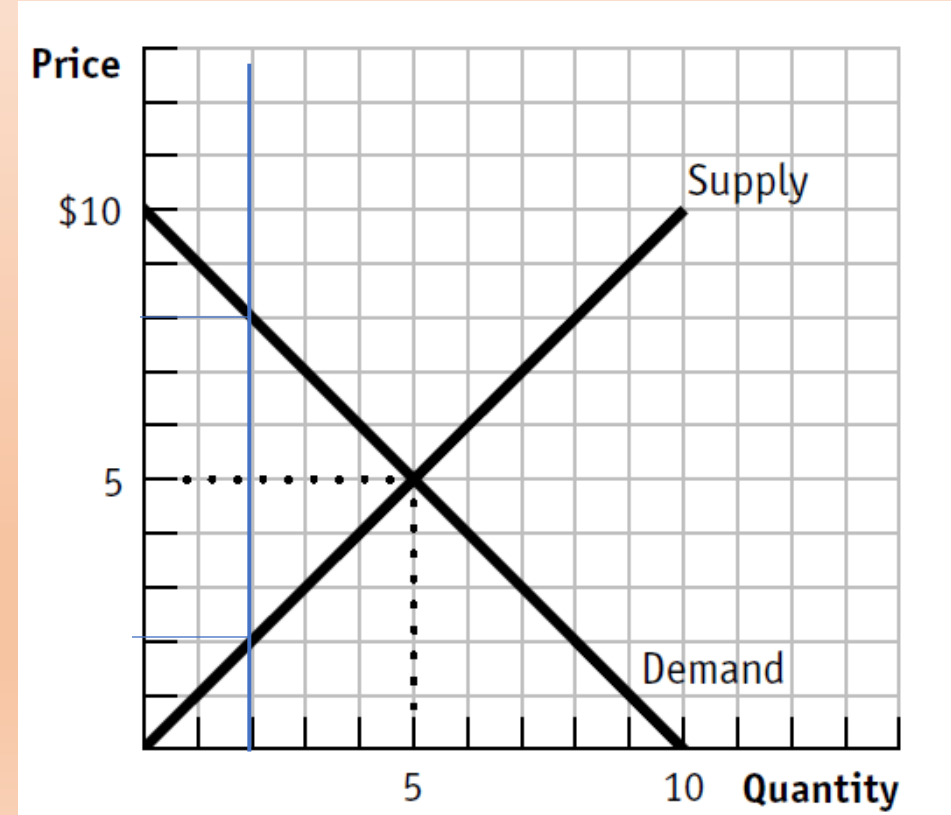


Solution: c $(5 \cdot 5)/2$

Practice Learning

- *What is the value of the quota rent if the quota is set to 2 units?*

- a) \$8
- b) \$6
- c) \$4
- d) \$3



Solution: b (8-2)