

CHAPTER

Consumers, Producers, and the Efficiency of Markets

PRINCIPLES OF
Economics

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Premium PowerPoint Slides
by Vance Ginn & Ron Cronovich



**In this chapter,
look for the answers to these questions:**

- What is consumer surplus? How is it related to the demand curve?
- What is producer surplus? How is it related to the supply curve?
- Do markets produce a desirable allocation of resources? Or could the market outcome be improved upon?

Welfare Economics

- Recall, the **allocation of resources** refers to:
 - how much of each good is produced
 - which producers produce it
 - which consumers consume it
- Welfare economics studies how the allocation of resources affects economic well-being.
- First, we look at the well-being of consumers.

Willingness to Pay (WTP)

A buyer's **willingness to pay** for a good is the _____ amount the buyer will pay for that good.

WTP measures how much the buyer

<i>name</i>	<i>WTP</i>
Anthony	\$250
Chad	175
Flea	300
John	125

Example: Four guys from the members of the Red Hot Chili Peppers WTP for an iPod.

WTP and the Demand Curve

Q: If price of an iPod is \$200, who will buy an iPod, and what is quantity demanded?

A: Anthony & Flea will buy an iPod, Chad & John will not.

Hence, $Q^d = 2$
when $P = \$200$.

<i>name</i>	<i>WTP</i>
Anthony	\$250
Chad	175
Flea	300
John	125

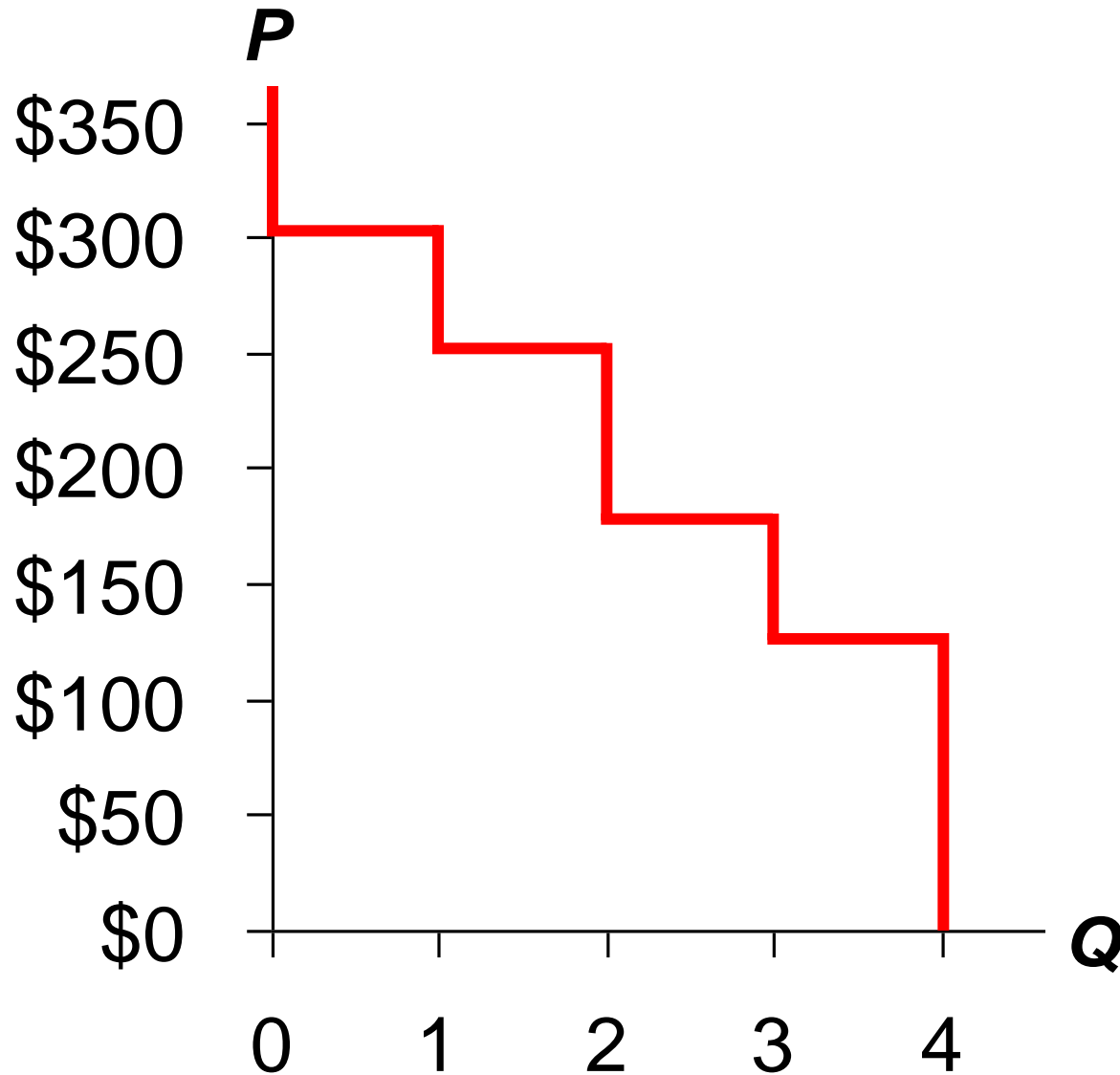
WTP and the Demand Curve

Derive the demand schedule:

<i>name</i>	<i>WTP</i>
Anthony	\$250
Chad	175
Flea	300
John	125

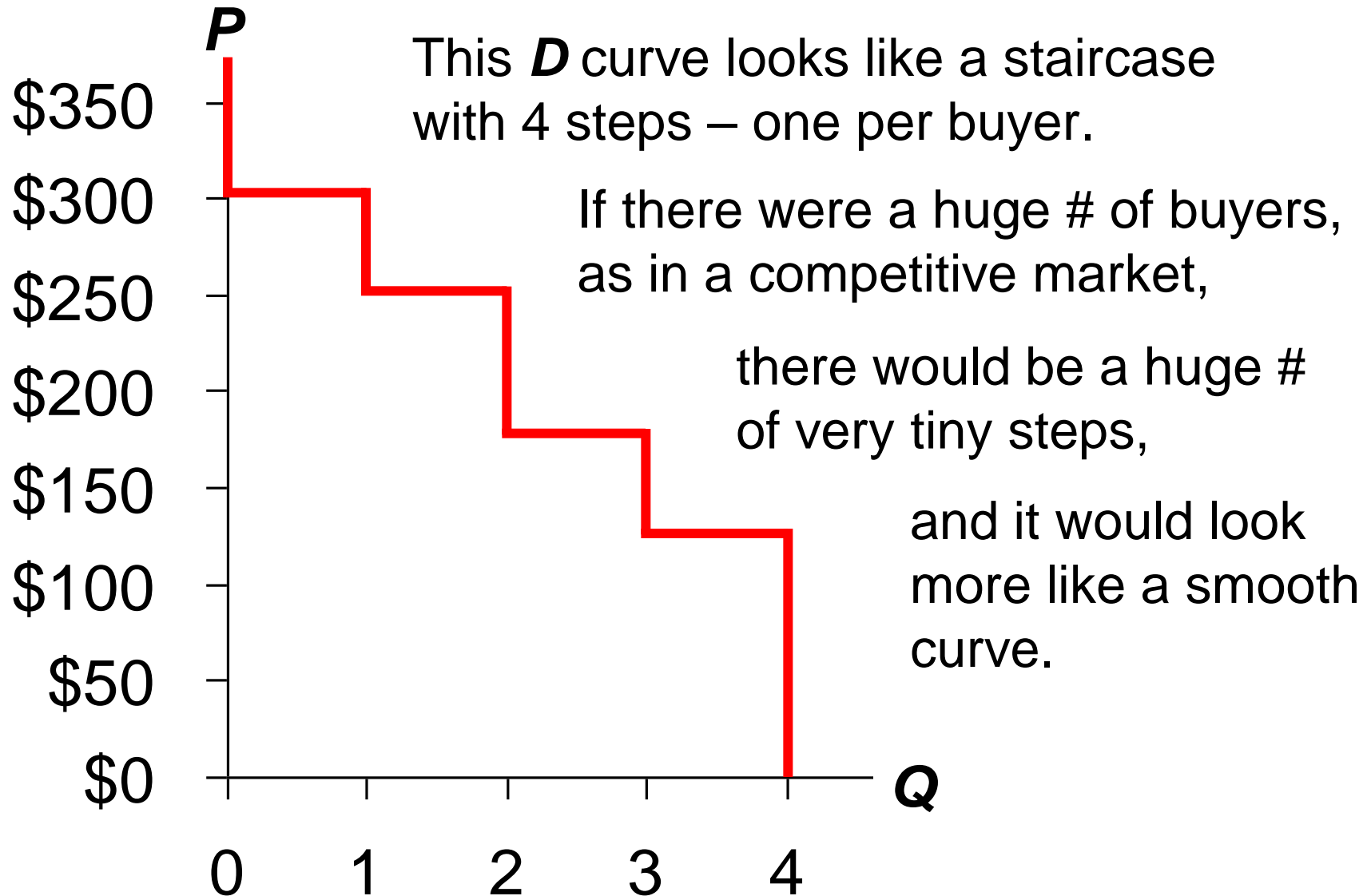
<i>P</i> (price of iPod)	who buys	<i>Q^d</i>
\$301 & up	nobody	0
251 – 300	Flea	1
176 – 250	Anthony, Flea	2
126 – 175	Chad, Anthony, Flea	3
0 – 125	John, Chad, Anthony, Flea	4

WTP and the Demand Curve

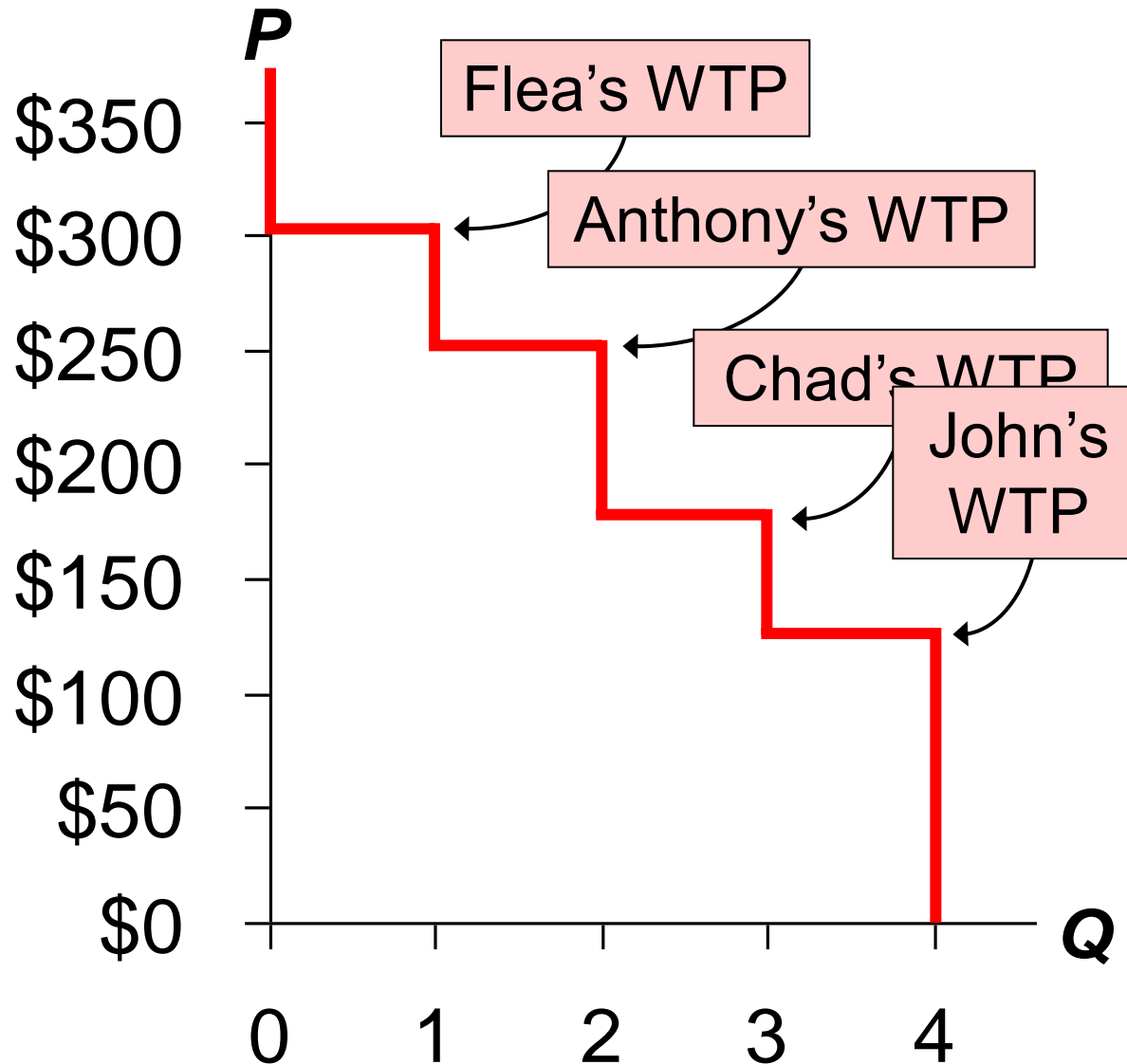


P		Q^d
\$301 & up		0
251 – 300		1
176 – 250		2
126 – 175		3
0 – 125		4

About the Staircase Shape...



WTP and the Demand Curve



At any Q , the height of the D curve is the WTP of the _____, the buyer who would leave the market if P were any higher.

Consumer Surplus (CS)

Consumer surplus is the amount a buyer is willing to pay minus the amount the buyer actually pays:

<i>name</i>	<i>WTP</i>
Anthony	\$250
Chad	175
Flea	300
John	125

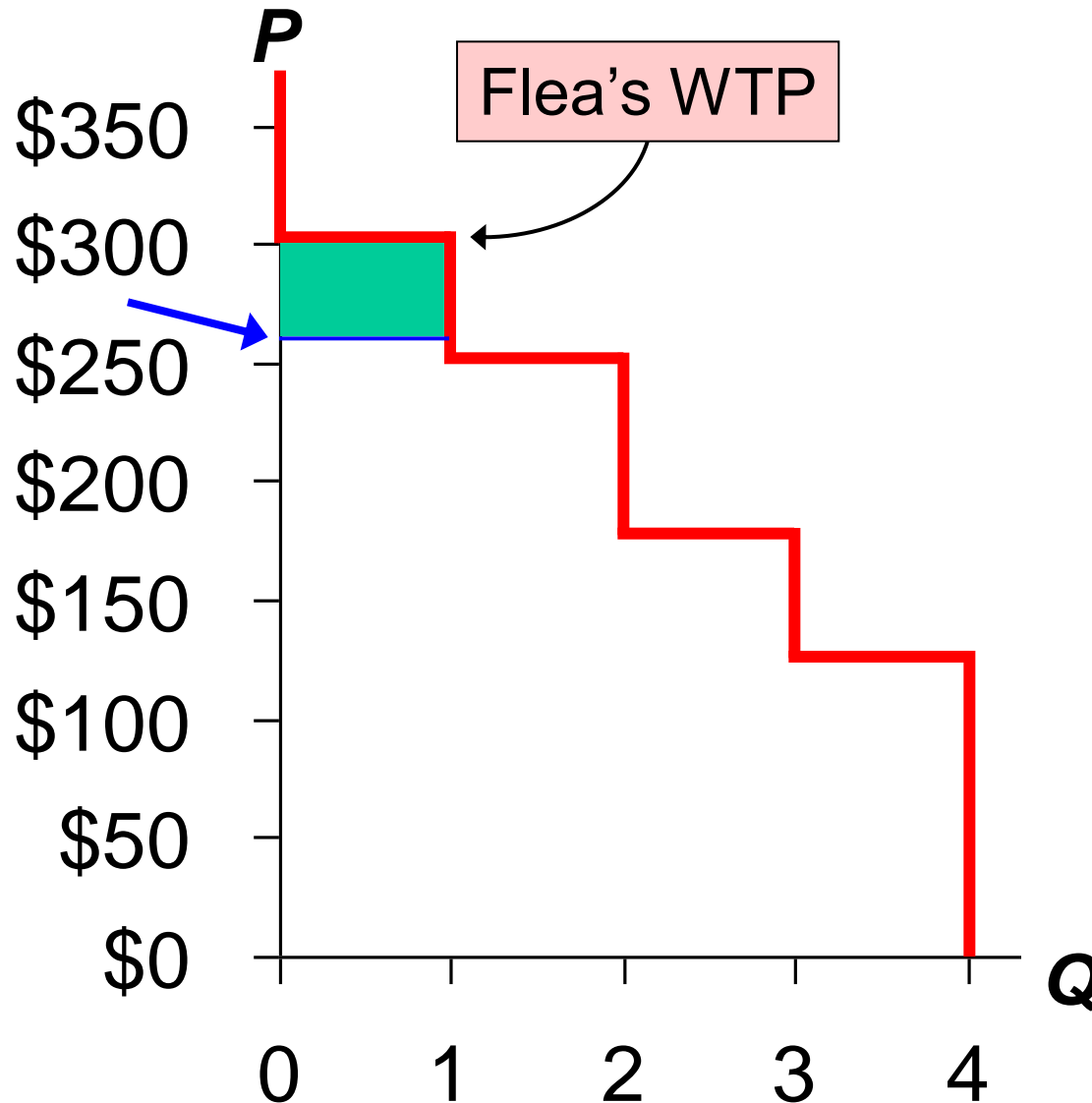
Suppose $P = \$260$.

Flea's CS = $\$300 - 260 = \40 .

The others get no CS because they do not buy an iPod at this price.

_____.

CS and the Demand Curve

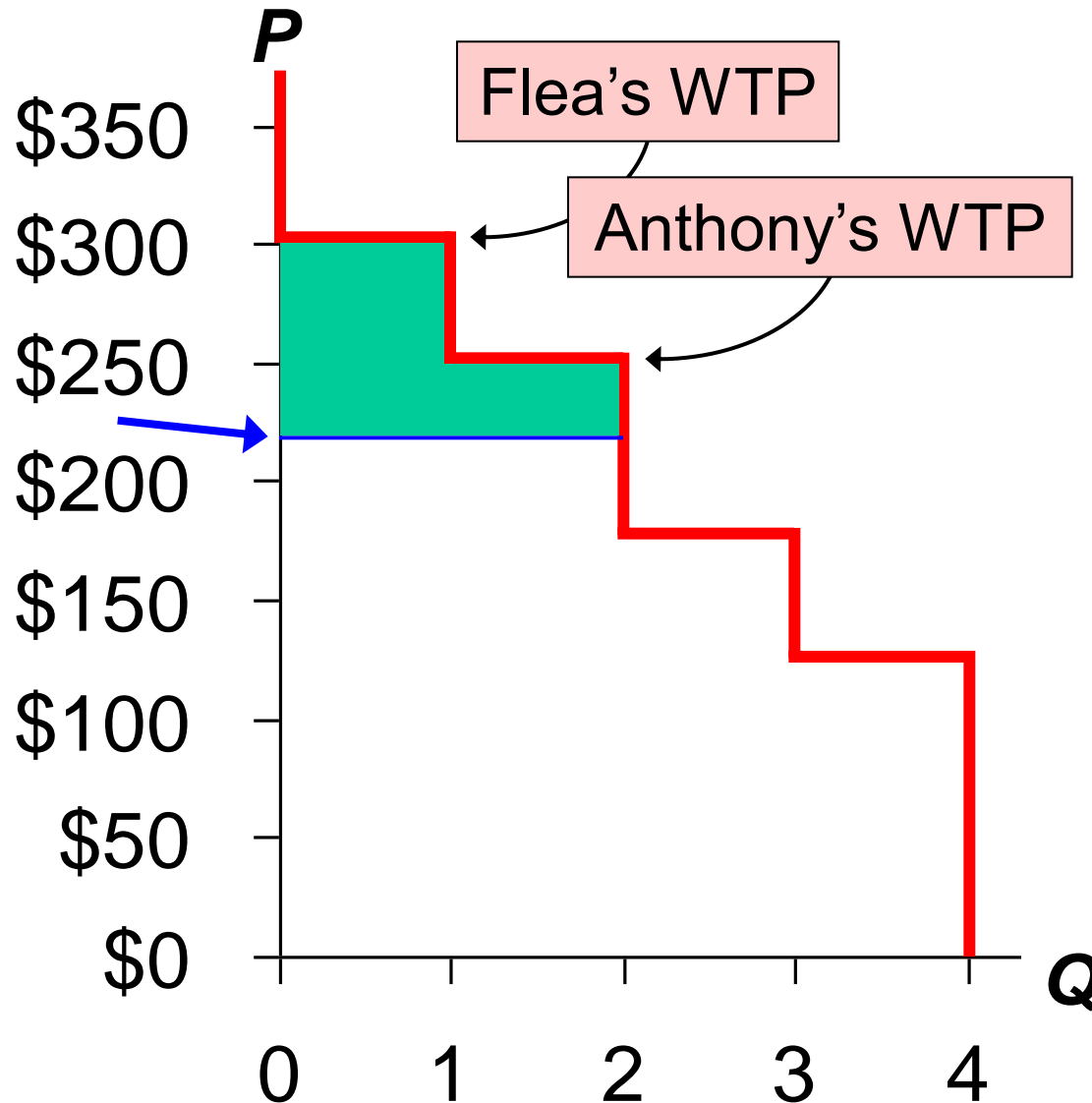


$P = \$260$

Flea's CS =
 $\$300 - 260 = \underline{\hspace{2cm}}$

Total CS = $\underline{\hspace{2cm}}$

CS and the Demand Curve



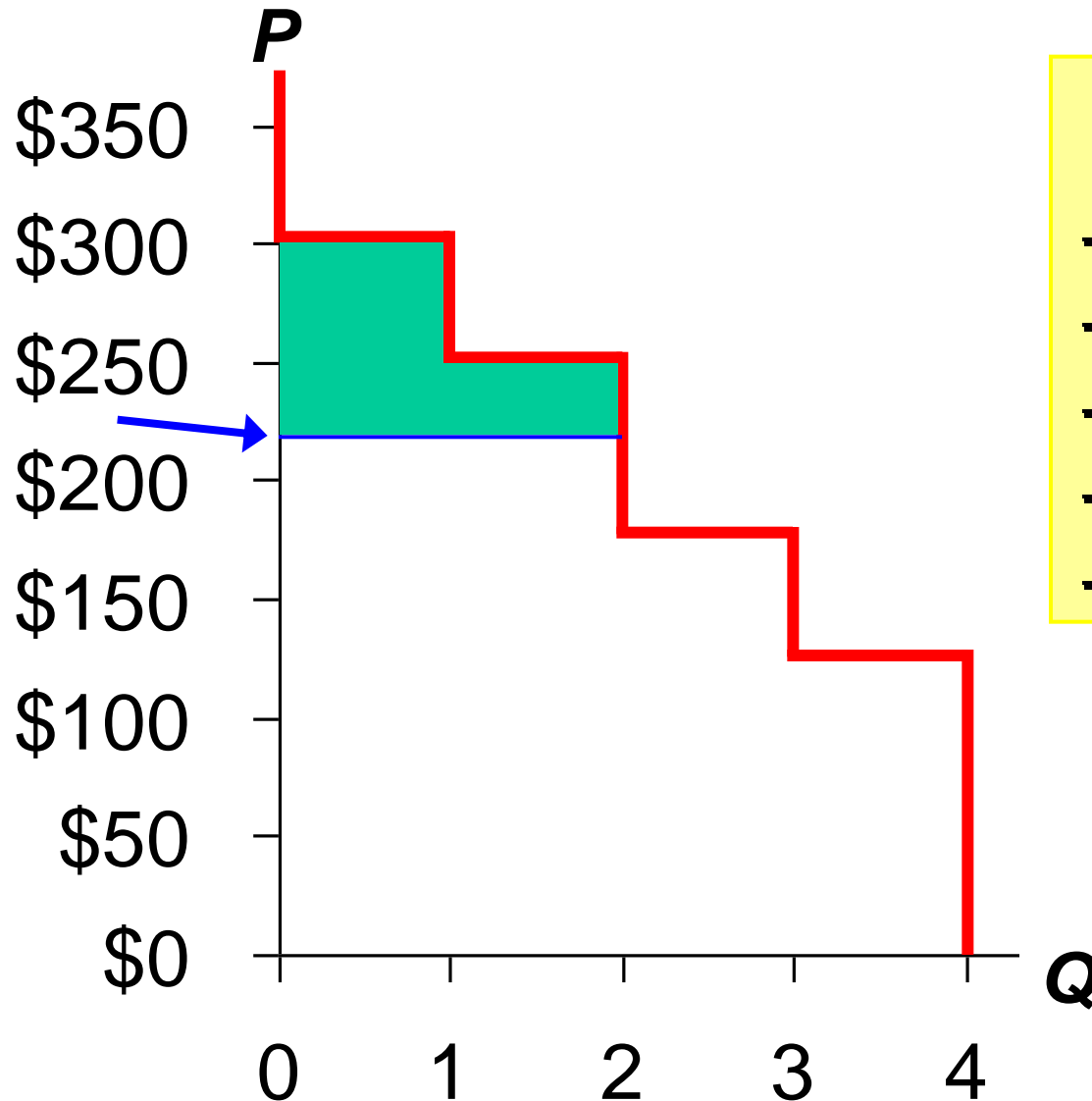
Instead, suppose
 $P = \$220$

Flea's CS =
 $\$300 - \$220 = \underline{\hspace{2cm}}$

Anthony's CS =
 $\$250 - \$220 = \underline{\hspace{2cm}}$

Total CS = $\underline{\hspace{2cm}}$

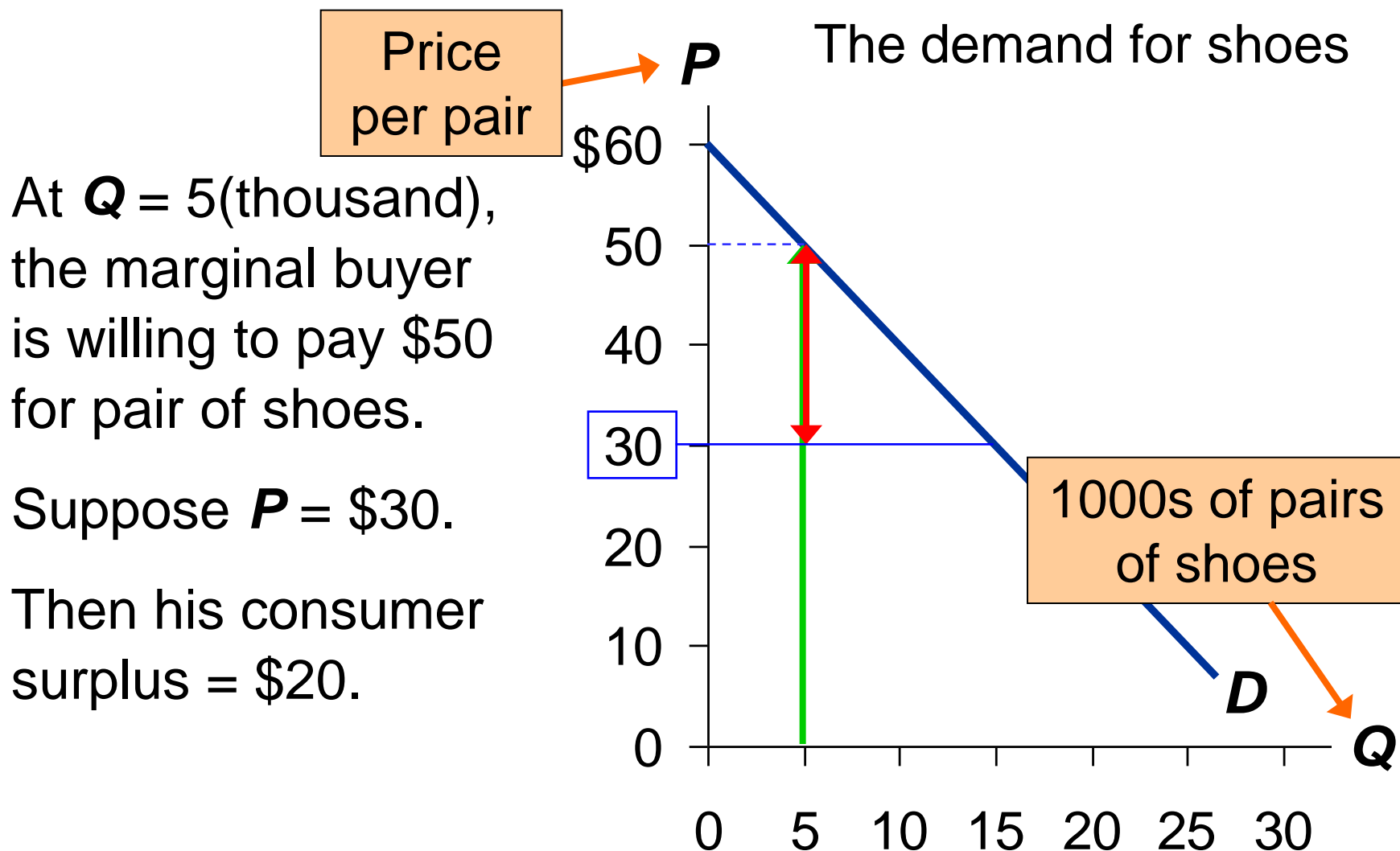
CS and the Demand Curve



The lesson:

*above the price,
from 0 to Q .*

CS with Lots of Buyers & a Smooth D Curve



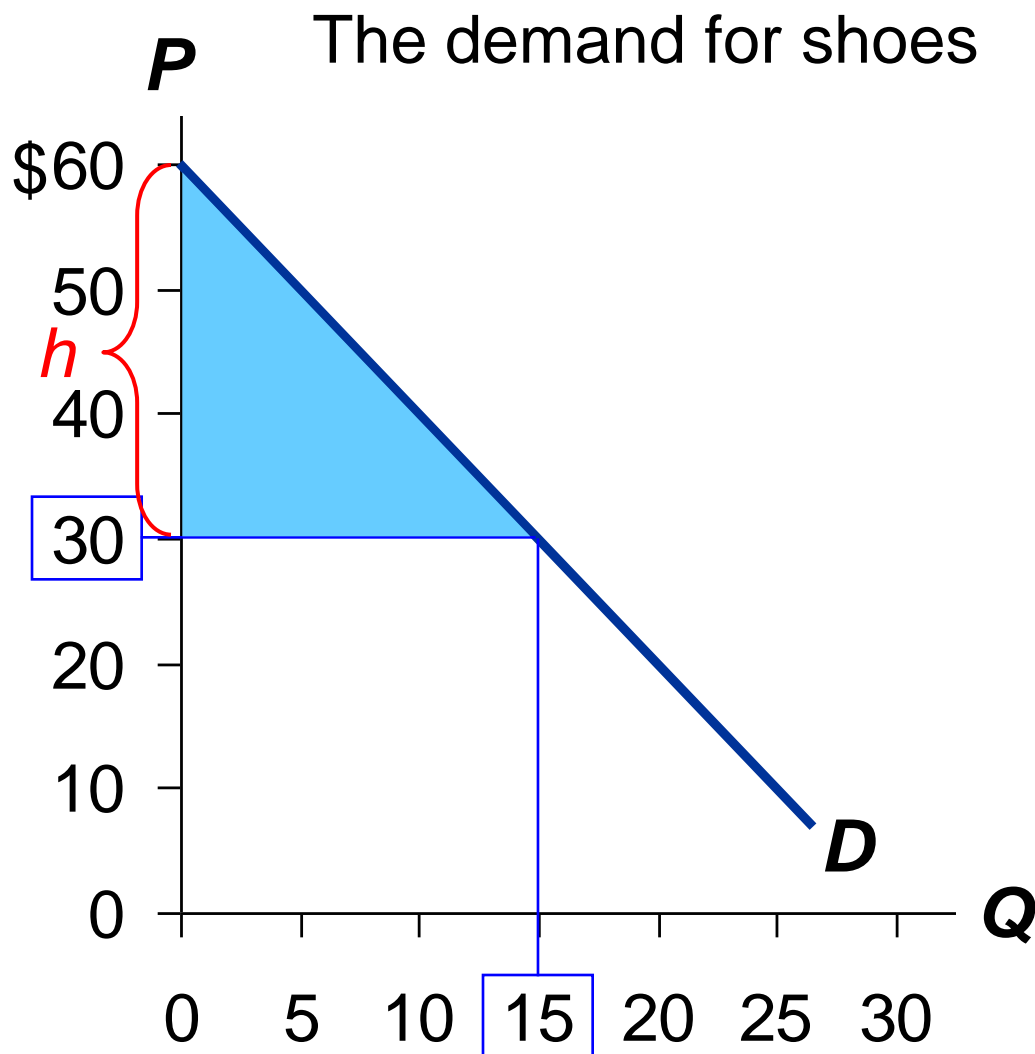
CS with Lots of Buyers & a Smooth D Curve

CS is the area b/w
P and the **D** curve,
from 0 to **Q**.

Recall: area of
a triangle equals

Height =
 $\$60 - 30 = \underline{\$30}$.

So,
 $CS = \frac{1}{2} \times 15 \times \30
 $= \underline{\hspace{2cm}}$.



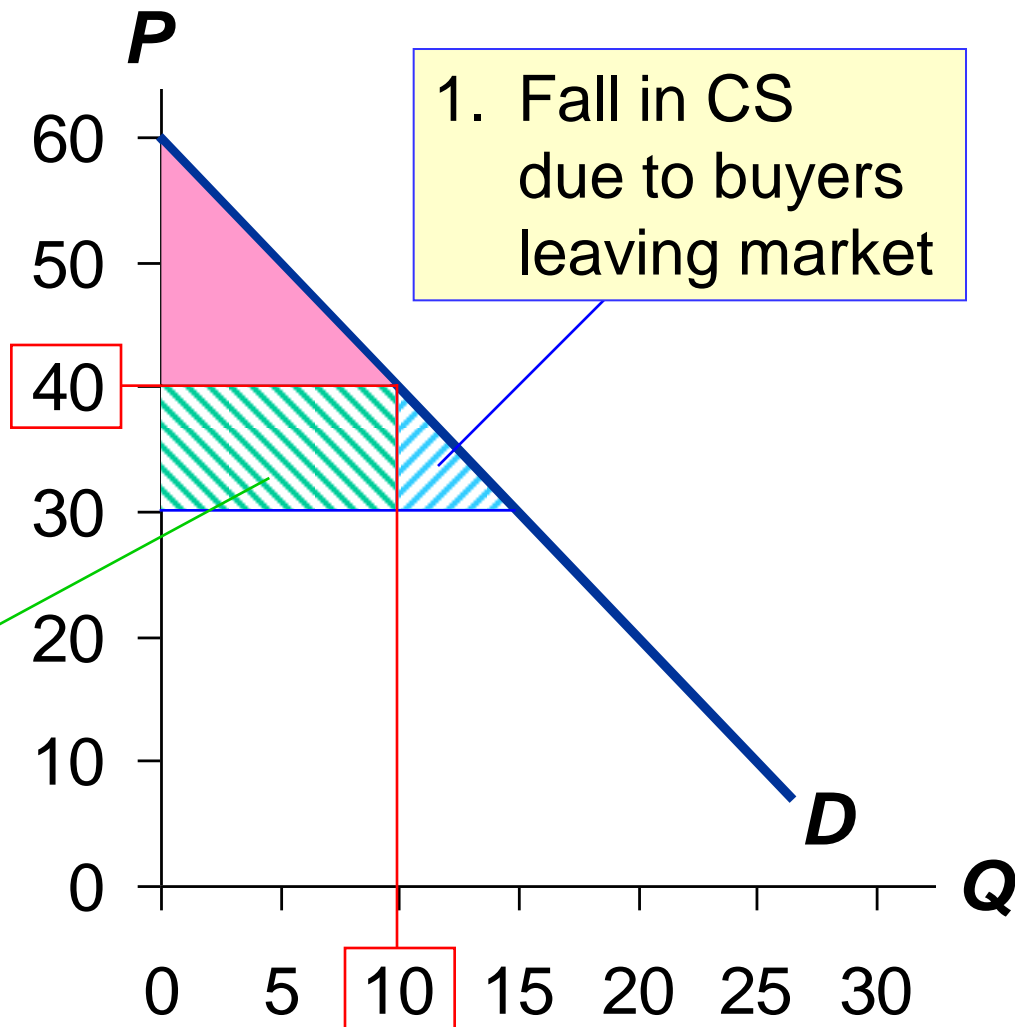
How a Higher Price Reduces CS

If P rises to \$40,

$$CS = \frac{1}{2} \times 10 \times \$20 \\ = \underline{\hspace{2cm}}.$$

Two reasons for the fall in CS.

2. Fall in CS due to remaining buyers paying higher P



ACTIVE LEARNING 1

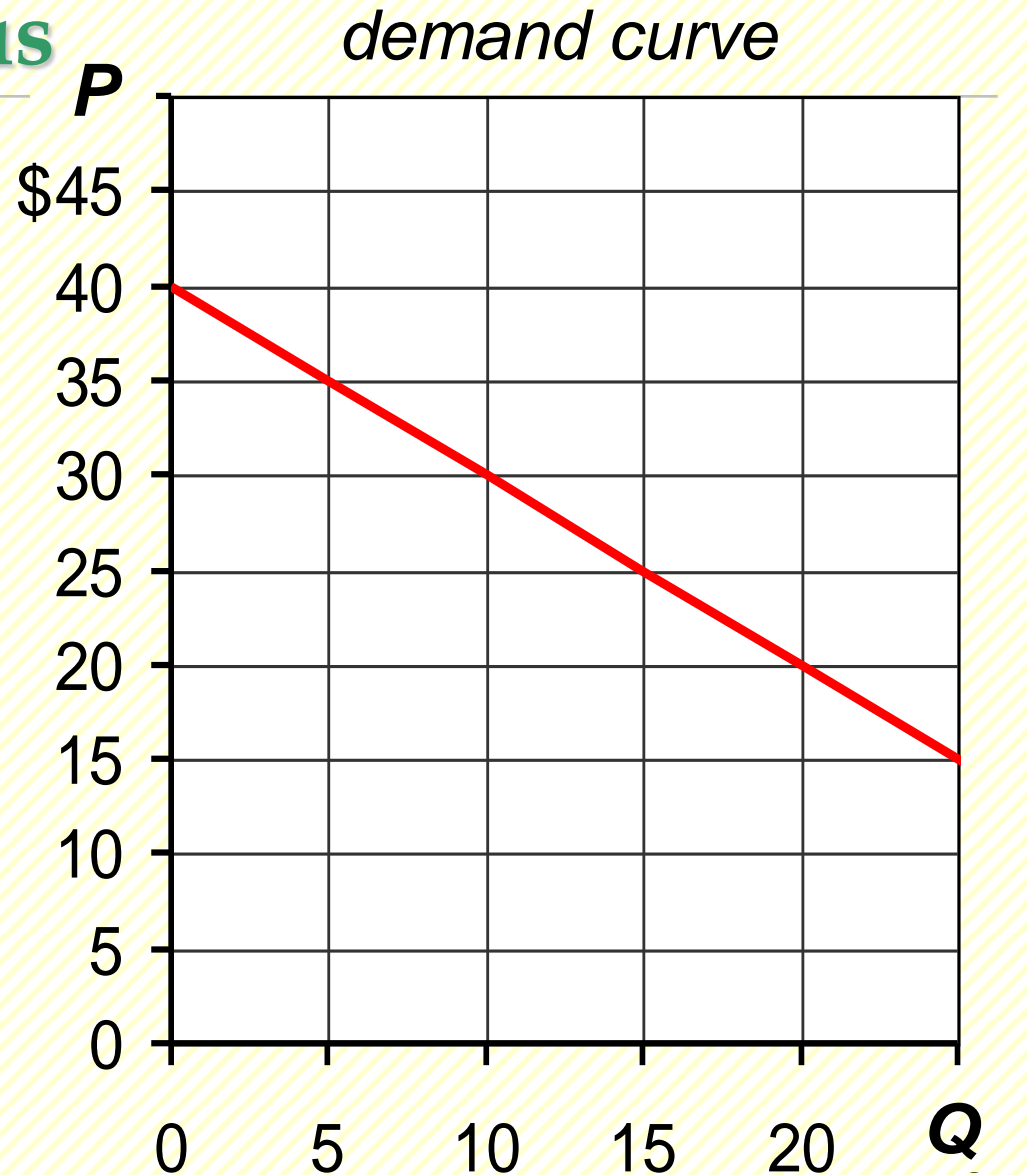
Consumer surplus

A. Find marginal buyer's WTP at $Q = 10$.

B. Find CS for $P = \$30$.

Suppose P falls to \$20.

C. How much will the CS be?



ACTIVE LEARNING 1

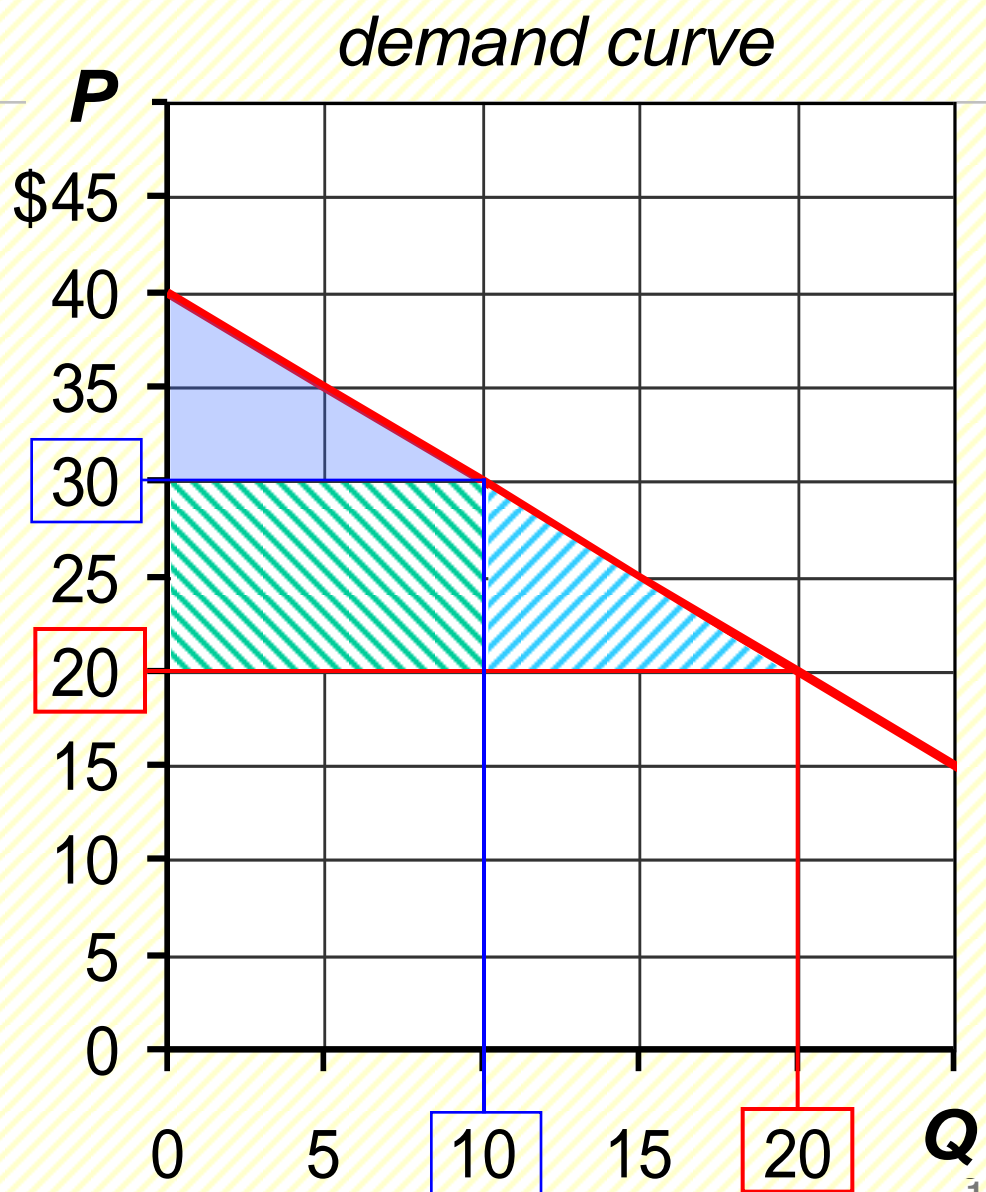
Answers

A. At $Q = 10$, marginal buyer's WTP is _____.

B. $CS = \frac{1}{2} \times 10 \times \10
= _____

P falls to \$20.

C. CS at \$20
= $\frac{1}{2} \times 20 \times \$20 =$



Cost and the Supply Curve

- **Cost** is the value of everything a seller must give up to _____ (i.e., opportunity cost).
- Includes cost of all resources used to produce good, including value of the seller's time.
- Example: Costs of 3 sellers in the lawn-cutting business.

<i>name</i>	<i>cost</i>
Jack	\$10
Janet	20
Chrissy	35

A seller will produce and sell the good/service only if the price exceeds his or her cost.

Hence, cost is a measure of

_____.

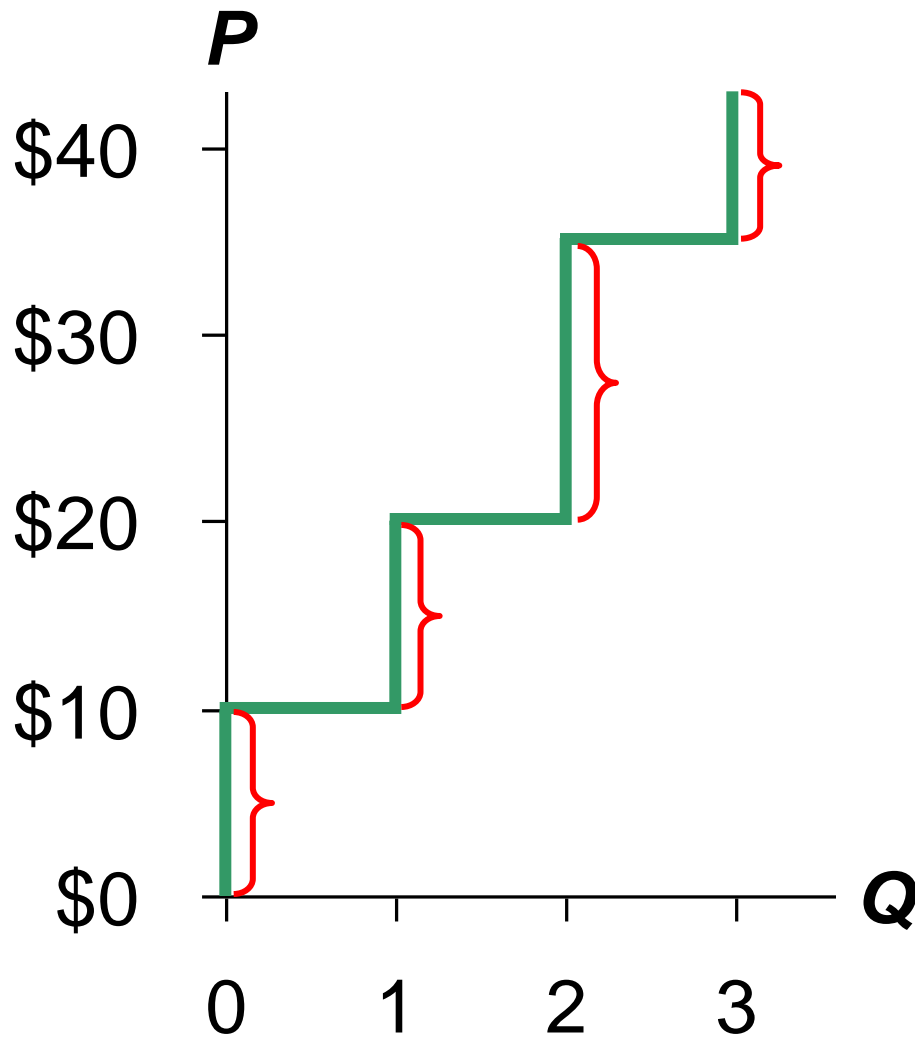
Cost and the Supply Curve

Derive the supply schedule from the cost data:

<i>name</i>	<i>cost</i>
Jack	\$10
Janet	20
Chrissy	35

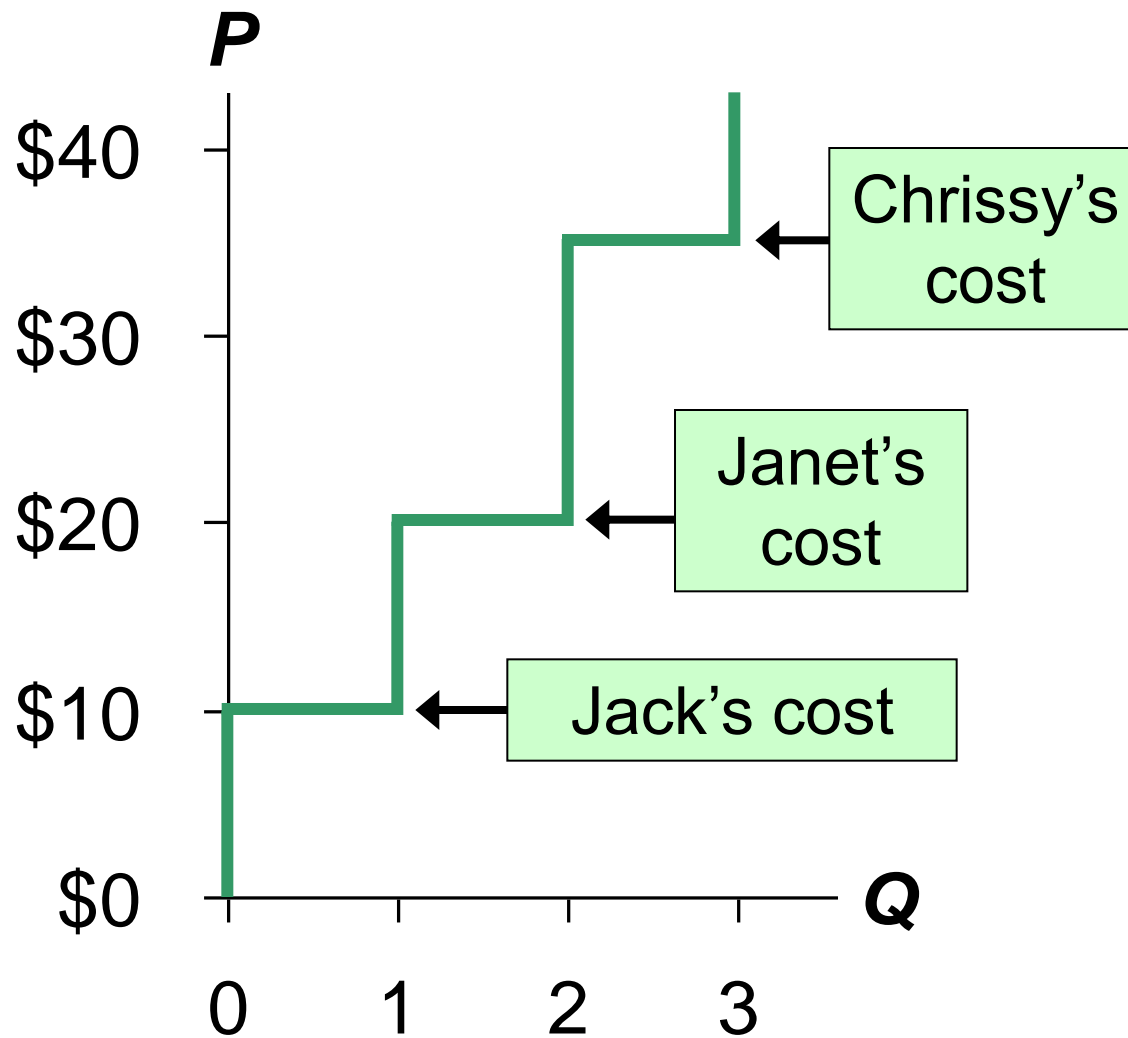
<i>P</i>	<i>Q^s</i>
\$0 – 9	0
10 – 19	1
20 – 34	2
35 & up	3

Cost and the Supply Curve



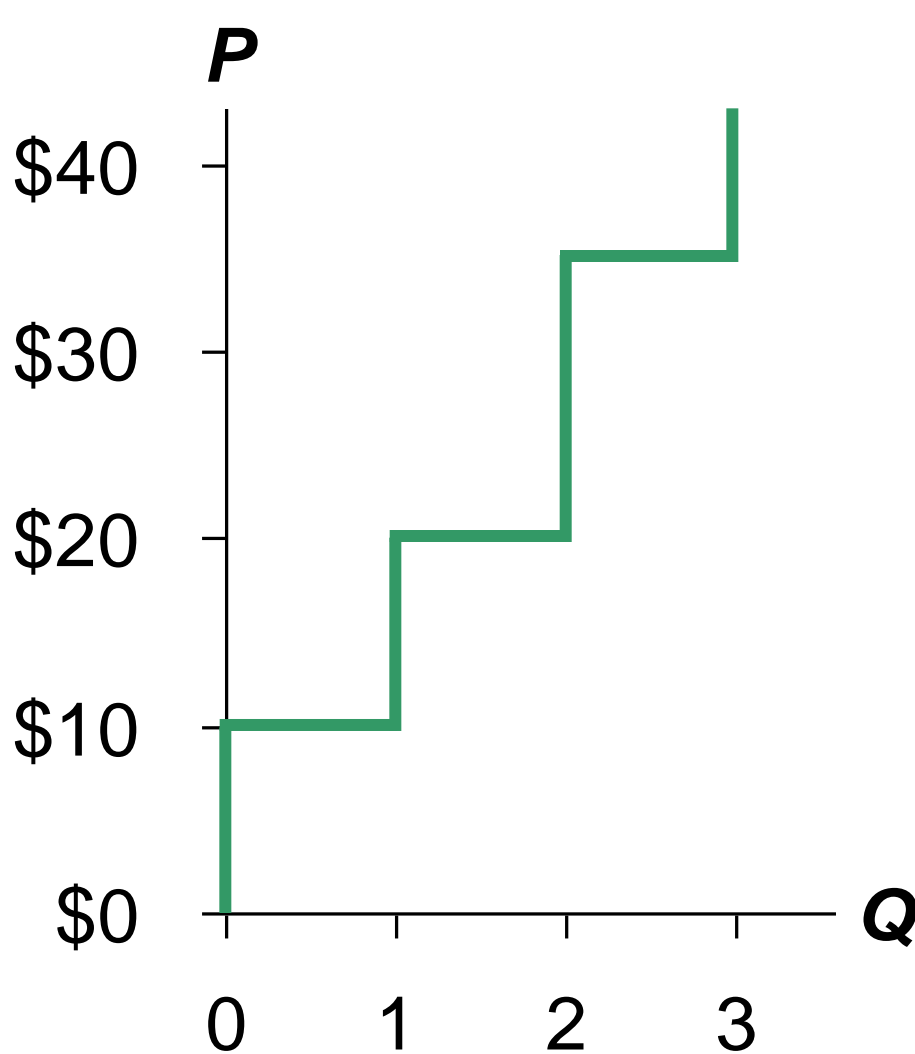
	P	Q^s
→	\$0 – 9	0
→	10 – 19	1
→	20 – 34	2
→	35 & up	3

Cost and the Supply Curve



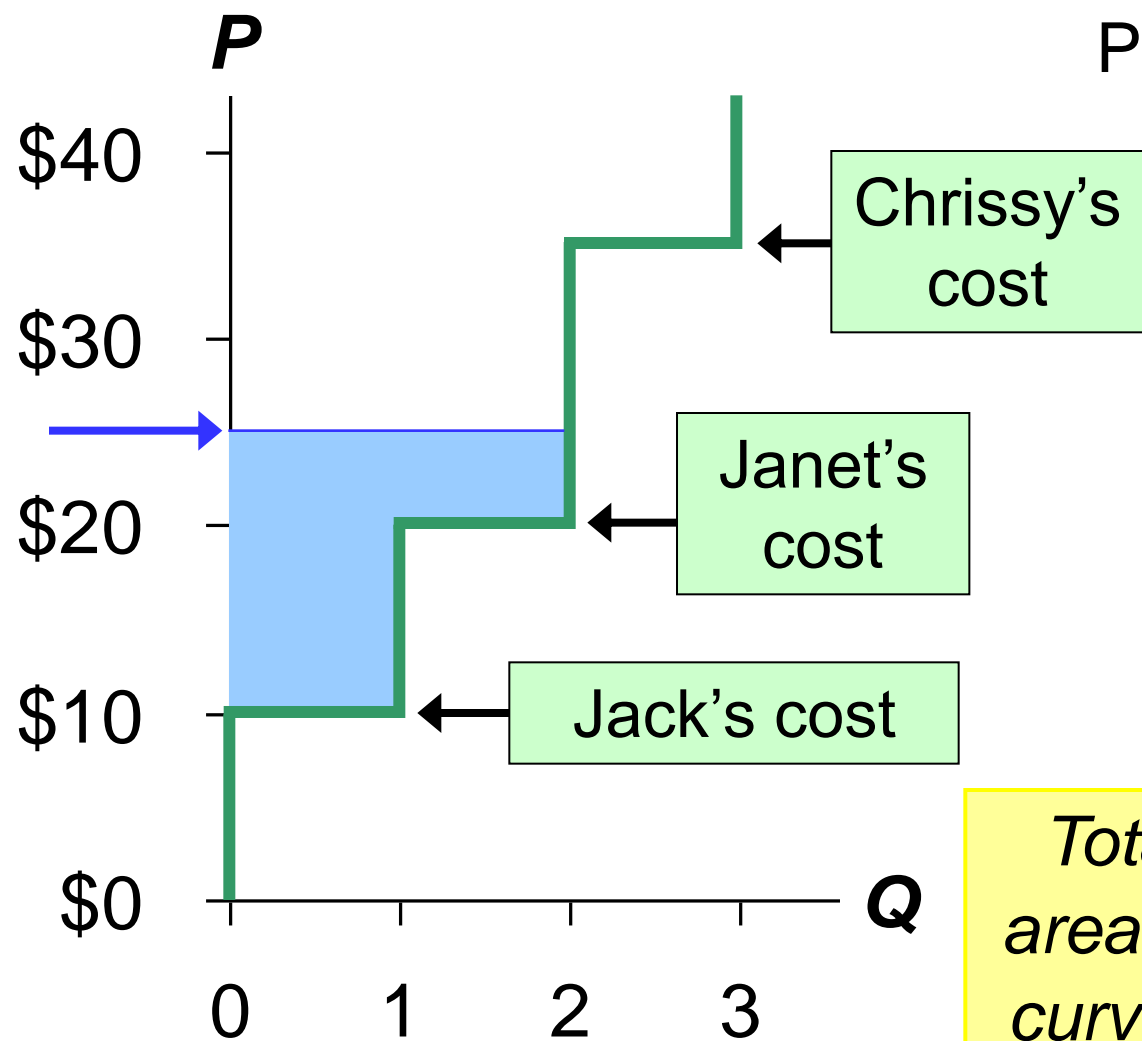
At each Q , the height of the S curve is the cost of the *marginal seller*, the seller who would leave the market if the price were any lower.

Producer Surplus



Producer surplus (PS):
the amount a seller
is paid for a good
minus the seller's cost

Producer Surplus and the S Curve



$$PS = P - \text{cost}$$

Suppose $P = \$25$.

Jack's PS = \$15

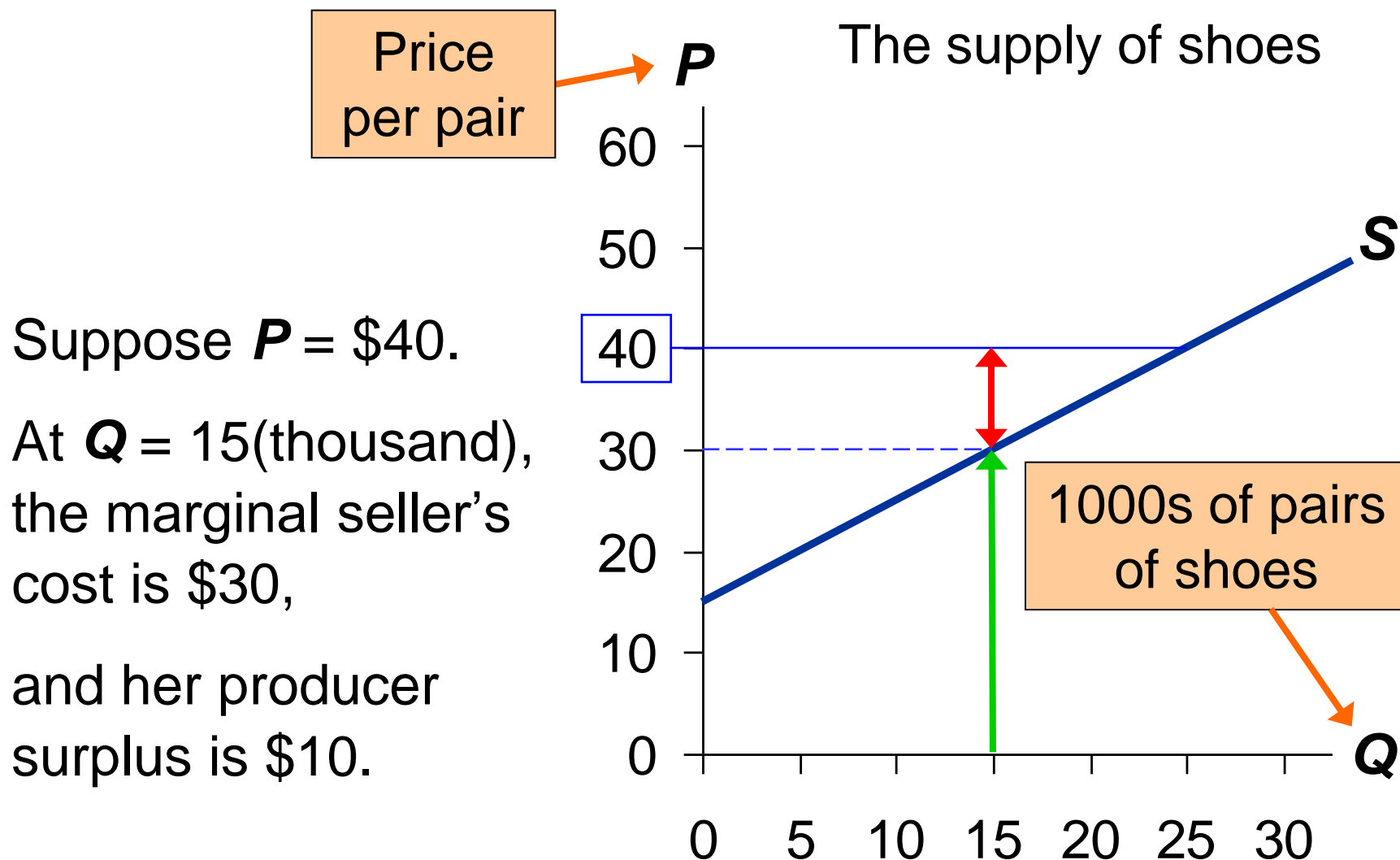
Janet's PS = \$5

Chrissy's PS = \$0

Total PS = \$20

Total PS equals the area above the supply curve under the price, from 0 to Q .

PS with Lots of Sellers & a Smooth S Curve



PS with Lots of Sellers & a Smooth S Curve

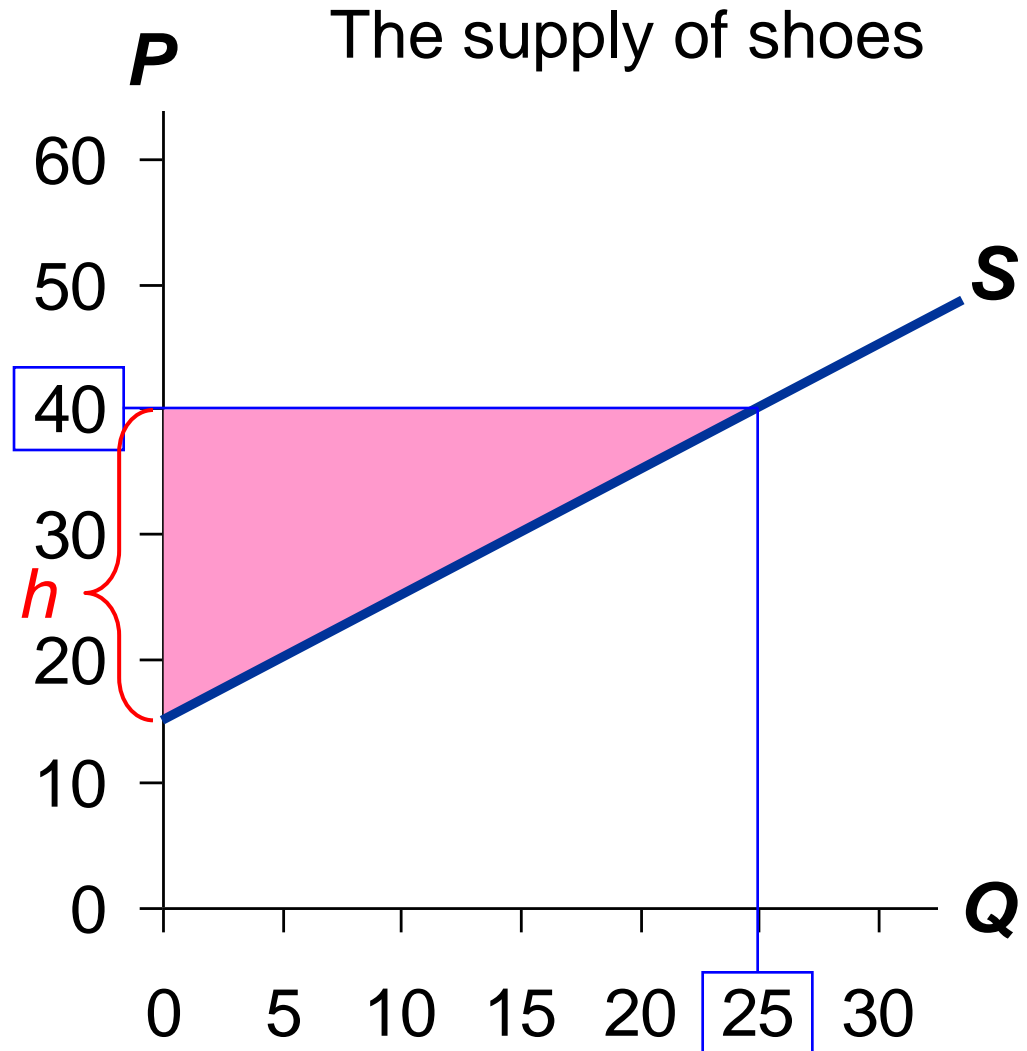
PS is the area b/w
P and the **S** curve,
from 0 to **Q**.

The height of this
triangle is

_____.

So,

$$\begin{aligned} \text{PS} &= \frac{1}{2} \times b \times h \\ &= \frac{1}{2} \times 25 \times \$25 \\ &= \$312.50 \end{aligned}$$



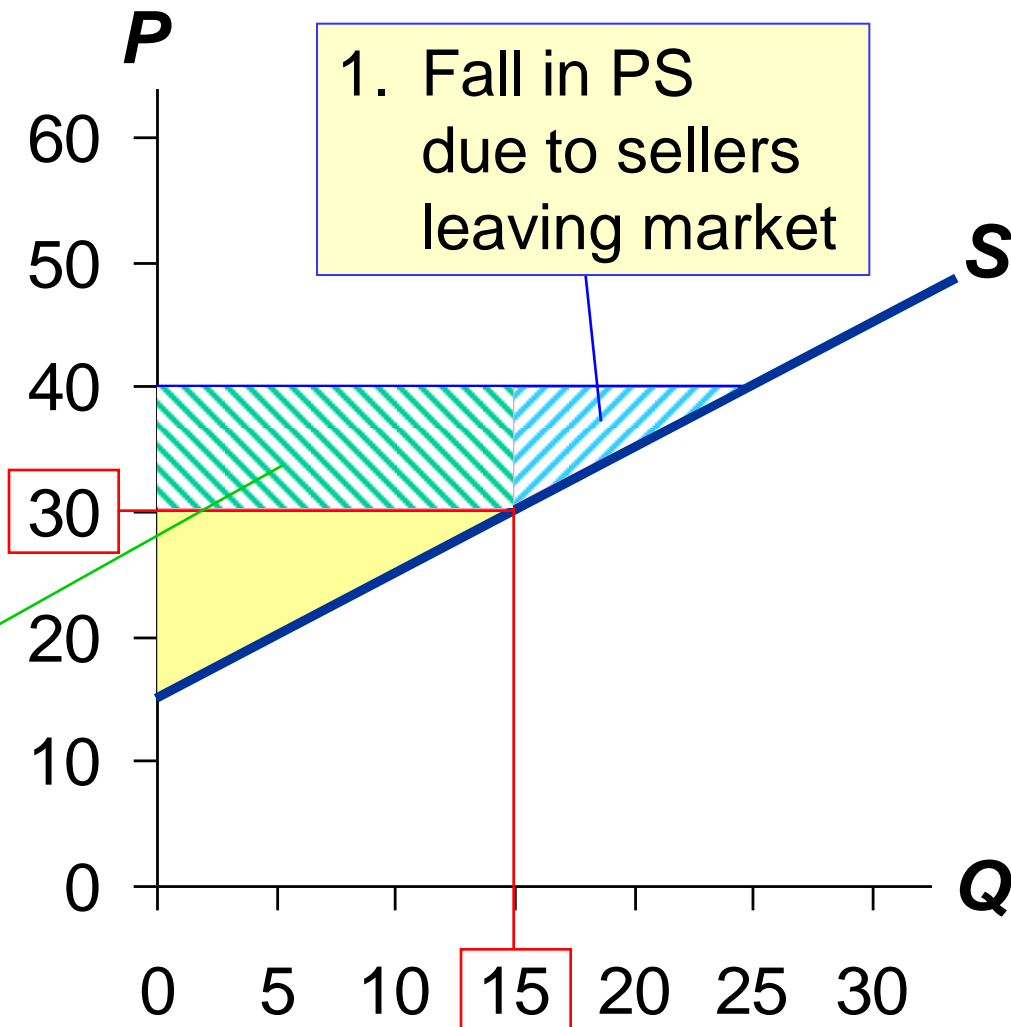
How a Lower Price Reduces PS

If P falls to \$30,

$$PS = \frac{1}{2} \times 15 \times \$15 \\ = \$112.50$$

Two reasons for the fall in PS.

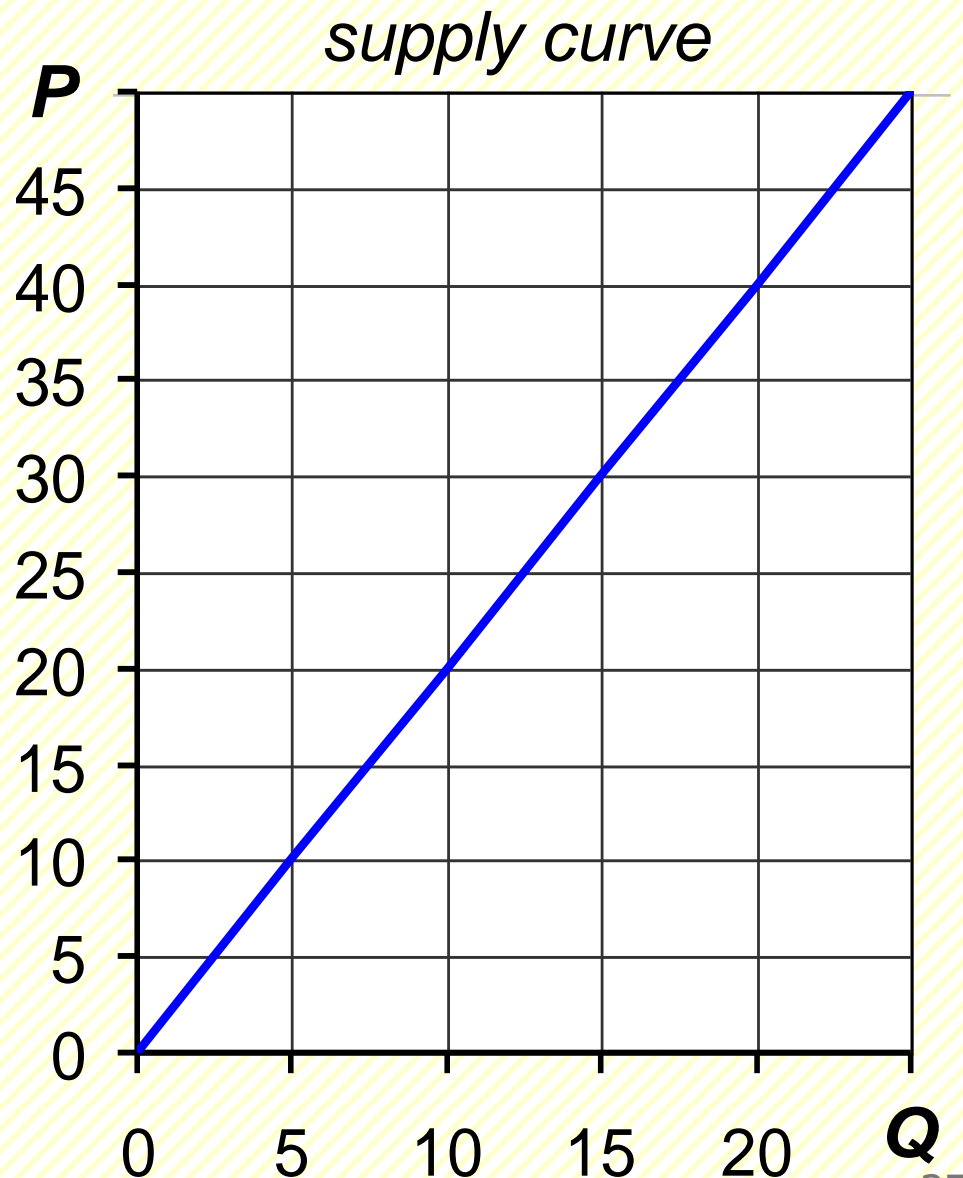
2. Fall in PS due to remaining sellers getting lower P



ACTIVE LEARNING 2

Producer surplus

- A. Find marginal seller's cost at $Q = 10$.
- B. Find total PS for $P = \$20$.
- C. Suppose P rises to \$30. Find the PS...



ACTIVE LEARNING 2

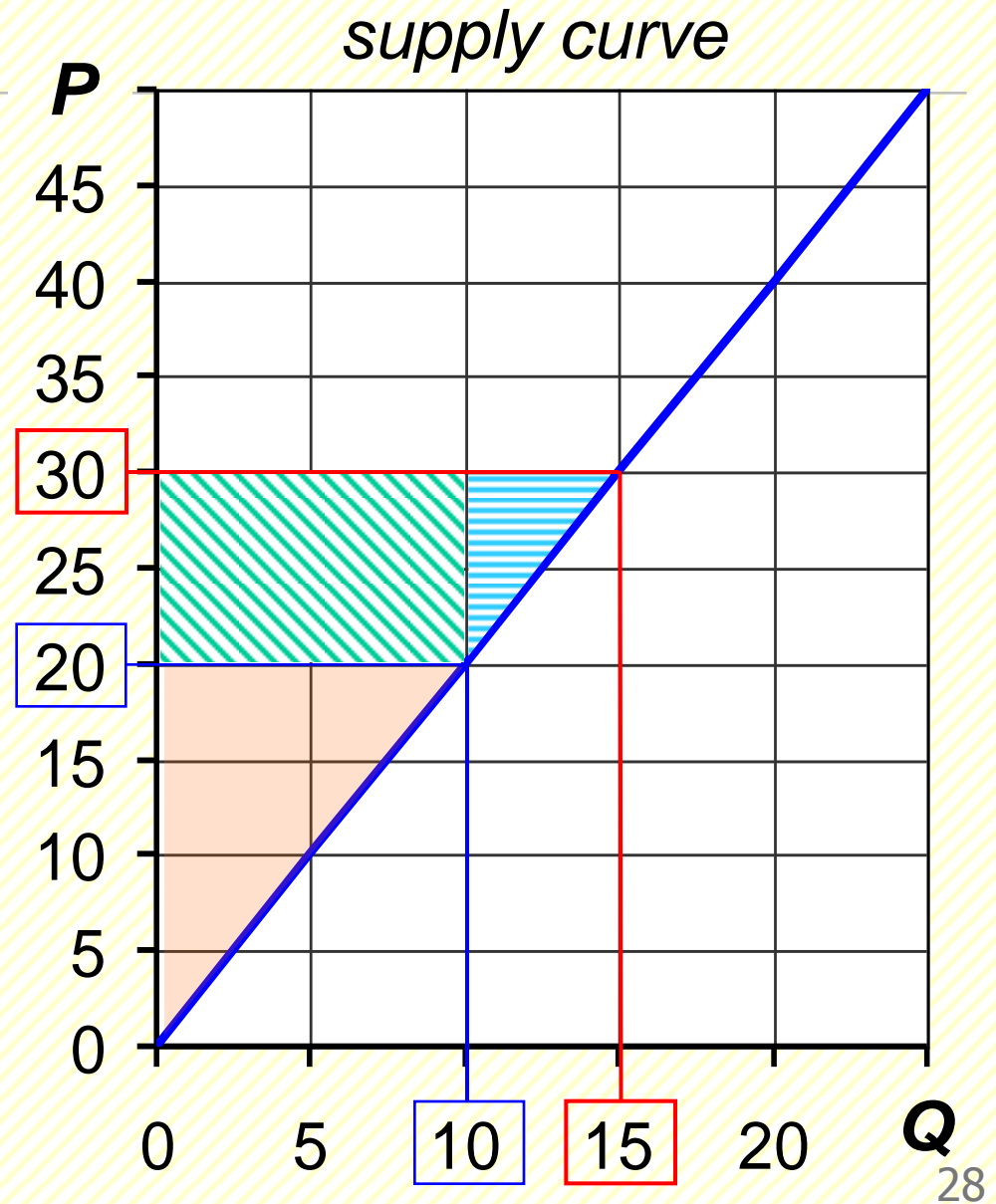
Answers

A. At $Q = 10$,
marginal cost = _____

B. $PS = \frac{1}{2} \times 10 \times \20
= _____

P rises to \$30.

C. PS at \$30
= $\frac{1}{2} \times 15 \times \$30 =$



CS, PS, and Total Surplus

CS = (value to buyers) – (amount paid by buyers)
= buyers' gains from participating in the market

PS = (amount received by sellers) – (cost to sellers)
= sellers' gains from participating in the market

= total gains from trade in a market

= (value to buyers) – (cost to sellers)

“Pretty Woman” –video- allocation of resources.

The Market's Allocation of Resources

- In a market economy, the allocation of resources is _____, determined by the interactions of many self-interested buyers and sellers.
- We use total surplus as a measure of society's well-being, and we consider whether the market's allocation is _____.

(Policymakers also care about *equality*, though the focus here is on efficiency.)

Efficiency

$$\text{Total surplus} = (\text{value to buyers}) - (\text{cost to sellers})$$

An allocation of resources is **efficient** if it

Efficiency means:

- The goods are consumed by the buyers who

- The goods are produced by the producers with the

- Raising or lowering the quantity of a good would

Evaluating the Market Equilibrium

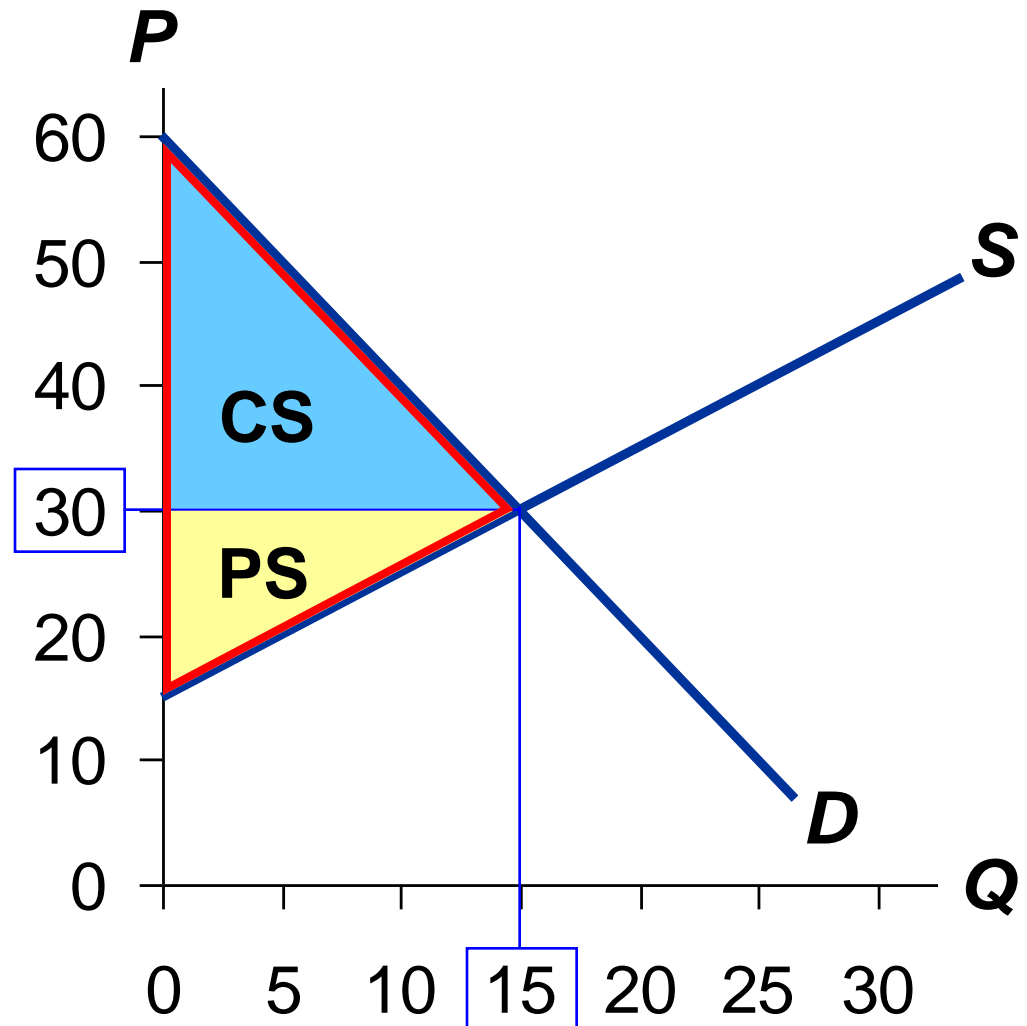
Market eq'm:

$$P = \$30$$

$$Q = 15,000$$

Total surplus
= CS + PS

Is the market eq'm
efficient?

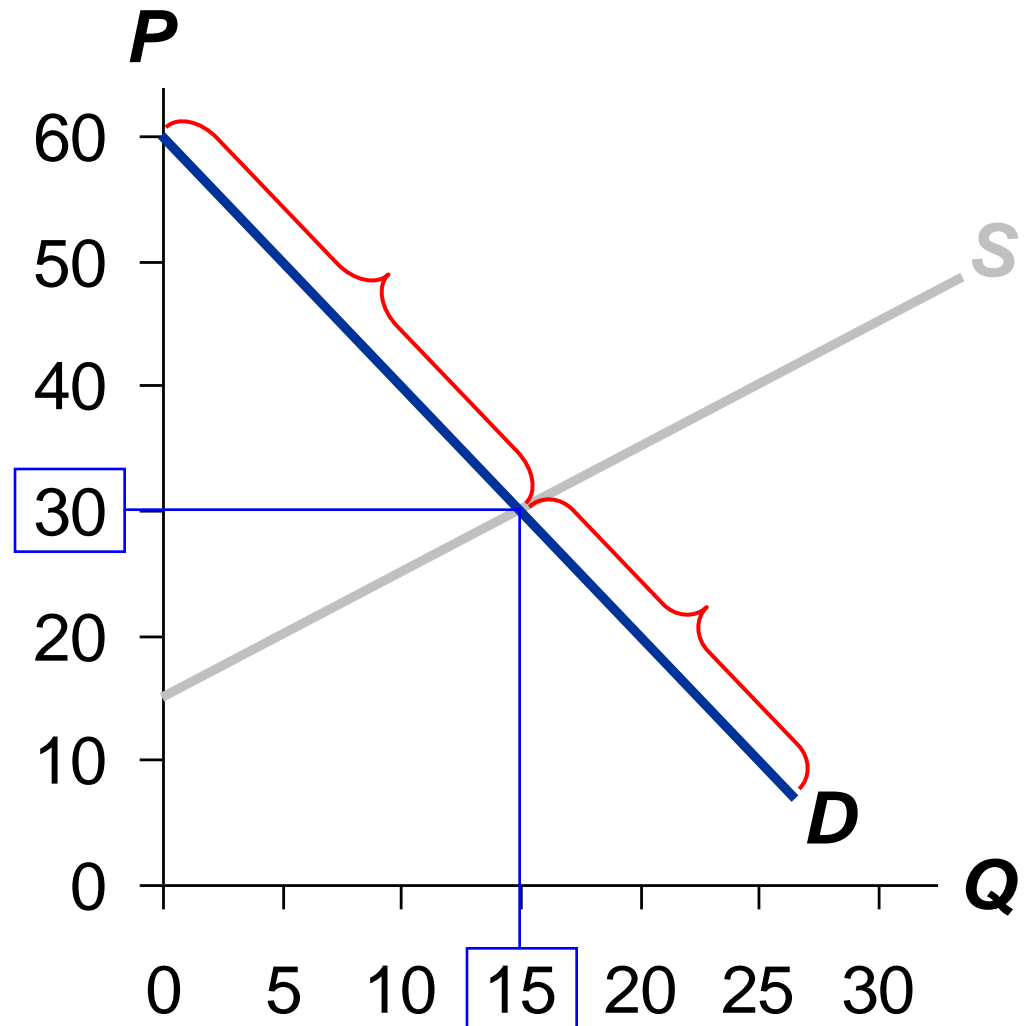


Which Buyers Consume the Good?

Every buyer whose WTP is $\geq \$30$ will buy.

Every buyer whose WTP is $< \$30$ will not.

So, *the buyers who value the good most highly are the ones who consume it.*

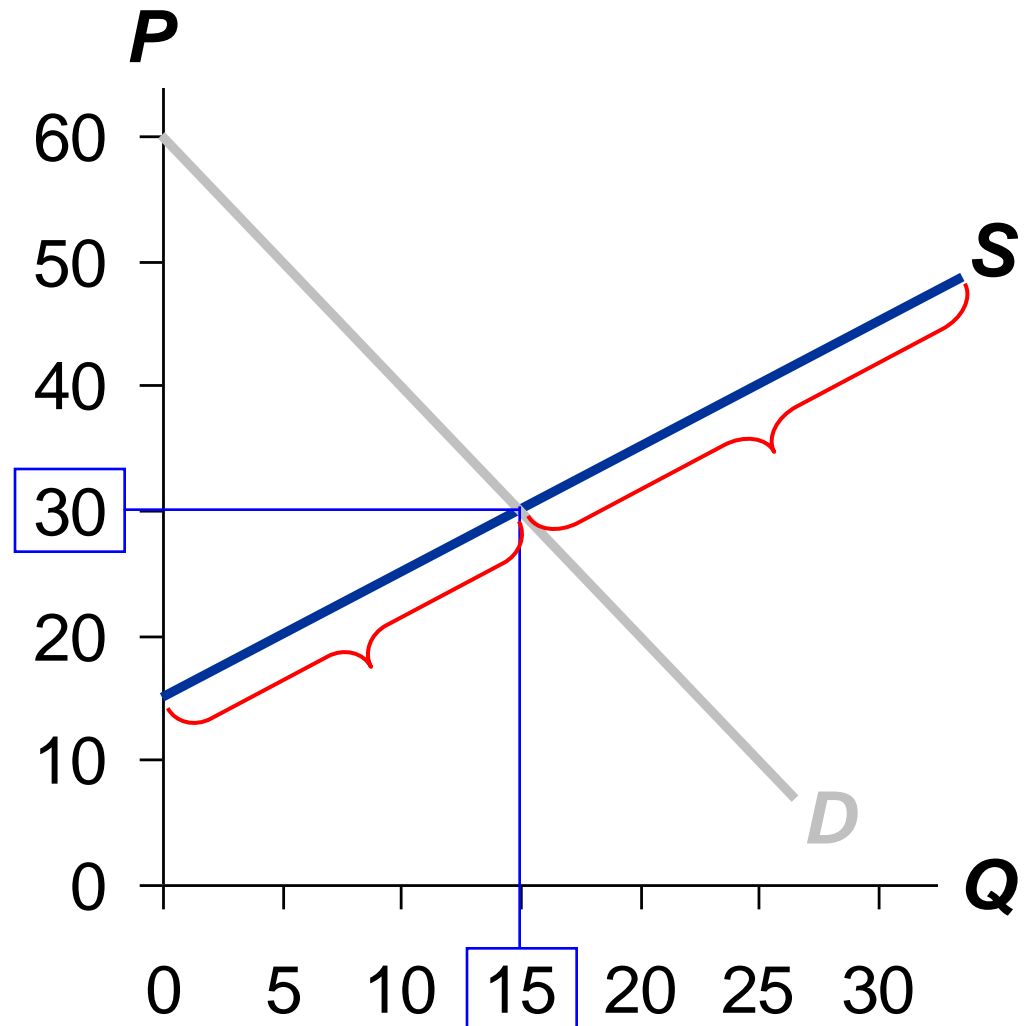


Which Sellers Produce the Good?

Every seller whose cost is $\leq \$30$ will produce the good.

Every seller whose cost is $> \$30$ will not.

So, *the sellers with the lowest cost produce the good.*



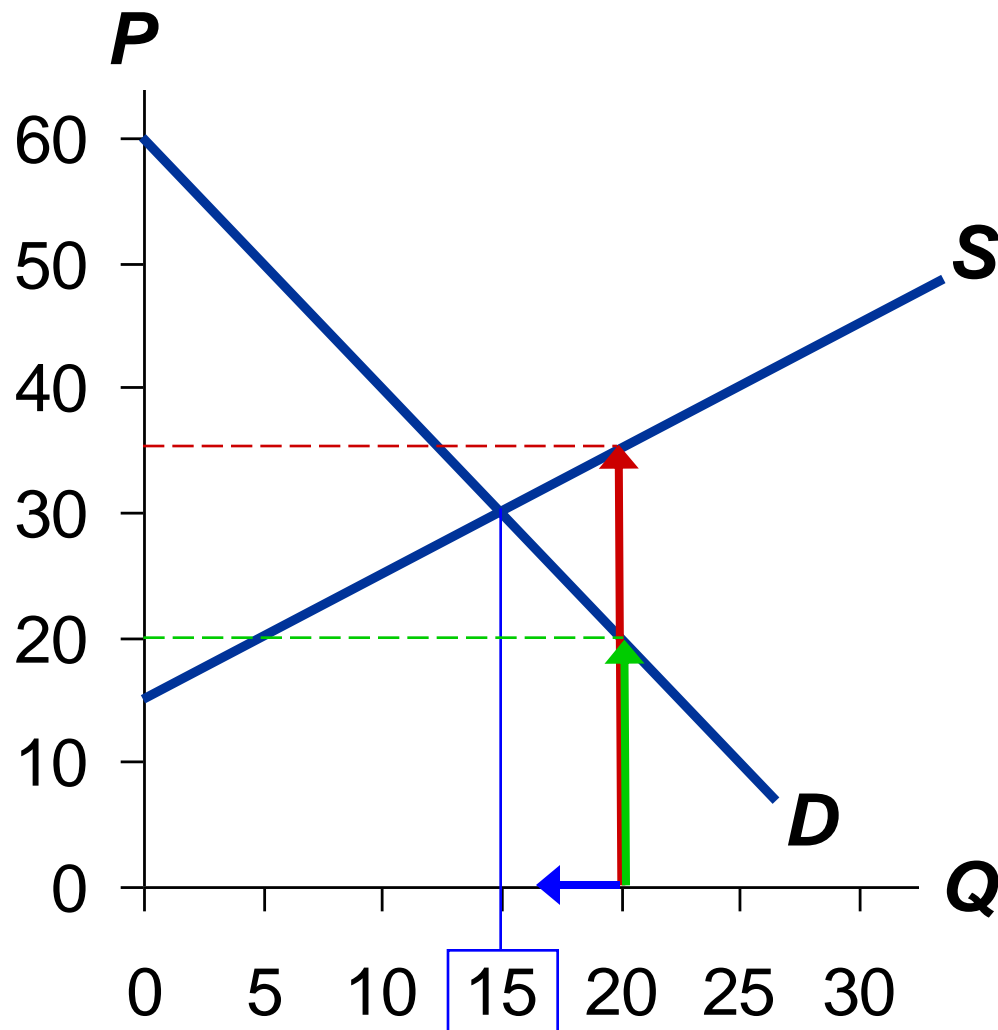
Does Eq'm Q Maximize Total Surplus?

At $Q = 20$,
cost of producing
the marginal unit
is \$35

value to consumers
of the marginal unit
is only \$20

Hence, can increase
total surplus
by reducing Q .

*This is true at any Q
greater than 15.*



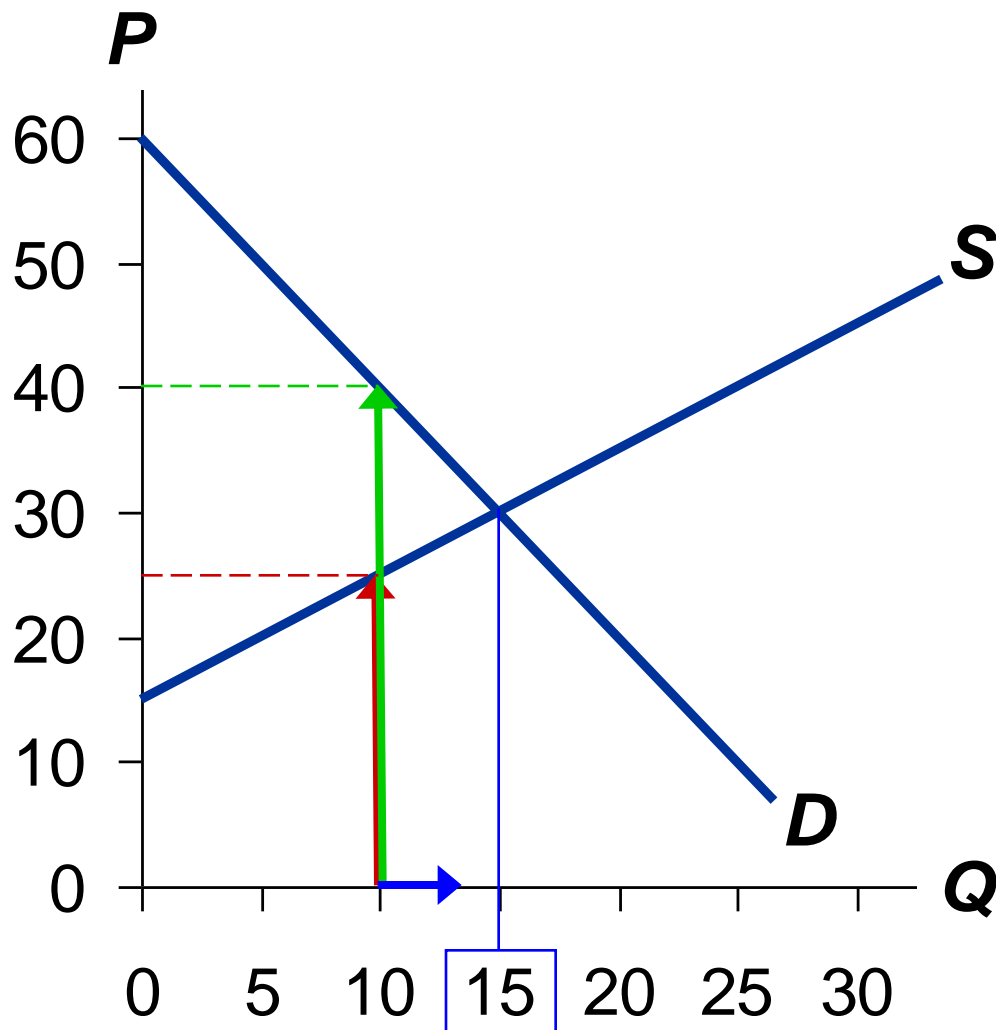
Does Eq'm Q Maximize Total Surplus?

At $Q = 10$,
cost of producing
the marginal unit
is \$25

value to consumers
of the marginal unit
is \$40

Hence, can increase
total surplus
by increasing Q .

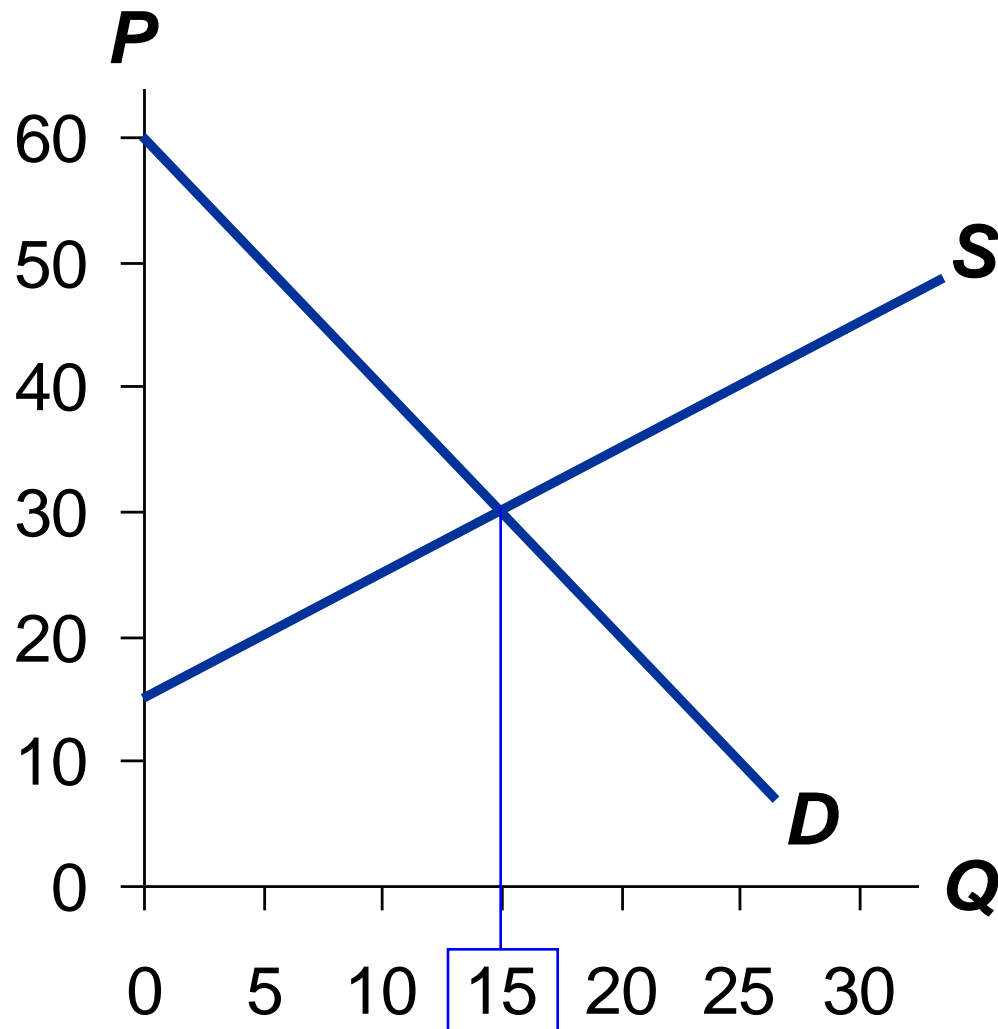
*This is true at any Q
less than 15.*



Does Eq'm Q Maximize Total Surplus?

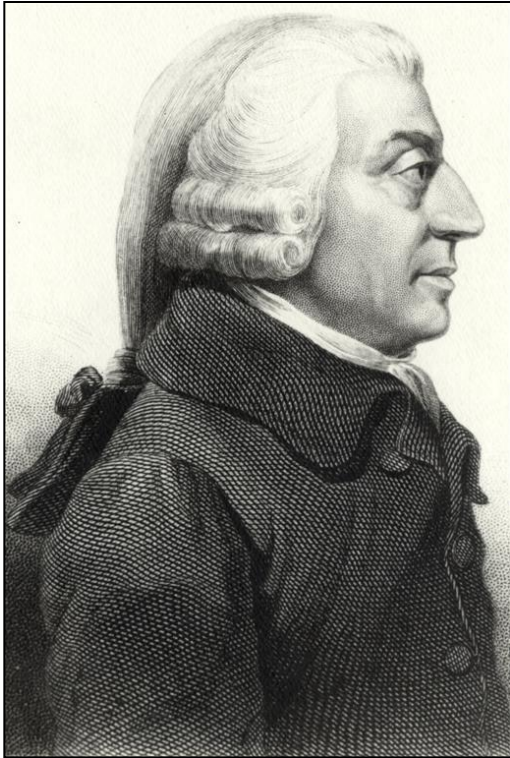
*The market
eq'm quantity*

*At any other
quantity,
can increase
total surplus by
moving toward
the market eq'm
quantity.*



Adam Smith and the Invisible Hand

Passages from *The Wealth of Nations*, 1776



Adam Smith,
1723-1790

“Every individual...neither intends to promote the public interest, nor knows how much he is promoting it.... He intends only his own gain, and he is in this, as in many other cases, led by **an invisible hand** to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.”

The Free Market vs. Govt Intervention

- The market equilibrium is efficient. No other outcome achieves higher total surplus.
 - [What about a market for kidneys](#)???-video
- Govt cannot raise total surplus by changing the market's allocation of resources.
- laissez-faire (French for “allow them to do”): the notion that govt should not interfere with the market.
- To allocate resources efficiently and maximize total surplus, the planner would need to know every seller's cost and every buyer's WTP for every good.

CONCLUSION

- This chapter used welfare economics to demonstrate one of the Ten Principles:
Markets are usually a good way to organize economic activity.
- Important note:
We derived these lessons assuming perfectly competitive markets.
- In other conditions we will study in later chapters, the market may fail to allocate resources efficiently...

CONCLUSION

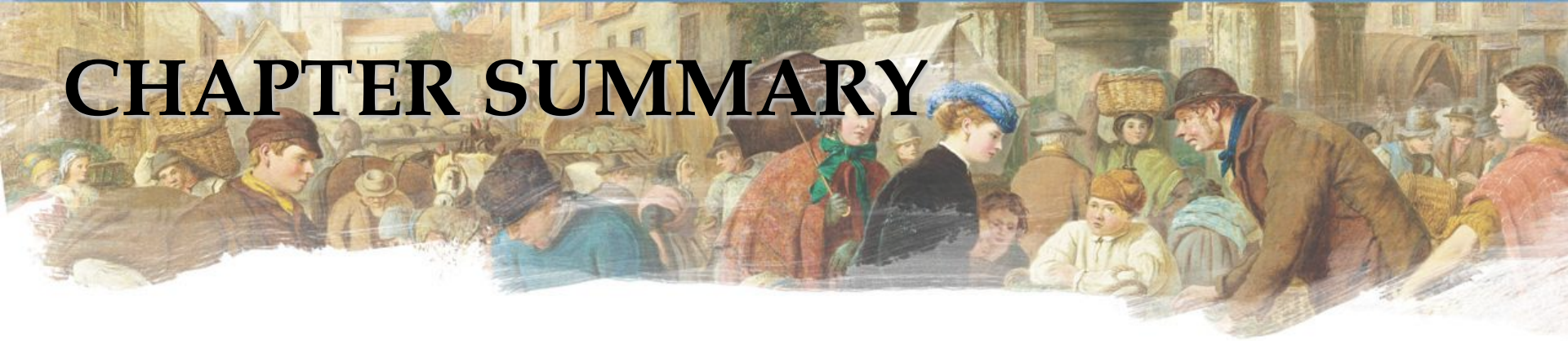
- Such market failures occur when:
 - a buyer or seller has *market power* – the ability to affect the market price.
 - transactions have side effects, called *externalities*, that affect bystanders. (example: pollution)
- We'll use welfare economics to see how public policy may improve on the market outcome in such cases.
- Despite the possibility of market failure, the analysis in this chapter applies in many markets, and the invisible hand remains extremely important.

CHAPTER SUMMARY



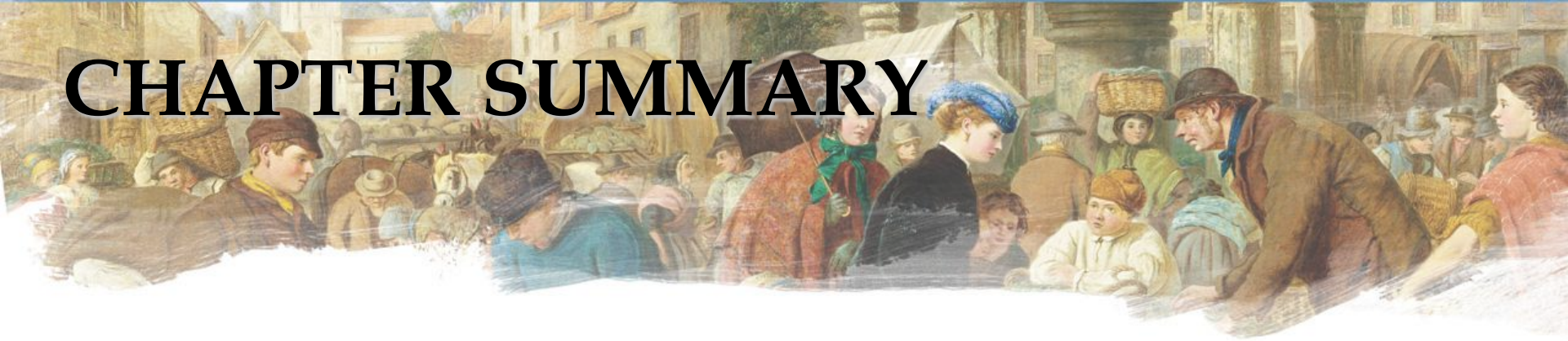
- The height of the ***D*** curve reflects the value of the good to buyers—their willingness to pay for it.
- Consumer surplus is the difference between what buyers are willing to pay for a good and what they actually pay.
- On the graph, consumer surplus is the area between ***P*** and the ***D*** curve.

CHAPTER SUMMARY



- The height of the **S** curve is sellers' cost of producing the good. Sellers are willing to sell if the price they get is at least as high as their cost.
- Producer surplus is the difference between what sellers receive for a good and their cost of producing it.
- On the graph, producer surplus is the area between **P** and the **S** curve.

CHAPTER SUMMARY



- To measure of society's well-being, we use total surplus, the sum of consumer and producer surplus.
- Efficiency means that total surplus is maximized, that the goods are produced by sellers with lowest cost, and that they are consumed by buyers who most value them.
- Under perfect competition, the market outcome is efficient. Altering it would reduce total surplus.