Ch.10 The Rational Consumer

- I can…

- understand the theory of <u>utility</u> and its relationship to demand;

- construct and interpret <u>marginal utility</u> schedules and curves;

- explain how a rational individual decides what to purchase given necessary information about utility, prices, and income;

- derive consumer demand schedules and curves given necessary information about utility, prices, and income.

When is more of a good thing too much?

Tom Steward/Corbis

Are the prices at Disney World Goofy?
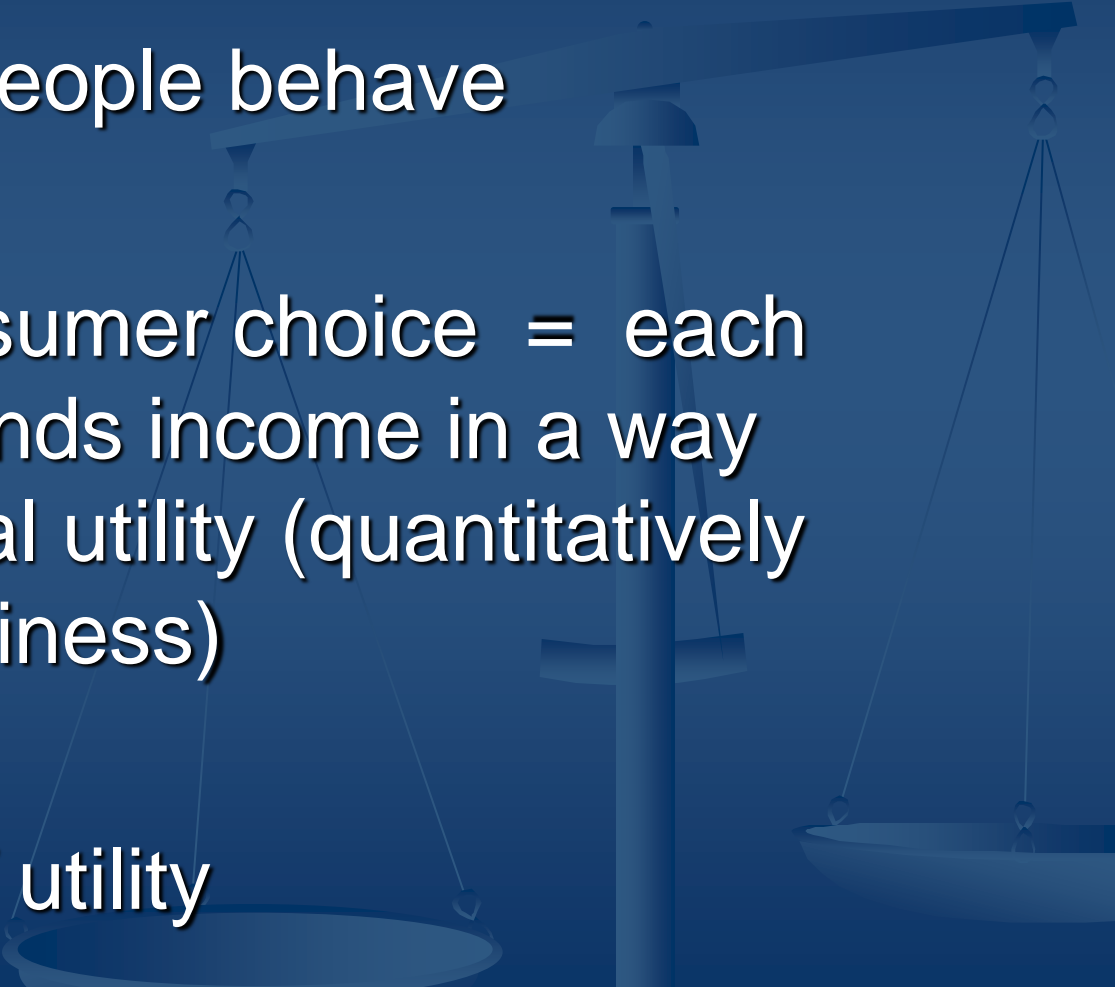

2 Select the Number of Days

Each ticket provides access to one theme park per day. All ticket days must be used within 14 days of first use.

Single Day Tickets	Ages 10+ per ticket	Ages 3-9 per ticket
1-Day Ticket: Magic Kingdom Park	$105.00	$99.00
1-Day Ticket: EPCOT, or Disney's Animal Kingdom Park, or Disney's Hollywood Studios	$97.00	$91.00

Multi Day Tickets Visit any one theme park per day.	Ages 10+ per day	Ages 3-9 per day
2-Day Ticket	$96.00 $192.00/ticket	$89.50 $179.00/ticket
3-Day Ticket	$91.67 $275.00/ticket	$85.34 $256.00/ticket
4-Day Ticket	$76.25 $305.00/ticket	$71.25 $285.00/ticket
5-Day Ticket	$63.00 $315.00/ticket	$59.00 $295.00/ticket

Staying longer than 5 Days? Show 6-10 day tickets

- Parking: $17 a day
- Season pass, $654 (includes parking)
- Why does Disney World charge less for the second day than the first day?

Utility=amount of satisfaction

- analyze how people behave

- Theory of consumer choice = each consumer spends income in a way maximizes total utility (quantitatively measure happiness)

- Utils= a unit of utility

Total versus Marginal Utility

- Total utility = benefit to a consumer from all the units of a good purchased/consumed (the whole pizza)
- Marginal utility = benefit from the last unit (slice) of a good purchased/consumed

Cassie's Total Utility and Marginal Utility

(a) Cassie's Utility Function

(b) Cassie's Marginal Utility Curve
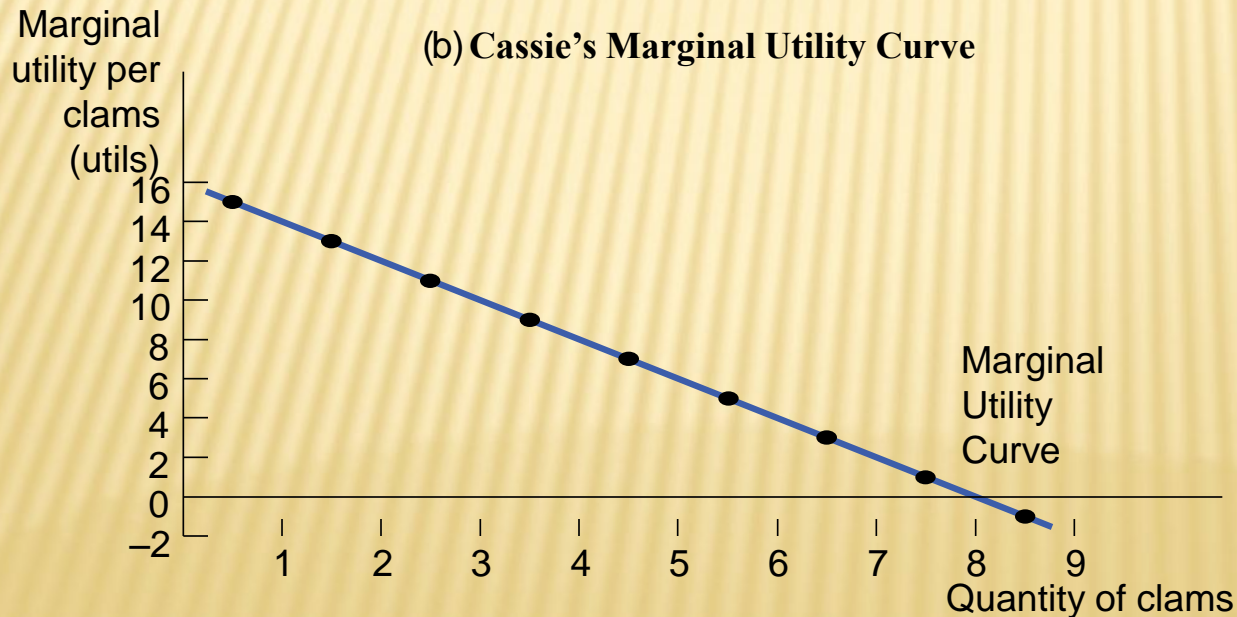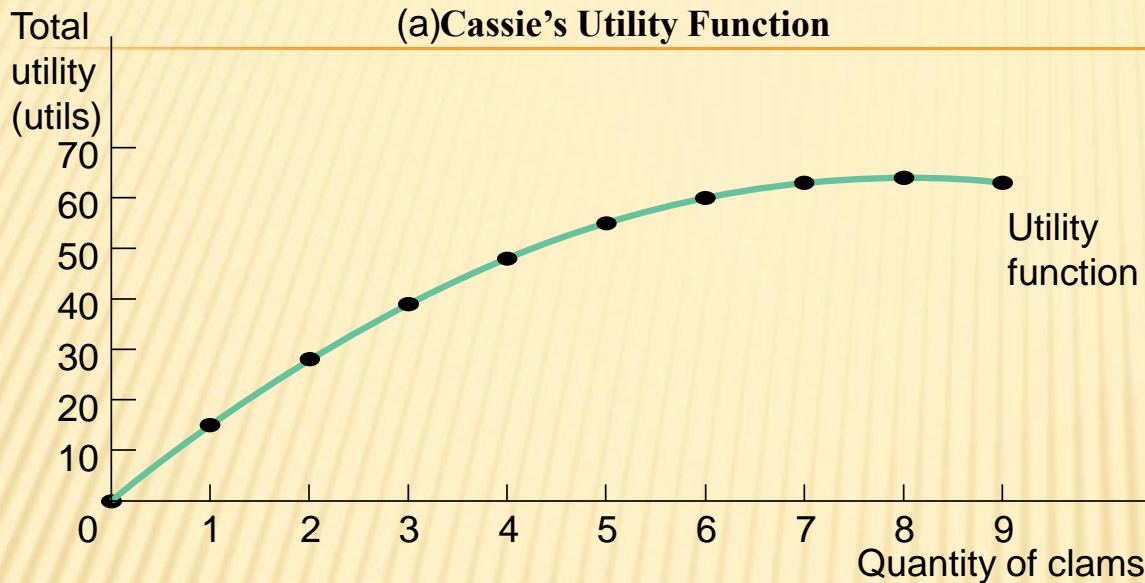
Quantity of clams	Total utility (utils)	Marginal utility per clam (utils)
0	0	
		15
1	15	
		13
2	28	
		11
3	39	
		9
4	48	
		7
5	55	
		5
6	60	
		3
7	63	
		1
8	64	
		−1
9	63	

The "Law" of Diminishing Marginal Utility

The more of a good a consumer has, the less marginal utility an additional unit contributes to overall satisfaction

Key Concept

The Law of Diminishing Marginal Utility

The law of diminishing marginal utility tells us that the more we consume of something, the less satisfaction we will get from each additional unit of it.

©TCI/Scott Willis

Slice 1: Very high utility   Slice 2: High utility   Slice 6: Low utility   Slice 10: Negative utility

The Optimal Purchase Rule:

Using Marginal Utility: Buy the quantity of each good at which price and marginal utility are equal.

P=MU

Your Total and Marginal Utility for Pizza

If the price of the pizza is $11.00 then you would buy 4 pizzas

TABLE 4-1   Your Total and Marginal Utility for Pizza this Month

(1) Quantity (Q) Pizzas per month	(2) Total Utility (TU)	(3) Marginal Utility (MU) = (ΔTU/ΔQ)	(4) Point in Figure 6-1
0	$ 0.00		
		$15.00	A
1	15.00		
		13.00	B
2	28.00		
		12.50	C
3	**40.50**		
		11.50	D
4	**52.00**		
		8.00	E
5	60.00		
		5.00	F
6	65.00		
		3.00	G
7	68.00		
		0.00	H
8	68.00		

NOTE: Each entry in Column (3) is the difference between successive entries in Column (2). This is indicated by zigzag lines.
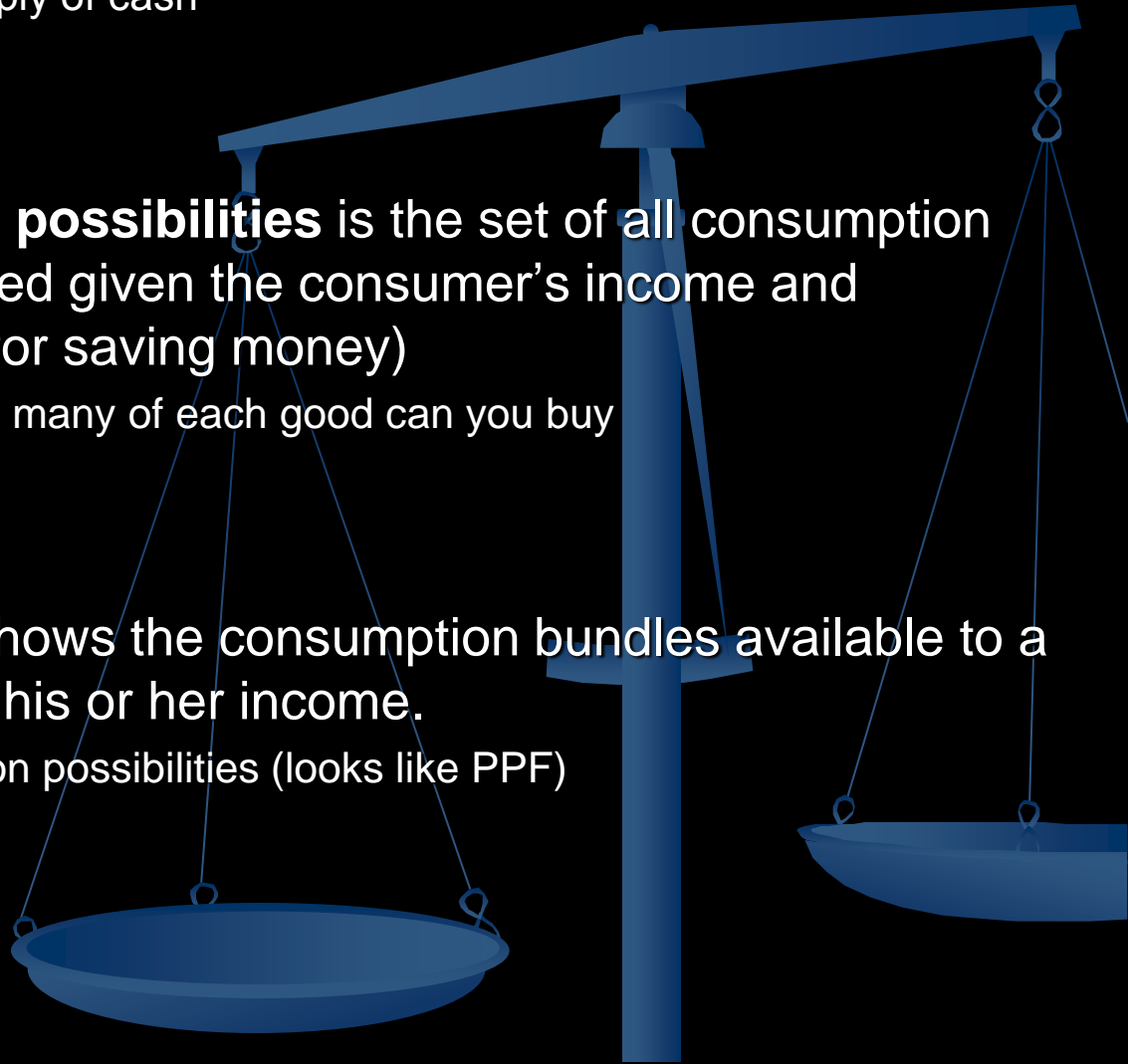
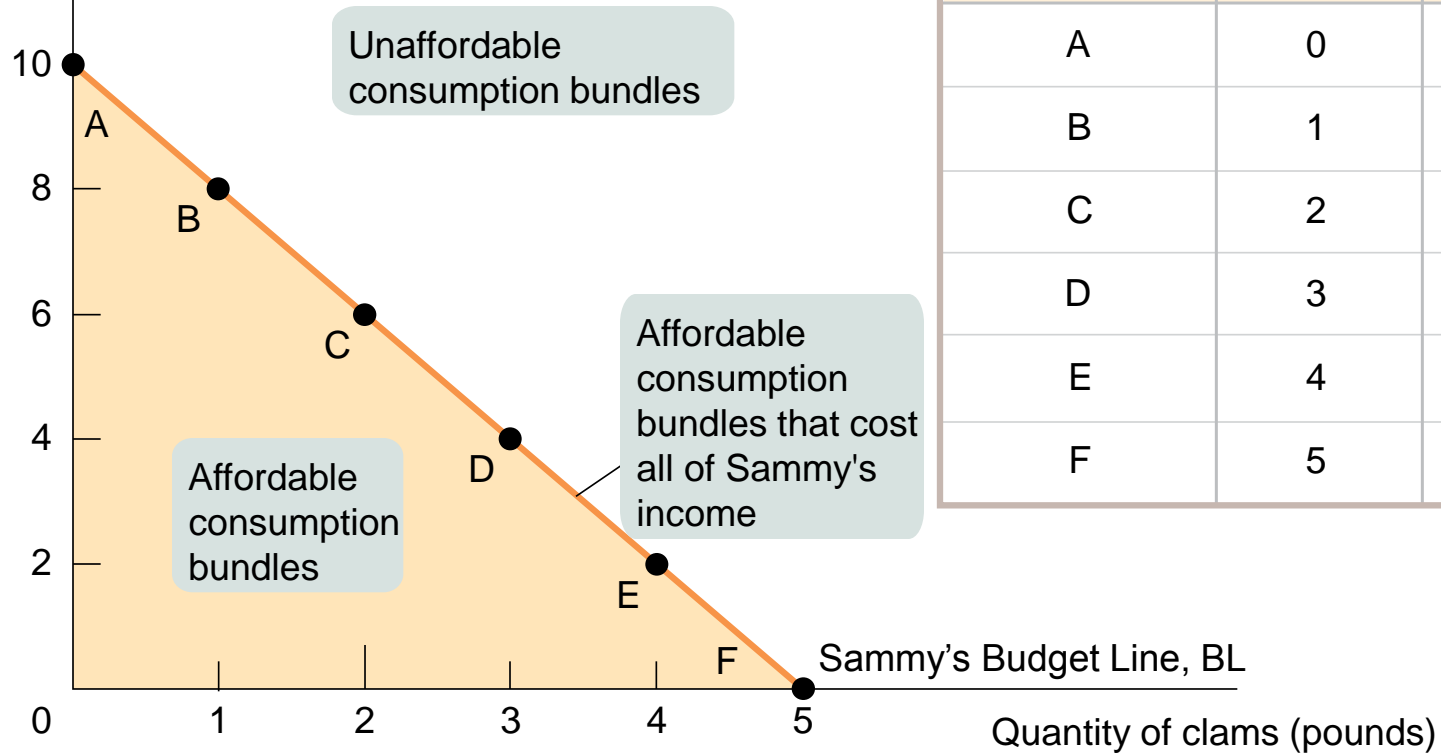# FIGURE 6-1 A Marginal Utility Curve: Your Demand for Pizza
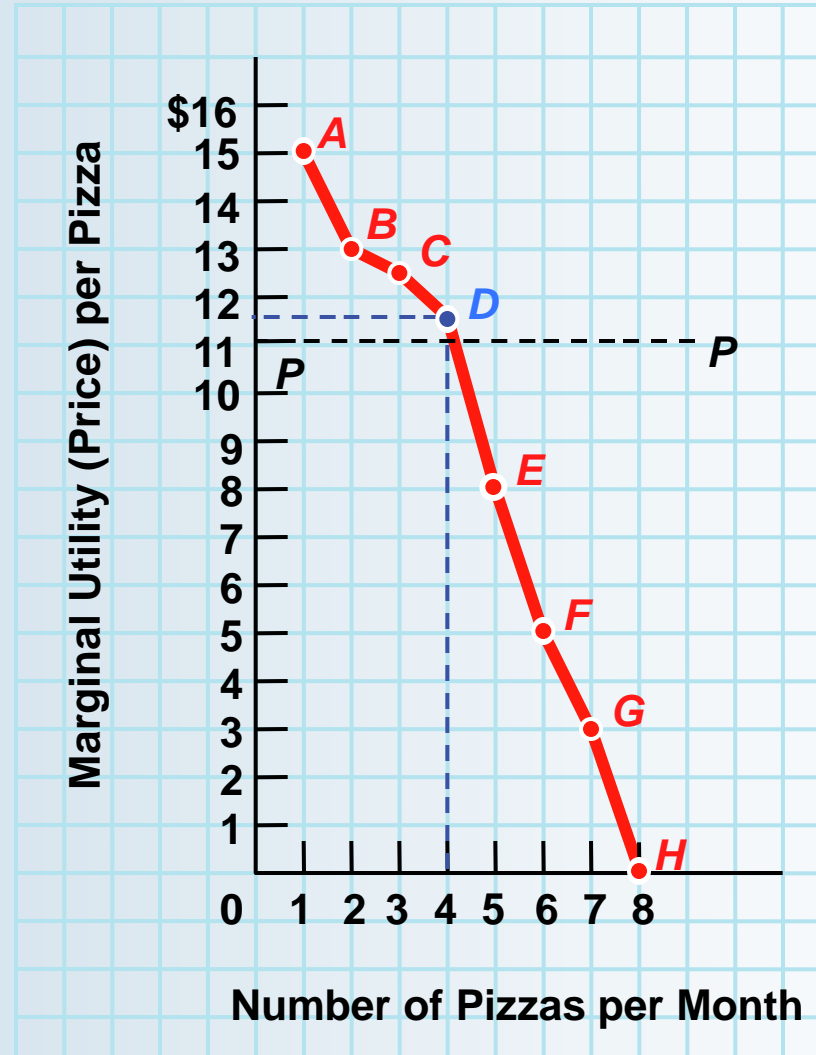
Budgets and Optimal Consumption

- A **budget constraint** requires that the cost of a consumer's consumption bundle be no more than the consumer's total income.
    - You don't have an endless supply of cash

- A consumer's **consumption possibilities** is the set of all consumption bundles that can be consumed given the consumer's income and prevailing prices. (No value for saving money)
    - Given a budget constraint, how many of each good can you buy

- A consumer's **budget line** shows the consumption bundles available to a consumer who spends all of his or her income.
   - Model that displays consumption possibilities (looks like PPF)

The Budget Line

Consumption bundle	Quantity of clams (pounds)	Quantity of potatoes (pounds)
A	0	10
B	1	8
C	2	6
D	3	4
E	4	2
F	5	0

Quantity of potatoes (pounds)

Unaffordable consumption bundles

Affordable consumption bundles that cost all of Sammy's income

Affordable consumption bundles

Sammy's Budget Line, BL

Quantity of clams (pounds)

Optimal Consumption Choice

- The **optimal consumption bundle** is the consumption bundle that maximizes a consumer's total utility given his or her budget constraint.

- What combination makes us most happy!
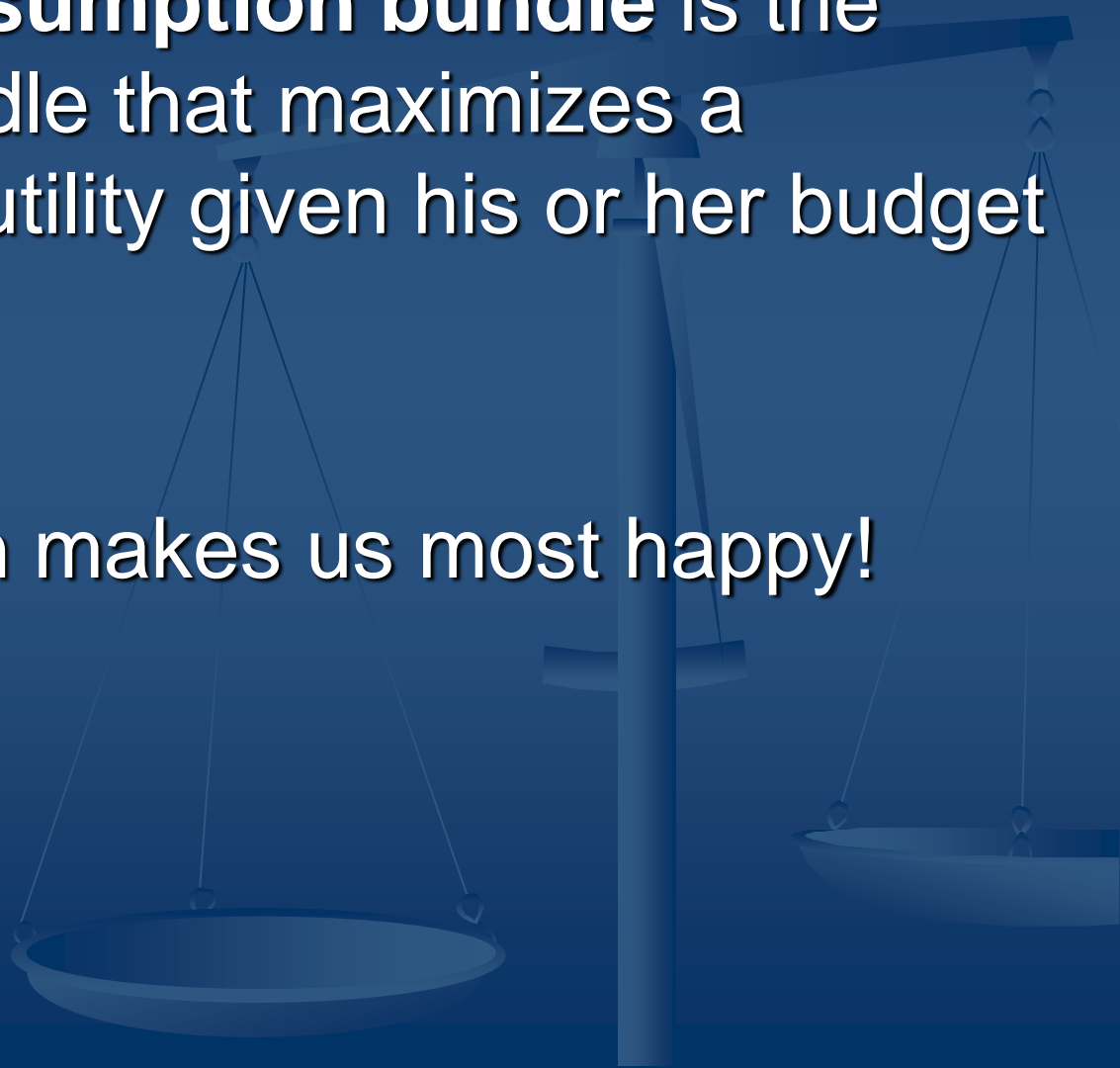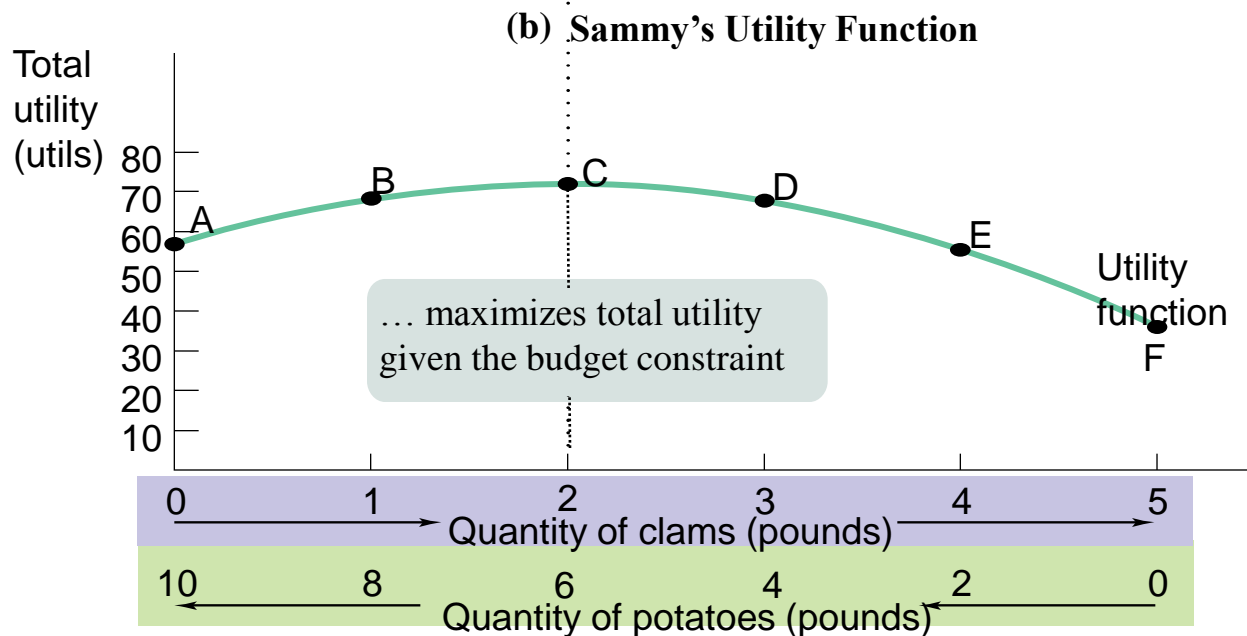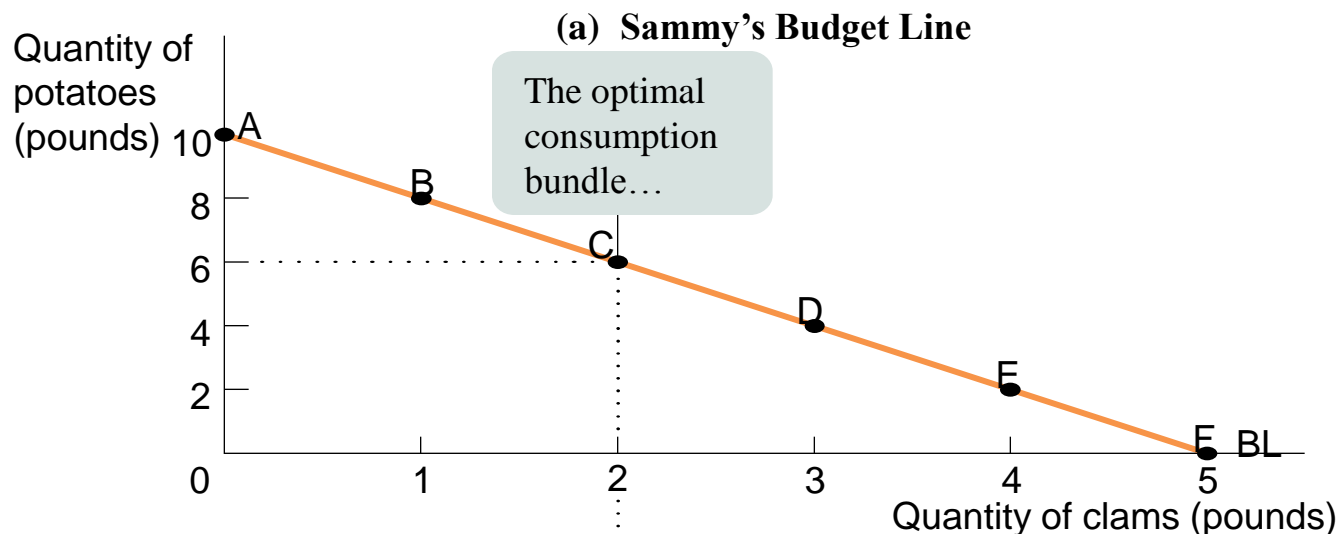
Sammy's Budget and Total Utility

Consumption Bundle	Quantity of clams (pounds)	Utility from clams (utils)	Quantity of potatoes (pounds)	Utility from potatoes (utils)	Total utility (utils)
A	0	0	10	56.7	56.7
B	1	15	8	53.2	68.2
C	2	25	6	47.0	72.0
D	3	31	4	36.8	67.8
E	4	34	2	21.4	55.4
F	5	36	0	0	36.0

Sammy's total utility is the sum of the utility he gets from clams and the utility he gets from potatoes.

Optimal Consumption Bundle

(a) Sammy's Budget Line

Quantity of potatoes (pounds)

The optimal consumption bundle…

Quantity of clams (pounds)

(b) Sammy's Utility Function

Total utility (utils)

… maximizes total utility given the budget constraint

Utility function

Quantity of clams (pounds)

Quantity of potatoes (pounds)

Sammy's total utility is maximized at bundle *C*, where he consumes 2 pounds of clams and 6 pounds of potatoes. This is Sammy's *optimal consumption bundle*.

Optimal Consumption Rule

When a consumer maximizes utility, the marginal utility per dollar spent must be the same for all goods and services in the consumption bundle.

Why you ask… if Sammy's MU per dollar spent on clams is higher than his MU per dollar spent on potatoes then he is consuming too many clams and vice versa…he maximizes his utility if they are equal

$$MU_C/P_C = MU_P/P_P$$

C=Clams   P: Potato

Marginal utility per dollar spent on a good
= Marginal utility of one unit of the good / Price of one unit of the good
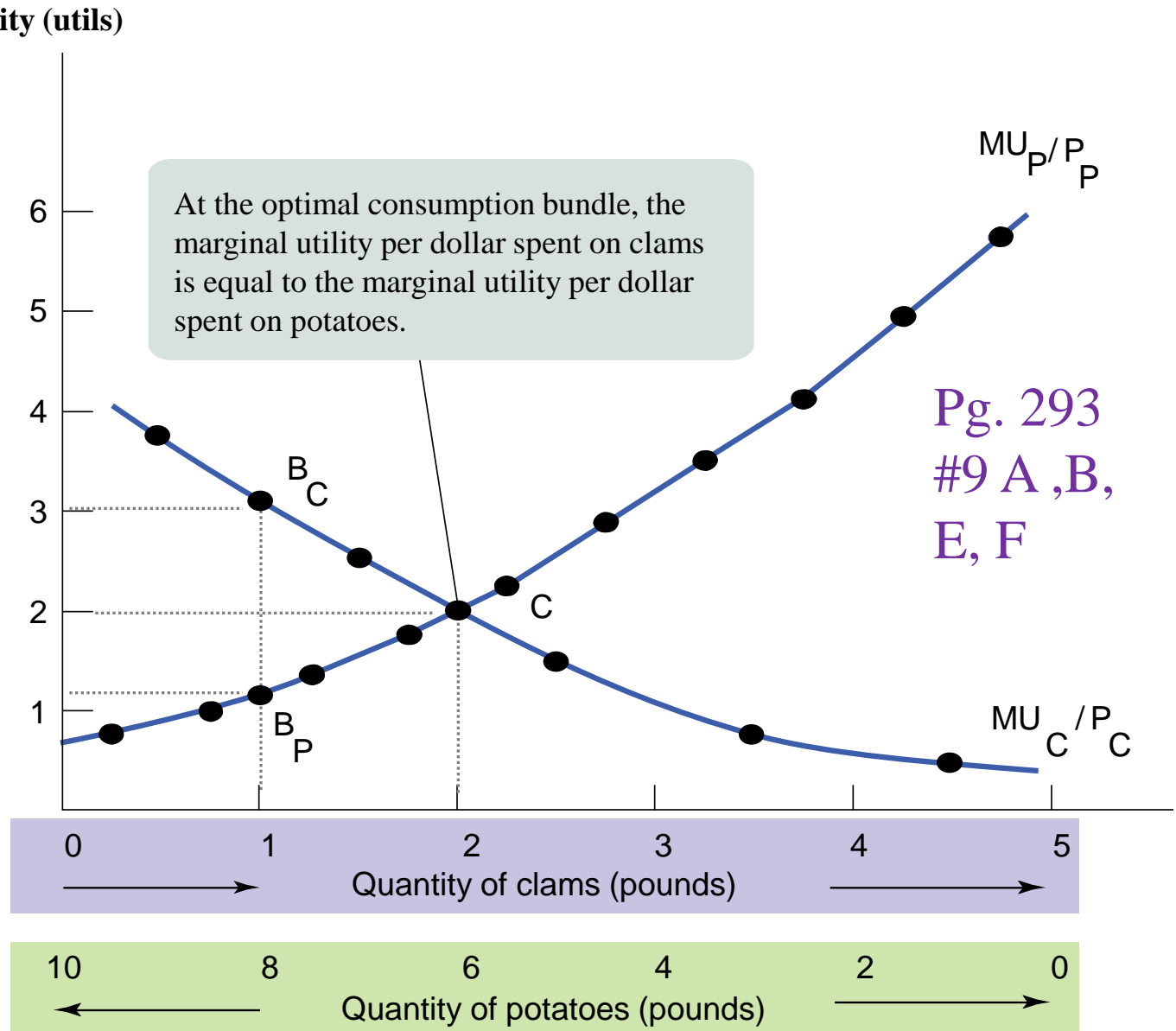= MU_{good}/P_{good}

(a) Clams (price of clams = $4 per pound)

Quantity of clams (pounds)	Utility from clams (utils)	Marginal utility per pound of clams (utils)	Marginal utility per dollar (utils)
0	0		
		15	3.75
1	15		
		10	2.50
2	25		
		6	1.50
3	31		
		3	0.75
4	34		
		2	0.50
5	36		

(b) Potatoes (price of potatoes = $2 per pound)

Quantity of potatoes (pounds)	Utility from potatoes (utils)	Marginal utility per pound of potatoes (utils)	Marginal utility per dollar (utils)
0	0		
		11.5	5.75
1	11.5		
		9.9	4.95
2	21.4		
		8.4	4.20
3	29.8		
		7.0	3.50
4	36.8		
		5.7	2.85
5	42.5		
		4.5	2.25
6	47.0		
		3.5	1.75
7	50.5		
		2.7	1.35
8	53.2		
		2.0	1.00
9	55.2		
		1.5	0.75
10	56.7		

Marginal Utility per Dollar

Total utility (utils)

If Sammy has, in fact, chosen his optimal consumption bundle, his marginal utility per dollar spent on clams and potatoes must be equal.

At the optimal consumption bundle, the marginal utility per dollar spent on clams is equal to the marginal utility per dollar spent on potatoes.

MU_P / P_P

MU_C / P_C

Pg. 293 #9 A ,B, E, F

B_C

C

B_P

6

5

4

3

2

1

Quantity of clams (pounds)

| 0 | 1 | 2 | 3 | 4 | 5 |

Quantity of potatoes (pounds)

| 10 | 8 | 6 | 4 | 2 | 0 |

Marginal Utility, the Substitution Effect, and the Law of Demand

The **substitution effect** of a change in the price of a good is the change in the quantity consumed of that good as the consumer substitutes the good that has become relatively cheaper for the good that has become relatively more expensive.

When the price of apples goes down, I buy more apples & fewer oranges
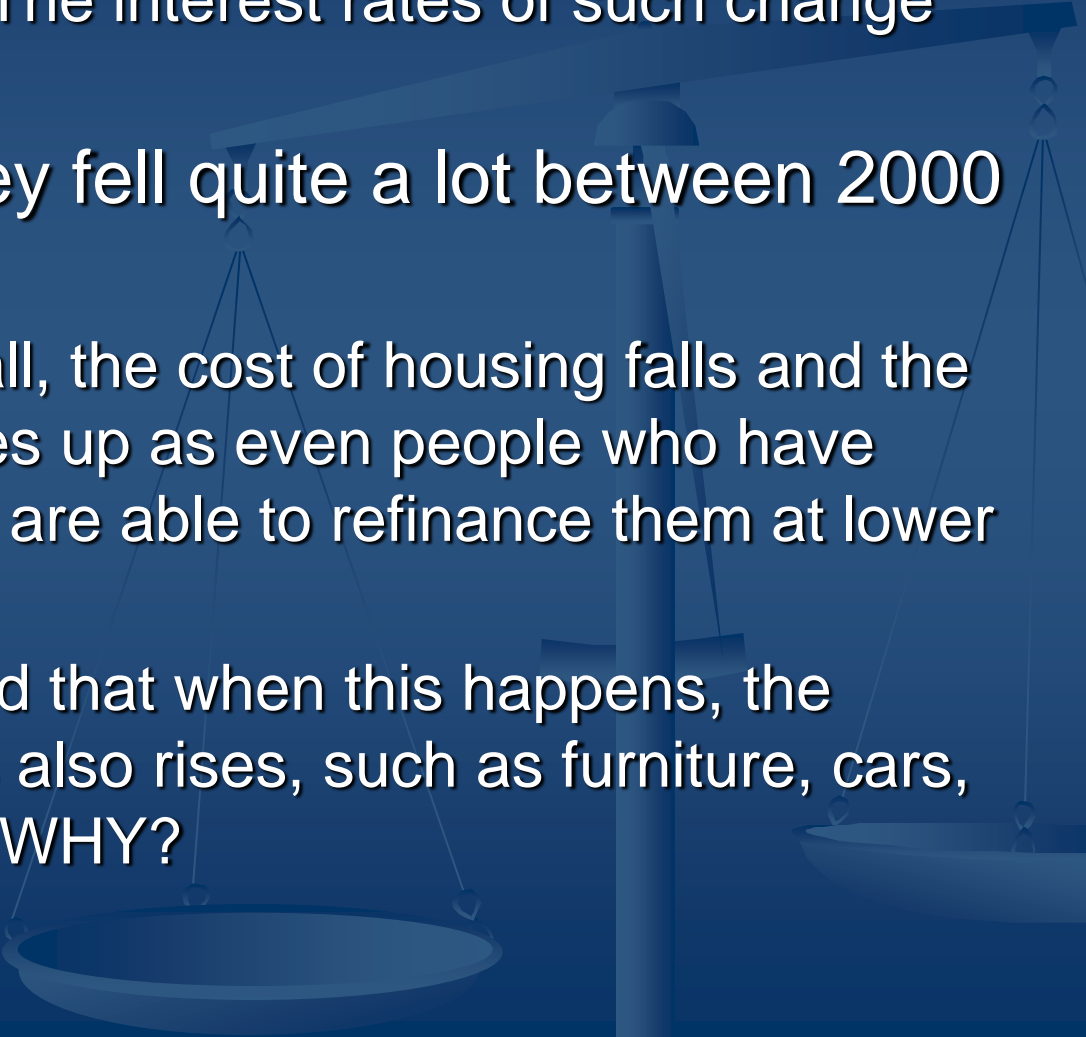
The Income Effect

The **income effect** of a change in the price of a good is the change in the quantity consumed of that good that results from a change in the consumer's purchasing power due to the change in the price of the good.

- Normal Goods
- Inferior Goods

- When prices falls you have "extra" money to buy more of everything else.

Mortgage Rates and Consumer Demand

- Most people buy houses with mortgages—loans backed by the value of the house. The interest rates of such change over time.

  - For example, they fell quite a lot between 2000 and 2003.

- When mortgage rates fall, the cost of housing falls and the demand for housing goes up as even people who have mortgages at high rates are able to refinance them at lower rates.

- Economists have noticed that when this happens, the demand for other goods also rises, such as furniture, cars, more vacation time etc. WHY?

Mortgage Rates and Consumer Demand

- When housing is cheaper, there is a substitution effect: people have an incentive to substitute housing in place of other goods in their consumption bundle.

- So when house prices fall, people are in effect richer—there is a noticeable income effect. So people buy more of the other goods in addition to the houses that they buy.
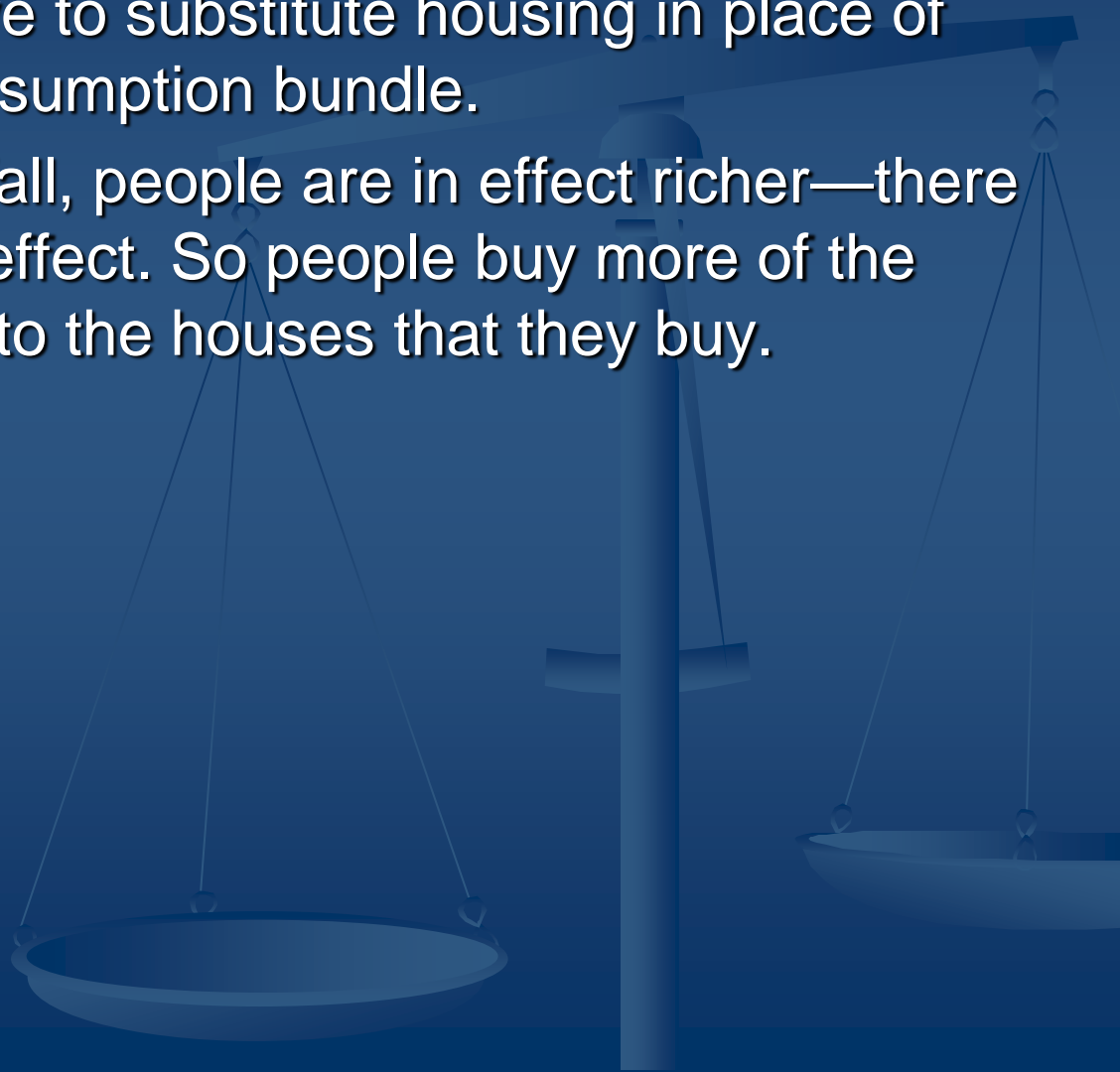
Ch. 4 Consumer and Producer Surplus

I can calculate, graphically illustrate, and explain the relevance of consumer and producer surplus.
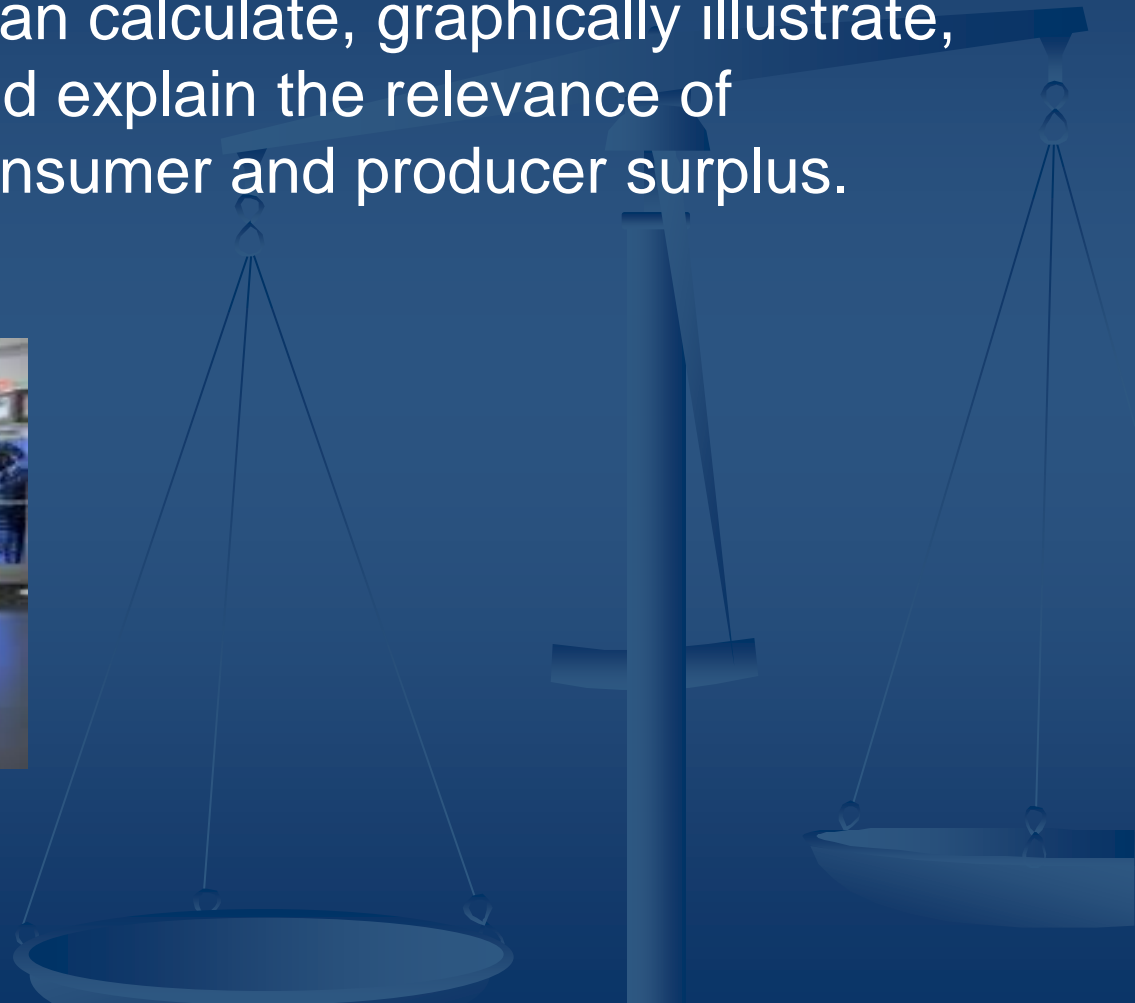
Consumer's Surplus: The Net Gain from a Purchase
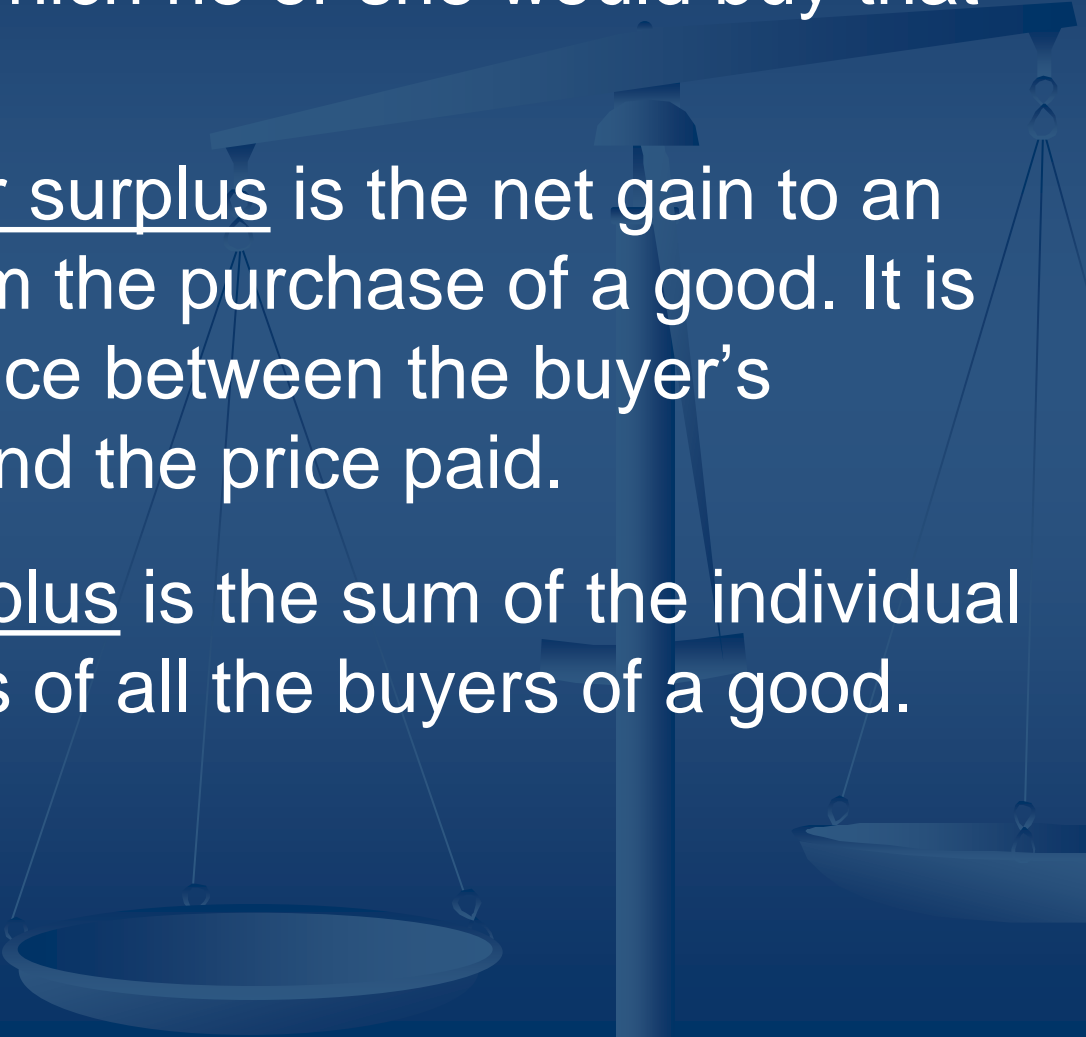
- Voluntary purchase $\Rightarrow$ benefit > costs

How much is this game system worth to you -
Subtracted by how much you paid

Consumer Surplus and the Demand Curve

- A consumer's <u>willingness to pay</u> for a good is the maximum price at which he or she would buy that good.

- <u>Individual consumer surplus</u> is the net gain to an individual buyer from the purchase of a good. It is equal to the difference between the buyer's willingness to pay and the price paid.

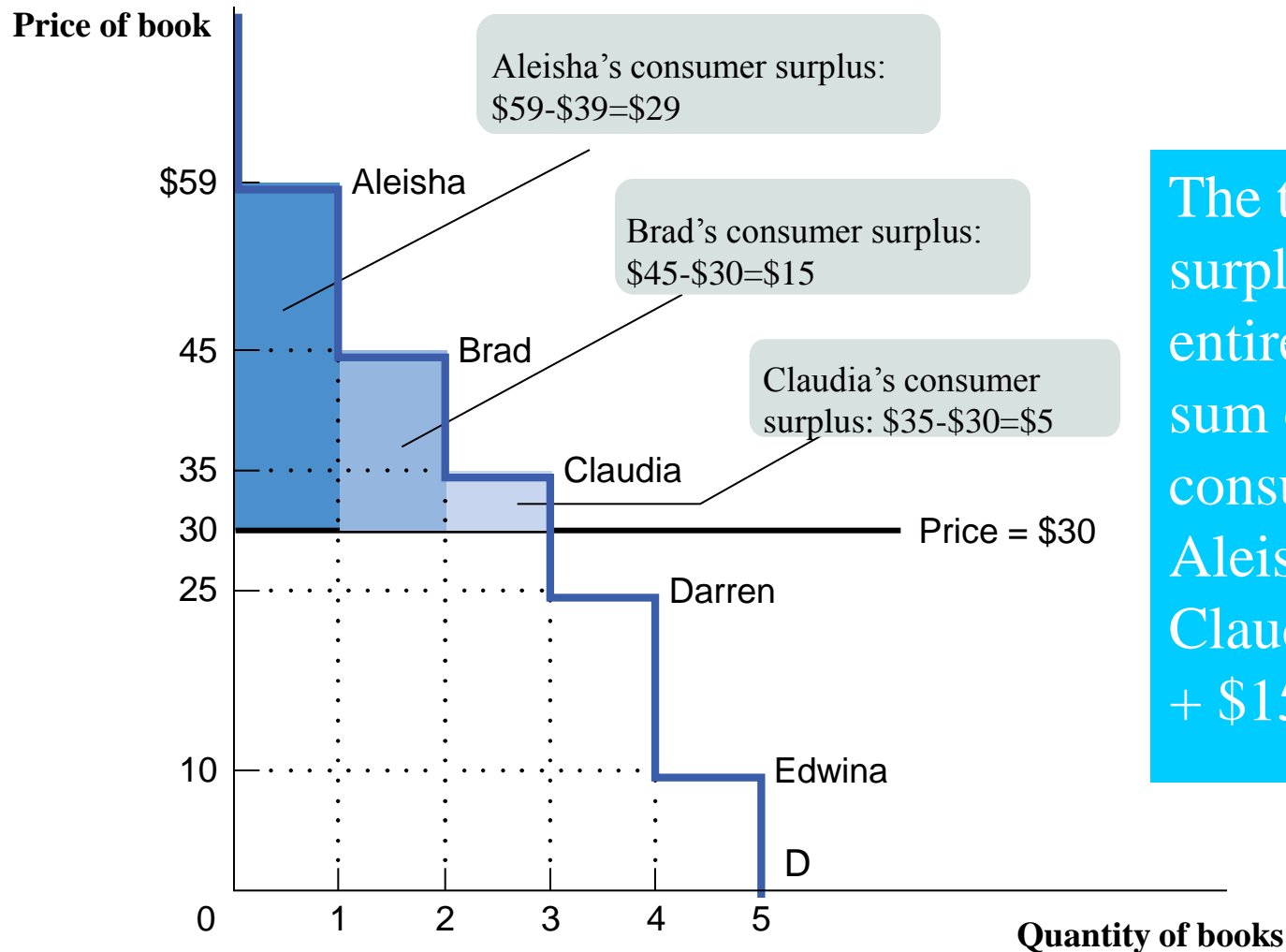- <u>Total consumer surplus</u> is the sum of the individual consumer surpluses of all the buyers of a good.

Consumer Surplus in the Used Textbook Market

TABLE 4-1

Consumer Surplus When the Price of a Used Textbook Is $30

Potential buyer	Willingness to pay	Price paid	Individual consumer surplus = Willingness to pay − Price paid
Aleisha	$59	$30	$29
Brad	45	30	15
Claudia	35	30	5
Darren	25	—	—
Edwina	10	—	—
All buyers			Total consumer surplus = $49

Consumer Surplus in the Used Textbook Market

Price of book

Aleisha's consumer surplus: $59-$39=$29

Brad's consumer surplus: $45-$30=$15

Claudia's consumer surplus: $35-$30=$5

$59 — Aleisha

45 — Brad

35 — Claudia

30 — Price = $30

25 — Darren

10 — Edwina

D

0   1   2   3   4   5

Quantity of books

The total consumer surplus is given by the entire shaded area - the sum of the individual consumer surpluses of Aleisha, Brad, and Claudia - equal to $29 + $15 + $5 = $49.
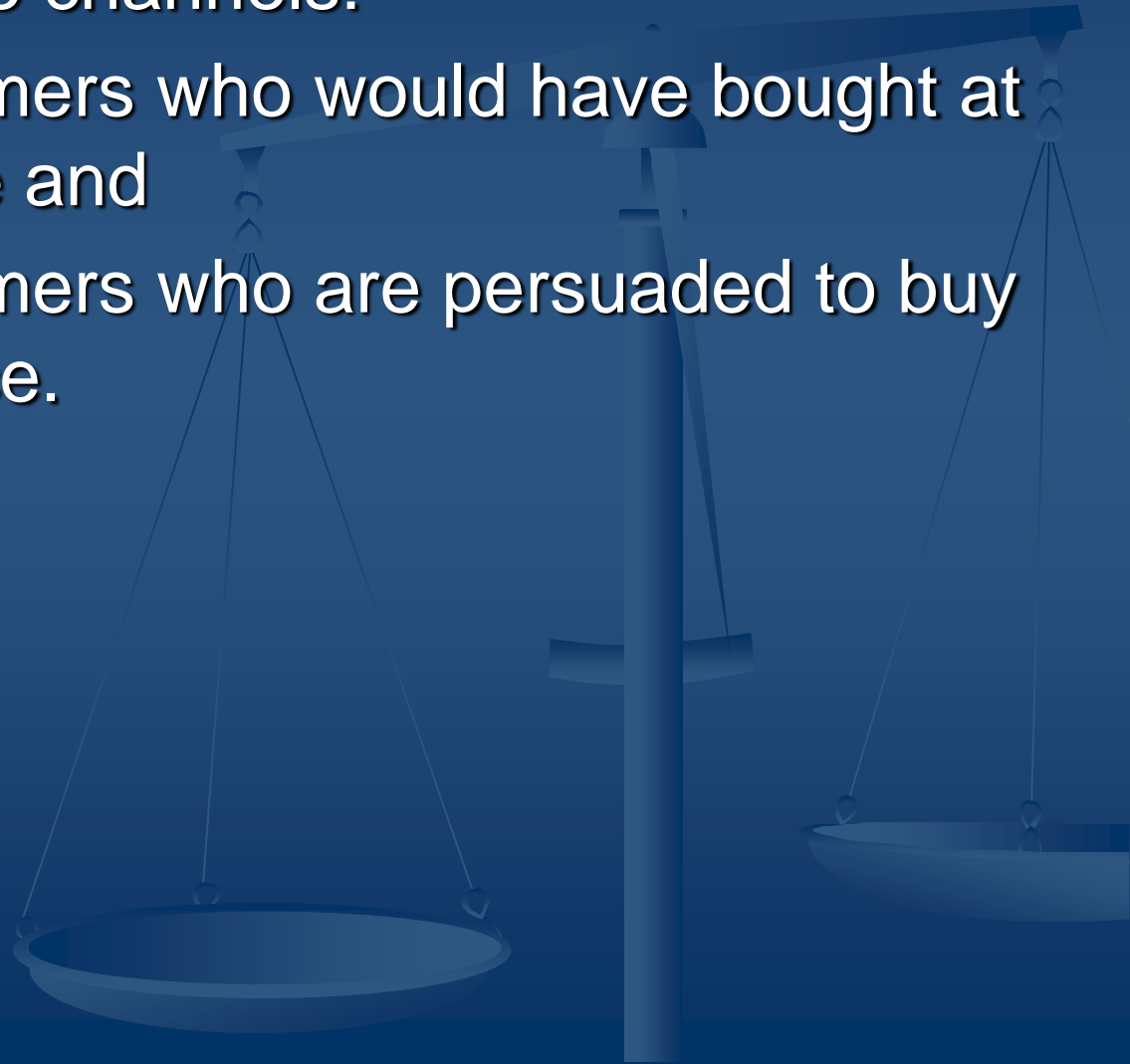
Consumer Surplus

Price of computers

The total consumer surplus generated by purchases of a good at a given price is equal to the area <u>below</u> the demand curve but <u>above </u>that price.

Consumer surplus

$1,500 — Price = $1,500

D

0

1 million

Quantity of computers
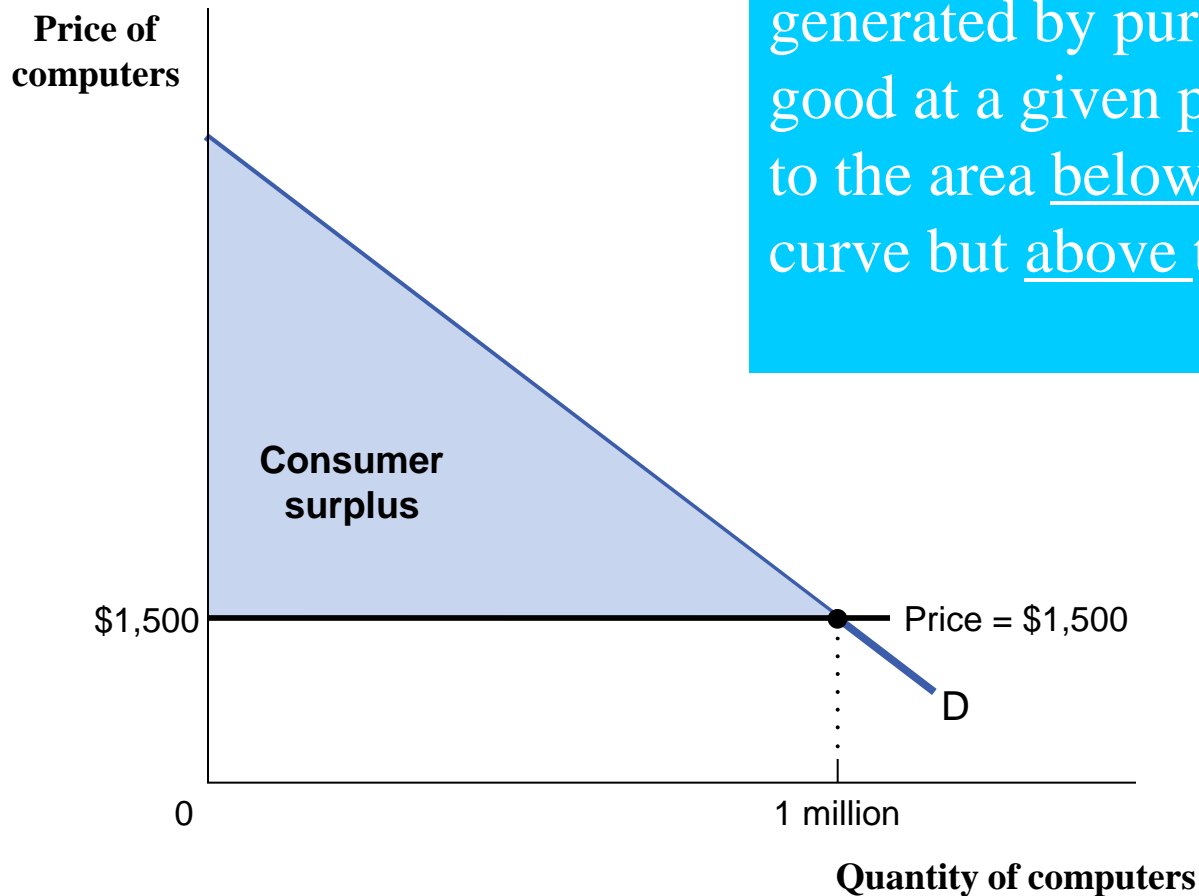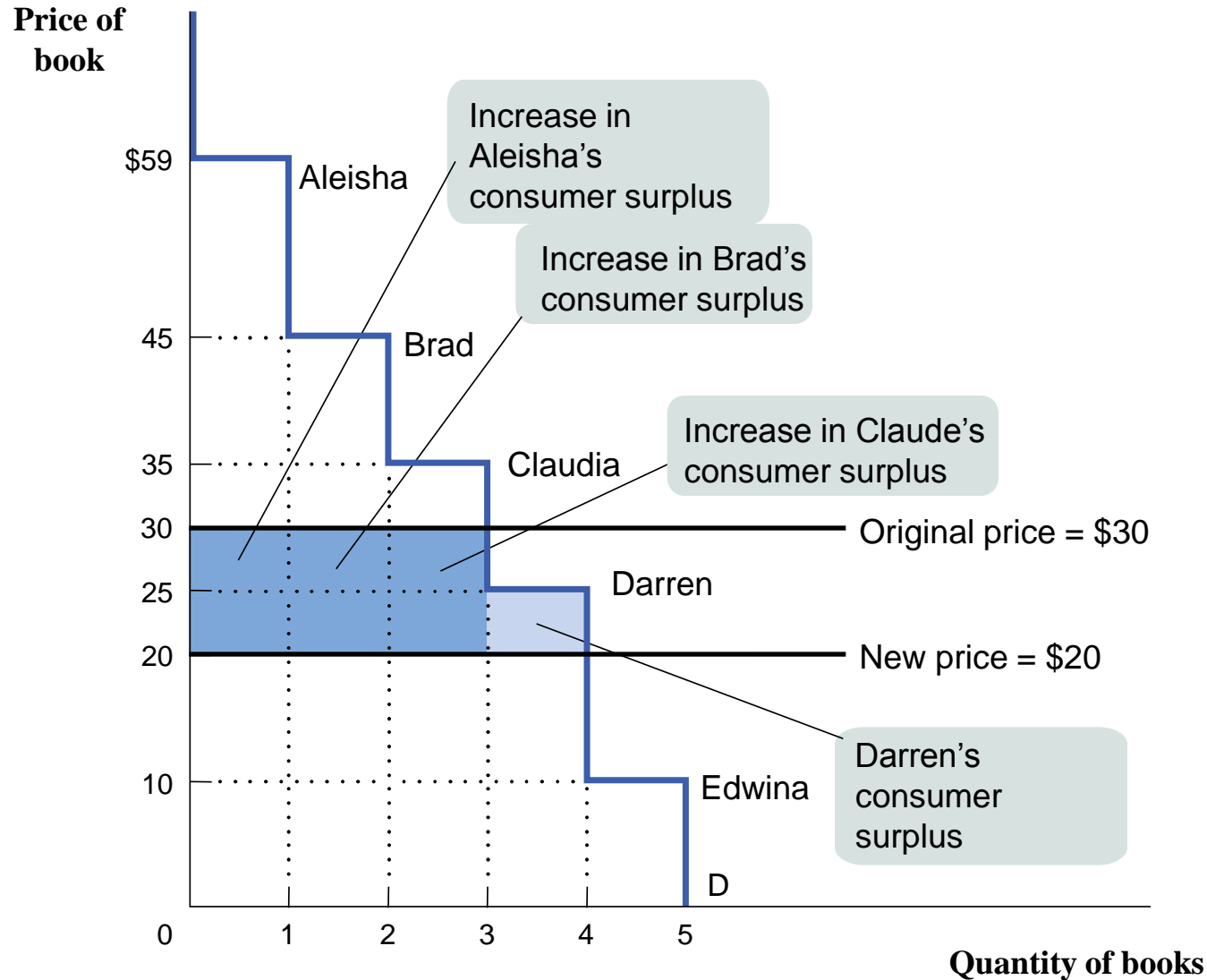
How Changing Prices Affect Consumer Surplus

A fall in the price of a good increases consumer surplus through two channels:

- A gain to consumers who would have bought at the original price and
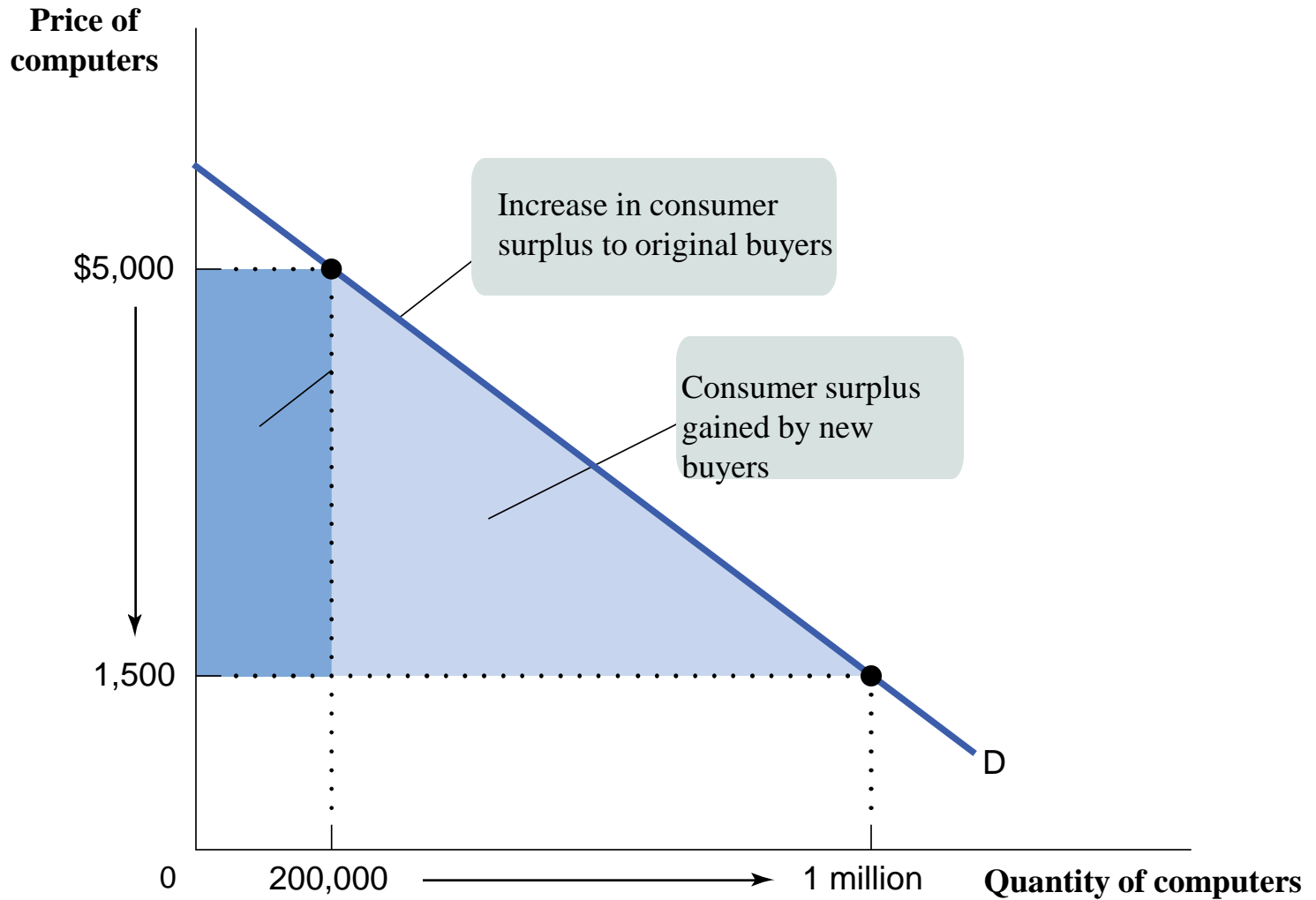- A gain to consumers who are persuaded to buy by the lower price.

# Consumer Surplus and a Fall in the Price of Used Textbooks

# A Fall in the Market Price Increases Consumer Surplus

Price of computers

Increase in consumer surplus to original buyers

Consumer surplus gained by new buyers

$5,000

1,500

D

0   200,000   1 million

Quantity of computers

Producer surplus

- ■ is the amount a seller is paid for a good minus the seller's <u>cost</u>

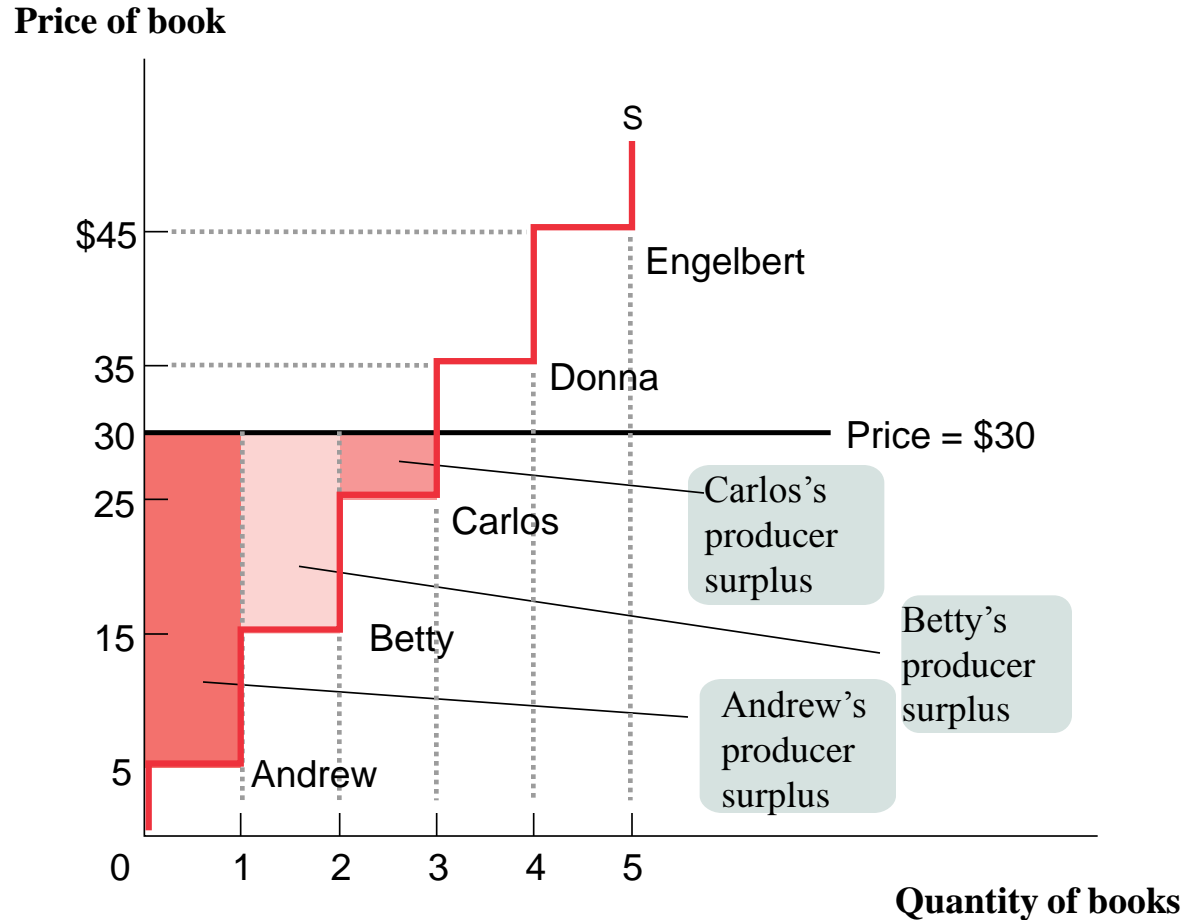- ■ measures the benefit to sellers participating in a market
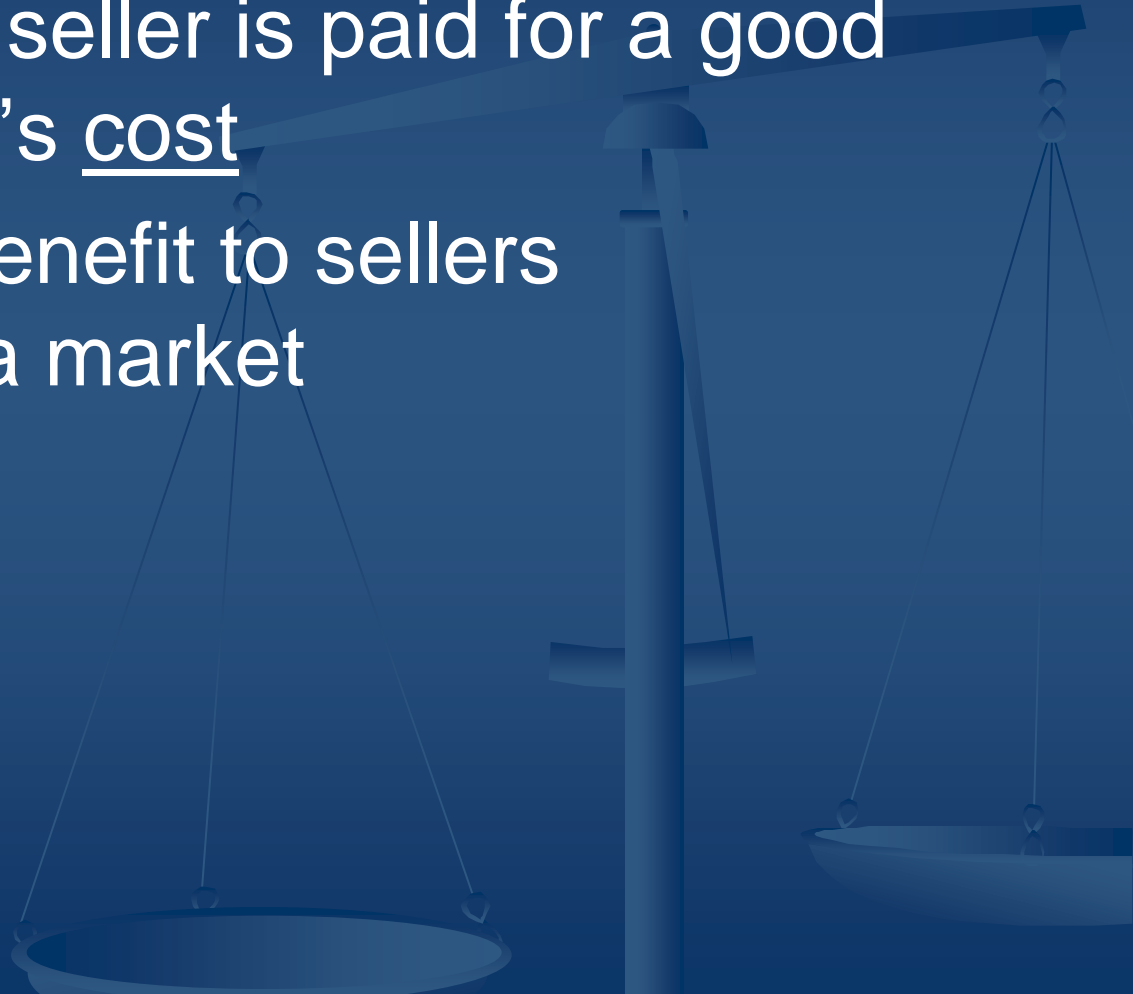
The Supply Curve for Used Textbooks
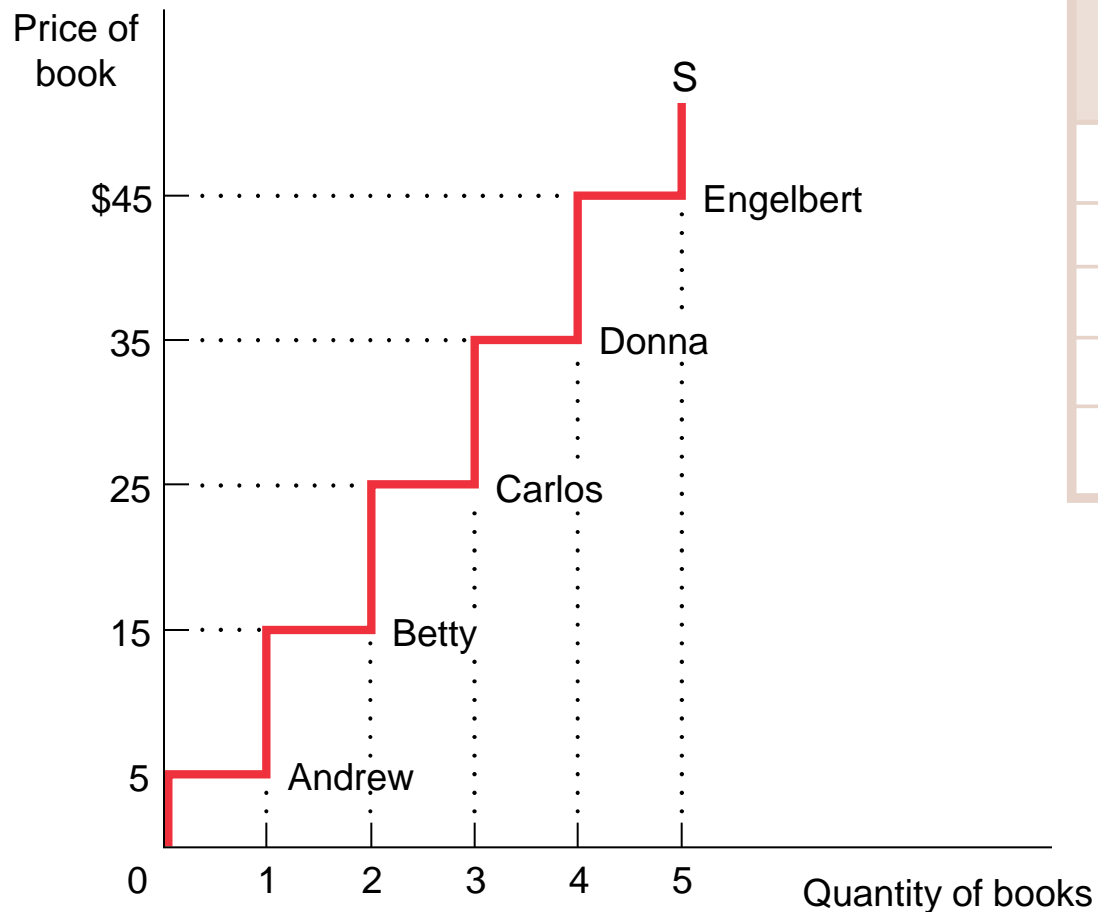
Potential sellers	Cost
Engelbert	$5
Donna	15
Carlos	25
Betty	35
Andrew	45

Producer Surplus in the Used Textbook Market
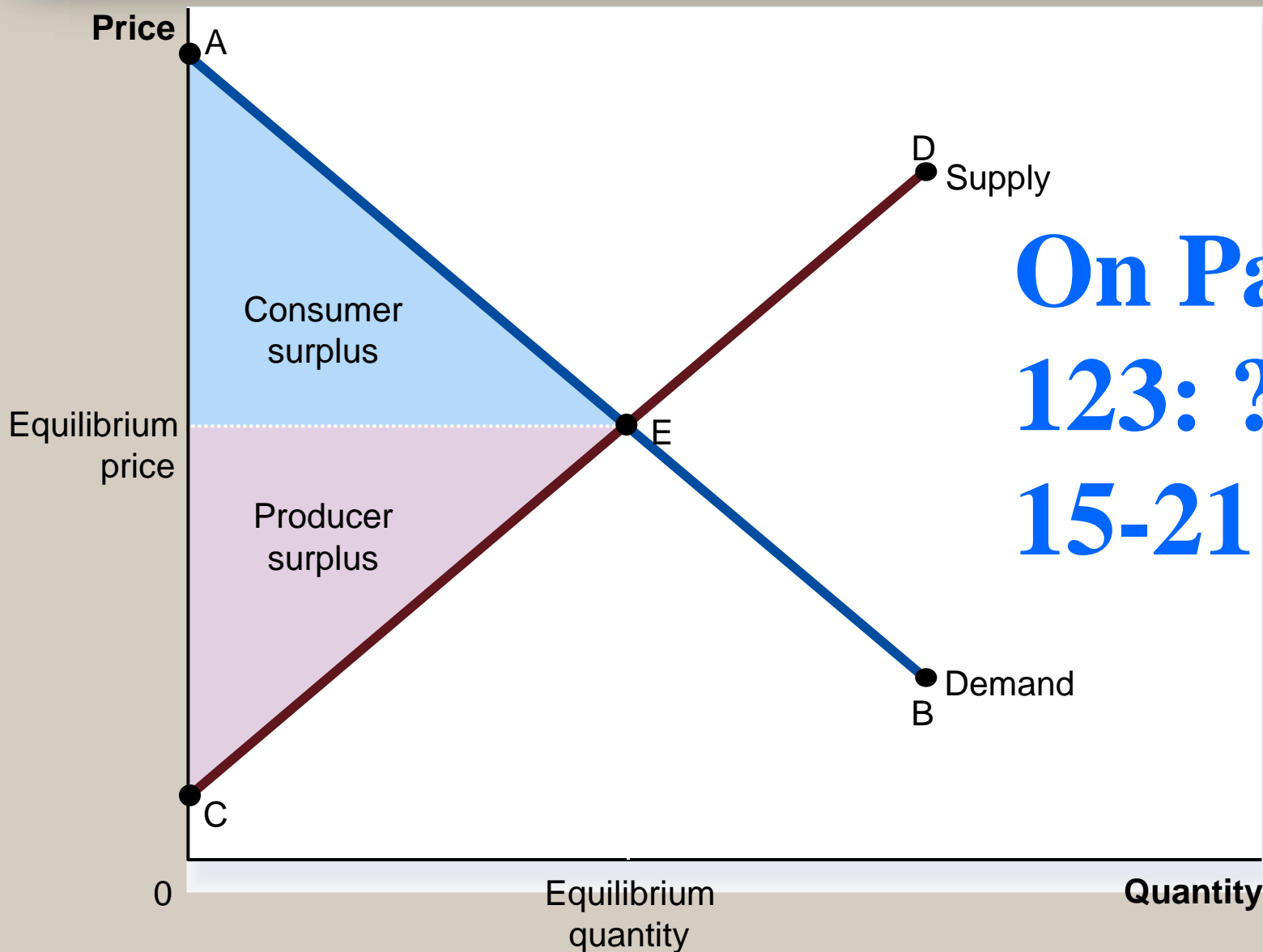
Producer Surplus

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

Price of wheat (per bushel)

$5

Producer surplus

S

Price = $5

0   1 million

Quantity of wheat (bushels)
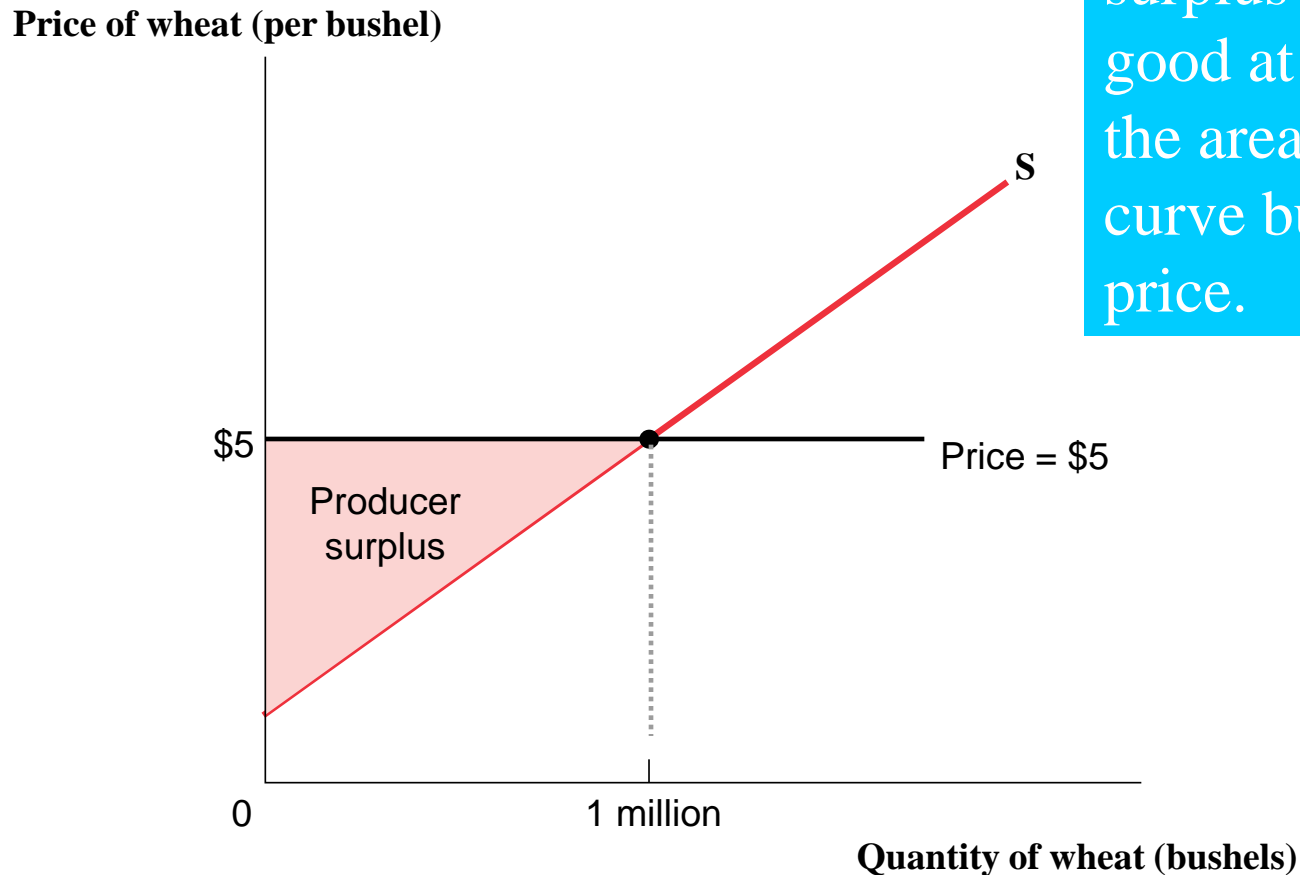
Figure 7 Consumer and Producer Surplus in the Market Equilibrium