

Utility and Demand

Definitions

- **Marginal**
 - an extra unit
- **Utility**
 - the satisfaction gained from consuming a product or service
- **Marginal Utility**
 - the extra satisfaction (utility) gained from consuming one more unit of a product or service

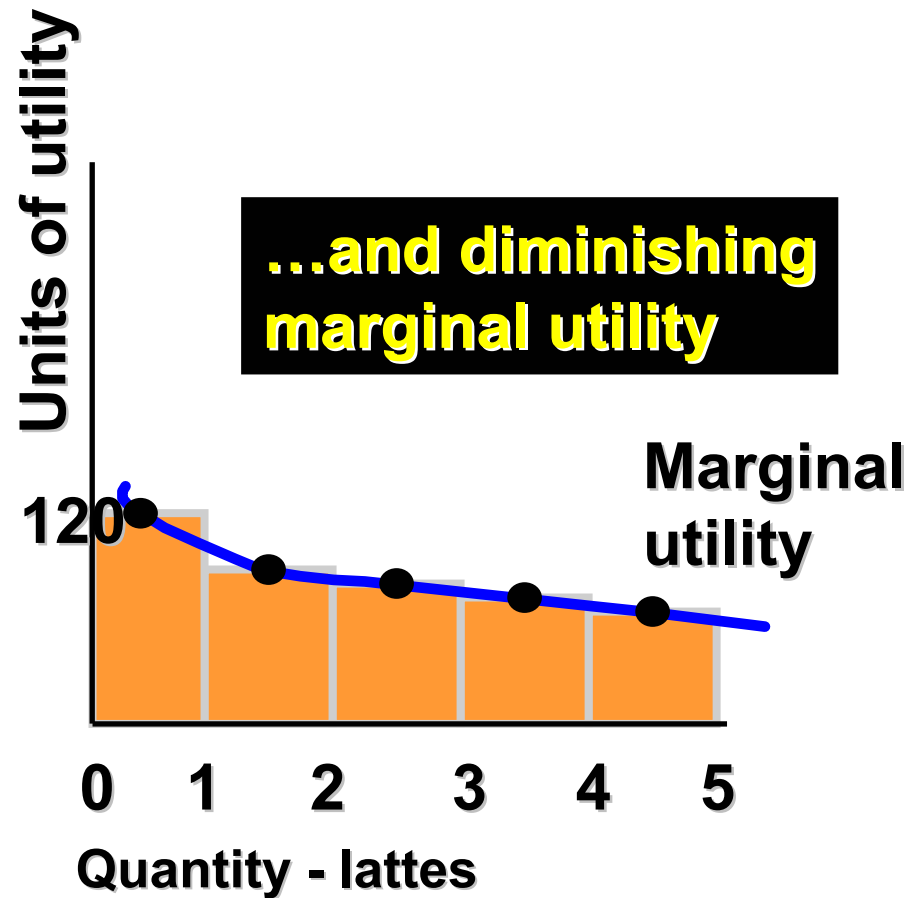
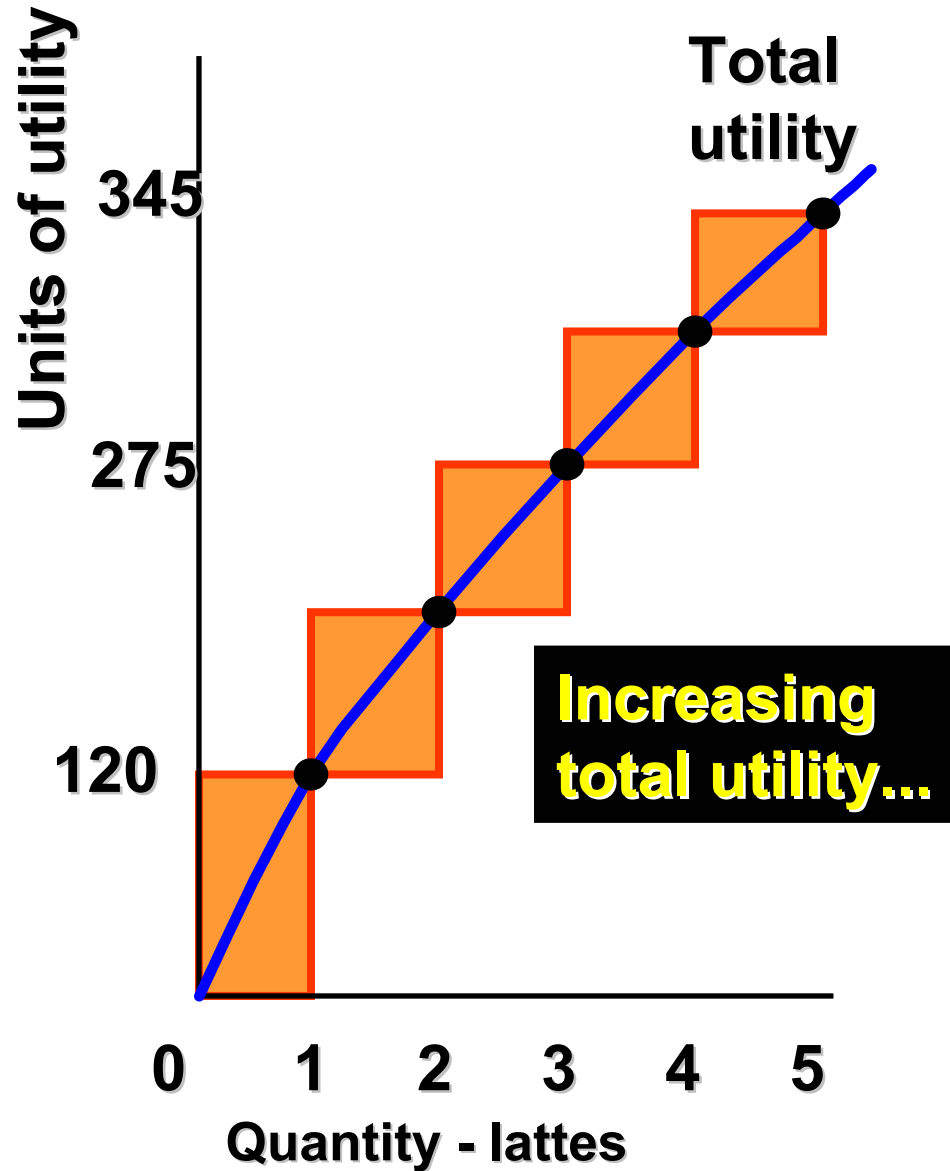
Marginal and Total Utility

<u># lattes</u>	<u>Utility from that latte (Marginal Utility)</u>	<u>Total utility from all lattes</u>
1	120	120
2	90	210
3	65	275
4	45	320
5	25	345
6	23	368
7	10	378
8	4	382
9	0	382
10	-2	380

Marginal Utility

- marginal utility = $\frac{\Delta \text{ in total utility}}{\Delta \text{ in \# of units}}$
- diminishing marginal utility
 - the amount of additional utility (marginal utility) decreases as more of the product is bought

Total and Marginal Utility



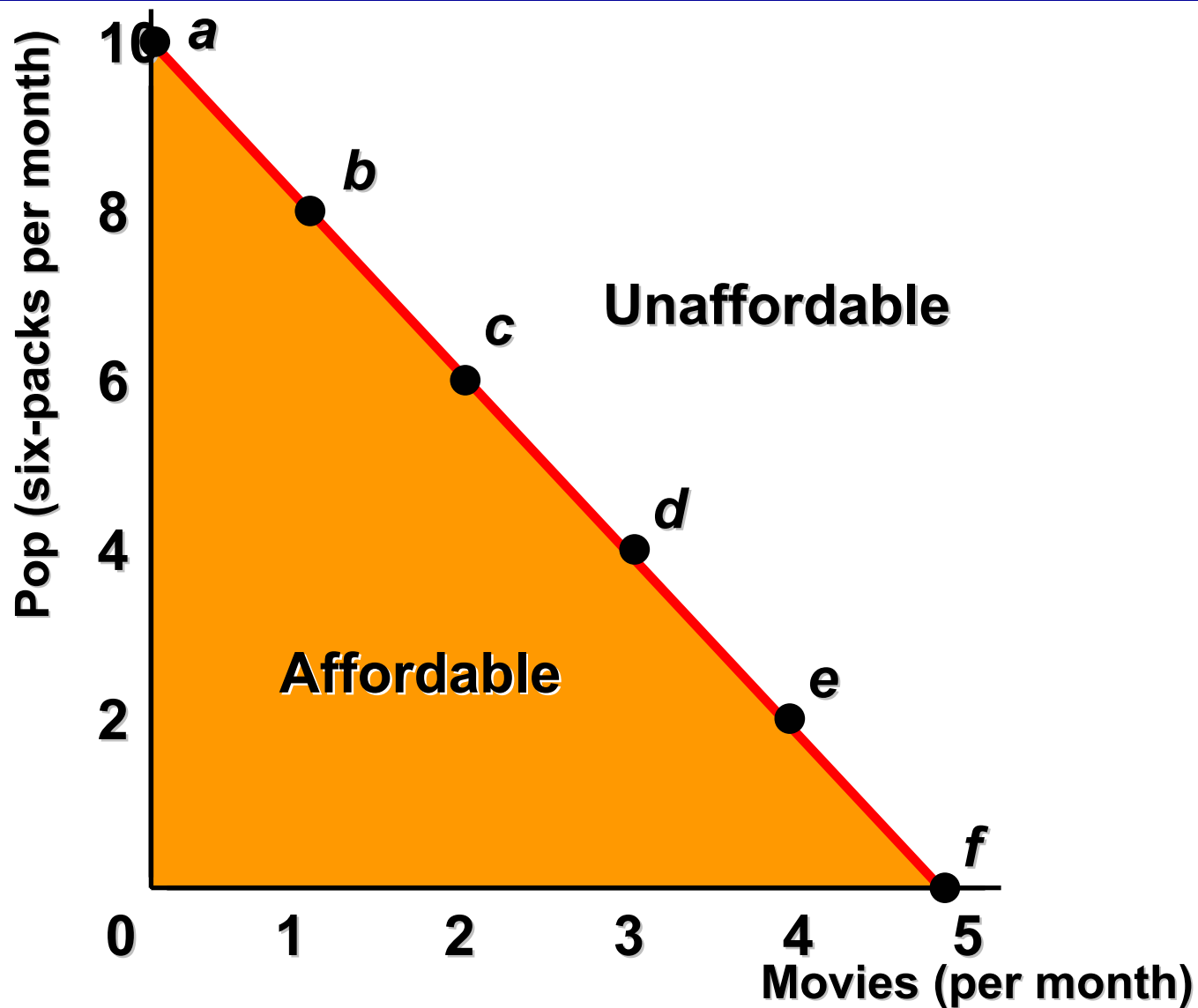
Marginal Utility

Q	Movies – MU	Pop - Mu
1	50	75
2	38	42
3	33	36
4	29	28
5	25	25

Consumption Possibilities

Possibility	Movies (\$6)		Pop (\$3)	
	Quantity	Expenditure (dollars)	Six-packs	Expenditure (dollars)
a	0	0	10	30
b	1	6	8	24
c	2	12	6	18
d	3	18	4	12
e	4	24	2	6
f	5	30	0	0

Consumption Possibilities



**Lisa's Total
Utility
from Movies
and Pop**

	Movies	Pop
Quantity per month	Total Utility	Six-packs Total utility
0	0	0
1	50	75
2	88	117
3	121	153
4	150	181
5	175	206
6	196	225
7	214	243
8	229	260
9	241	276
10	250	291
11	256	305
12	259	318
13	261	330
14	262	341

Lisa's Utility-Maximizing Combination

	<u>Movies</u>		Total utility from movies and pop	<u>Pop</u>	
	Quantity per month	Total utility		Total utility	Six-packs per month
a	0	0	291	291	10
b	1	50	310	260	8
c	2	88	313	225	6
d	3	121	302	181	4
e	4	150	267	117	2
f	5	175	175	0	0

Maximizing Utility

The marginal utility per dollar spent is the marginal utility obtained from the last unit of the good, divided by its price.

$$\frac{\text{Marginal utility from movies}}{\text{Price of a movie}} = \frac{\text{Marginal utility from pop}}{\text{Price of pop}} \quad \text{OR} \quad \frac{MU_m}{P_m} = \frac{MU_p}{P_p}$$

	Movies - \$6		Pop - \$3	
Q	MU	MU / \$	MU	MU / \$
1	50	8.33	75	25.00
2	38	6.33	42	14.00
3	33	5.50	36	12.00
4	29	4.83	28	9.33
5	25	4.17	25	8.33
6			19	6.33
7			18	6.00
8			17	5.67
9			16	5.33
10			15	5.00

Equalizing Marginal Utilities per Dollar Spent

Movies (\$6 each)

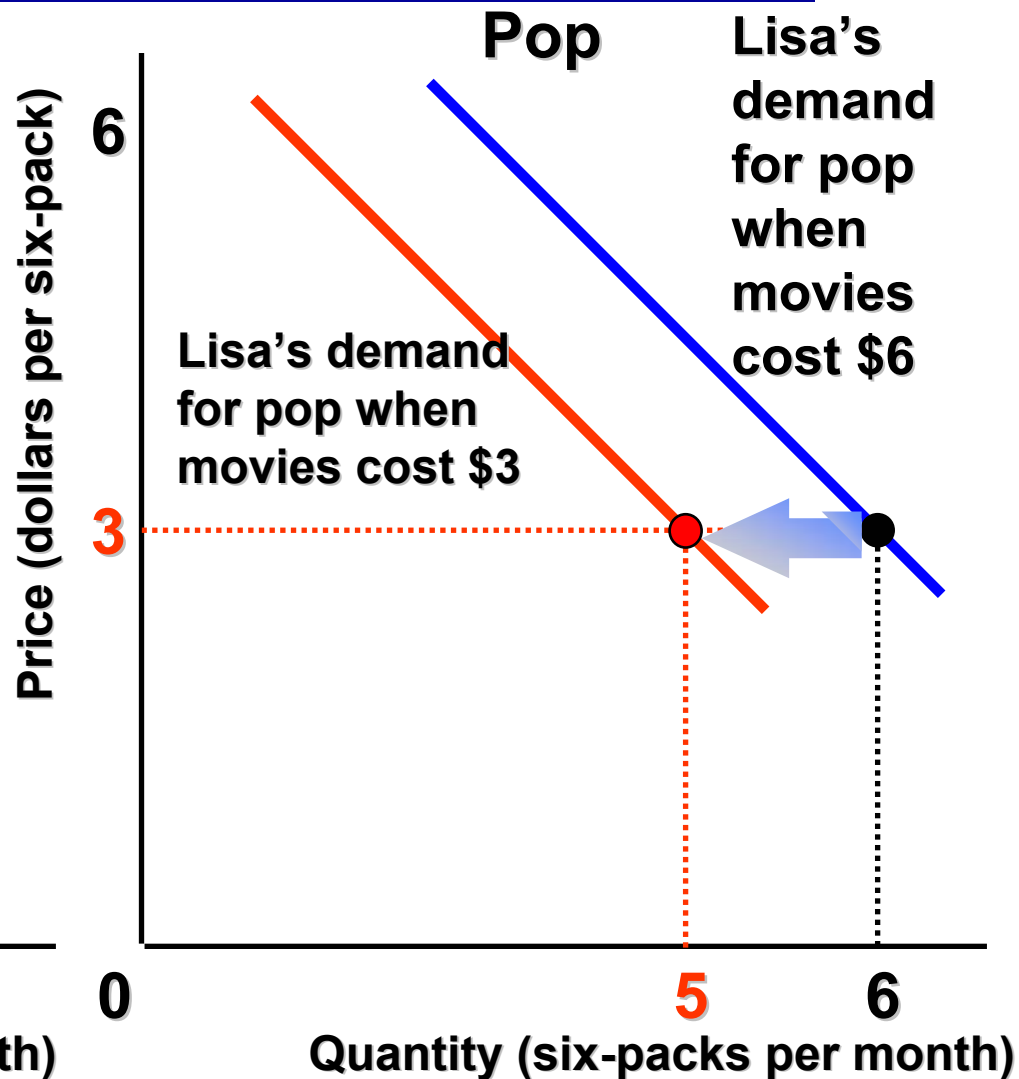
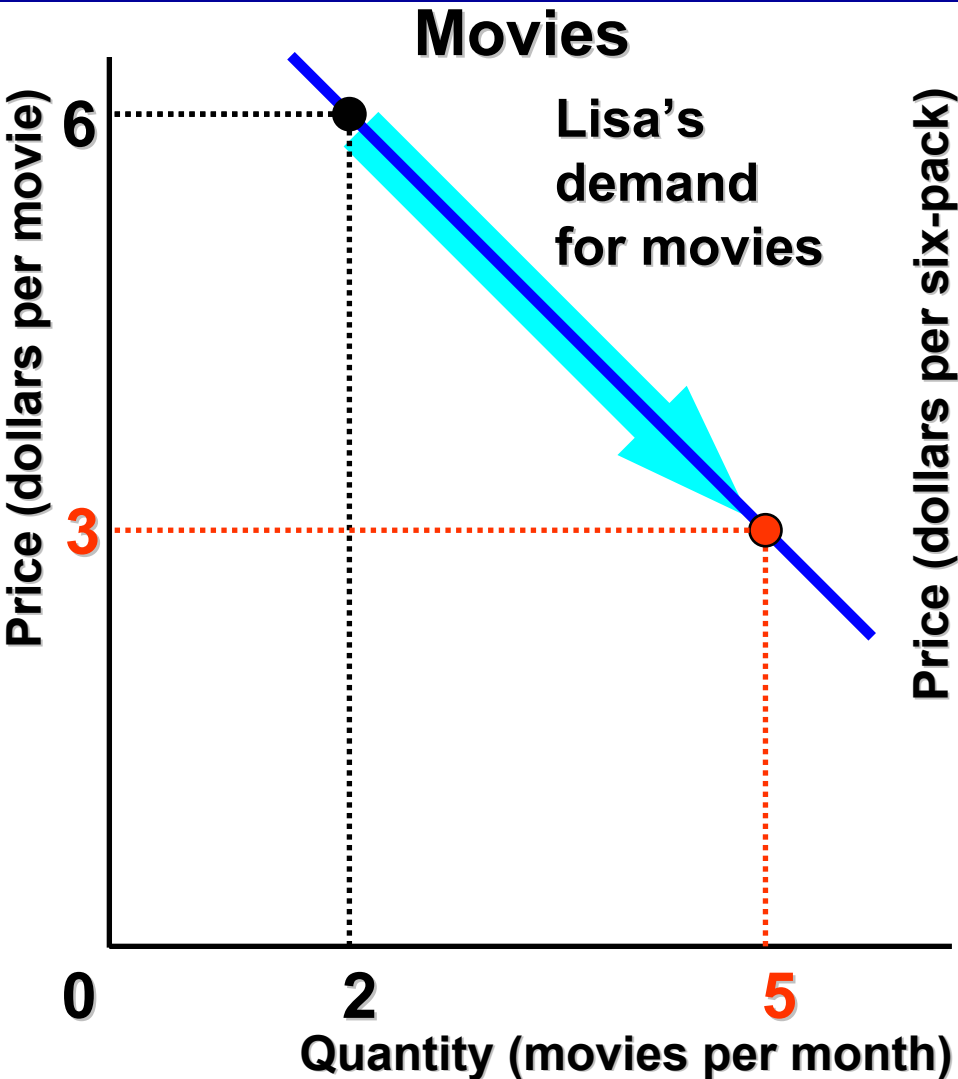
Pop (\$3 per six-pack)

	Quantity	Marginal utility	Marginal utility per dollar spent	Quantity	Marginal utility	Marginal utility per dollar spent
a	0	0		10	15	5.00
b	1	50	8.33	8	17	5.67
c	2	38	6.33	6	19	6.33
c	2	38	6.33	6	19	6.33
e	4	29	4.83	2	42	14.00
f	5	25	4.17	0	0	

How a Change in Price of Movies Affects Lisa's Choices

<u>Movies (\$3 each)</u>		<u>Pop (\$3 per six pack)</u>	
Quantity	Marginal utility per dollar spent	Six-packs	Marginal utility per dollar spent
0		10	5.00
1	16.67	9	5.33
2	12.67	8	5.67
3	11.00	7	6.00
4	9.67	6	6.33
5	8.33	5	8.33
6	7.00	4	9.33
7	6.00	3	12.00
8	5.00	2	14.00
9	4.00	1	25.00
10	3.00	0	

A Fall in the Price of Movies



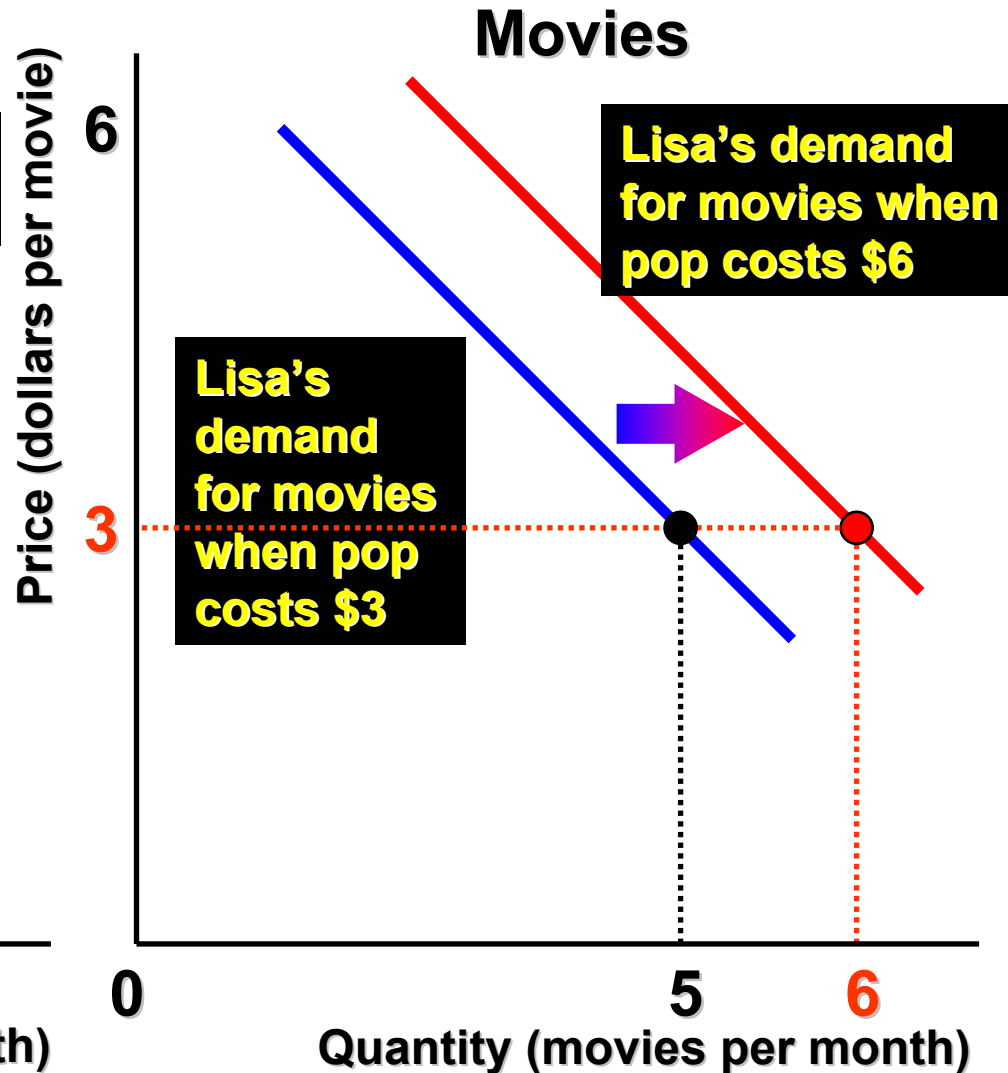
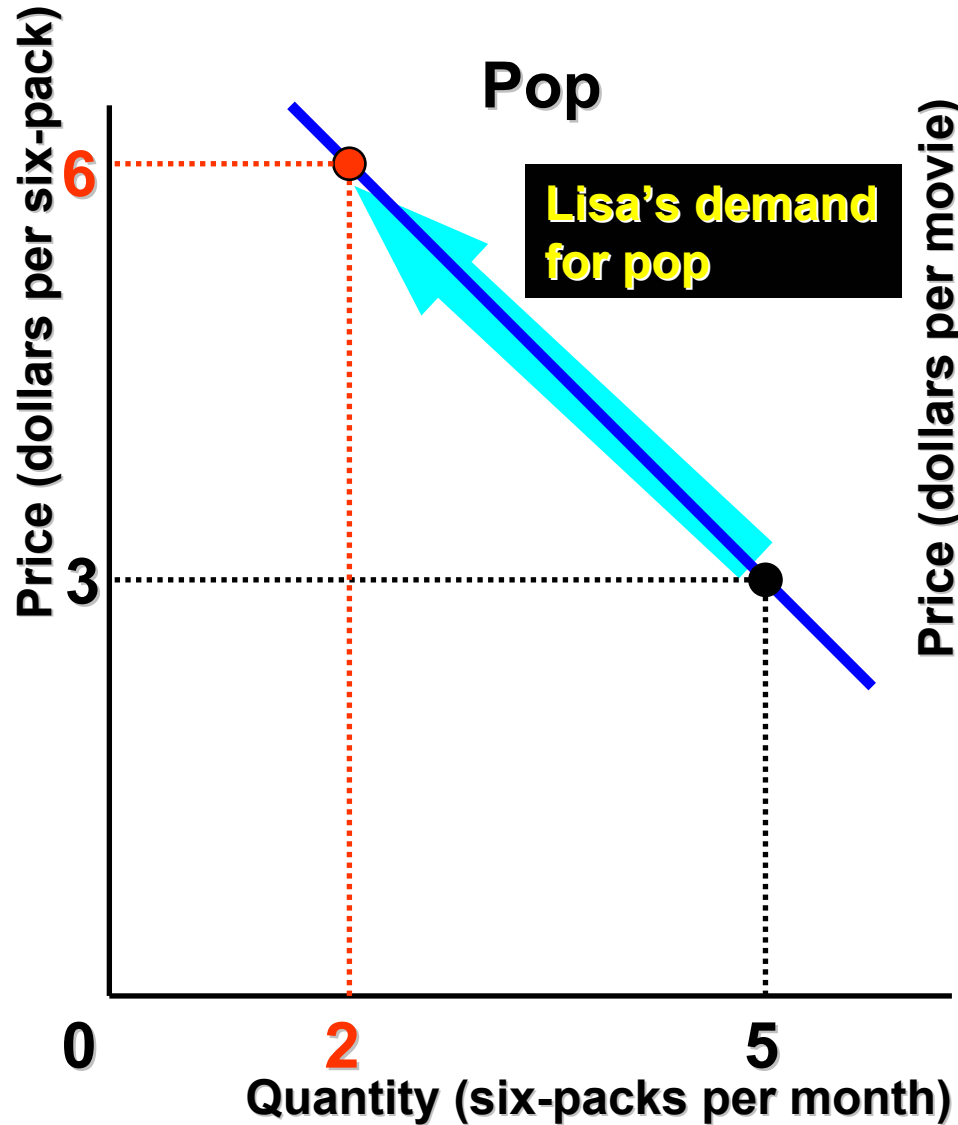
How a Change in Price of Pop Affects Lisa's Choices

Movies (\$3 each)

Pop (\$6 per six pack)

Quantity	Marginal utility per dollar spent	Six-packs	Marginal utility per dollar spent
0		5	4.17
2	12.67	4	4.67
4	9.67	3	6.00
6	7.00	2	7.00
8	5.00	1	12.50
10	3.00	0	

A Rise in the Price of Pop



Predictions of Marginal Utility Theory

Two predictions of marginal utility theory:

When the **price of a good rises**, the **quantity demanded** for that good **decreases**.

If the **price of one good rises**, the **demand for** another good that can serve as a **substitute increases**.

EXPLAINED
theory of
Chapter 3

Lisa's Choices with an Income of \$42 a Month

Movies (\$3 per movie)

Pop (\$3 per six pack)

Quantity **Marginal utility
per dollar spent**

Six packs **Marginal utility
per dollar spent**

0		14	3.67
1	16.67	13	4.00
2	12.67	12	4.33
3	11.00	11	4.67
4	9.67	10	5.00
5	8.33	9	5.33
6	7.00	8	5.67
7	6.00	7	6.00
8	5.00	6	6.33
9	4.00	5	8.33
10	3.00	4	9.33
11	2.00	3	12.00
12	1.00	2	14.00
13	0.67	1	25.00
14	0.33	0	

Individual Demand and Market Demand

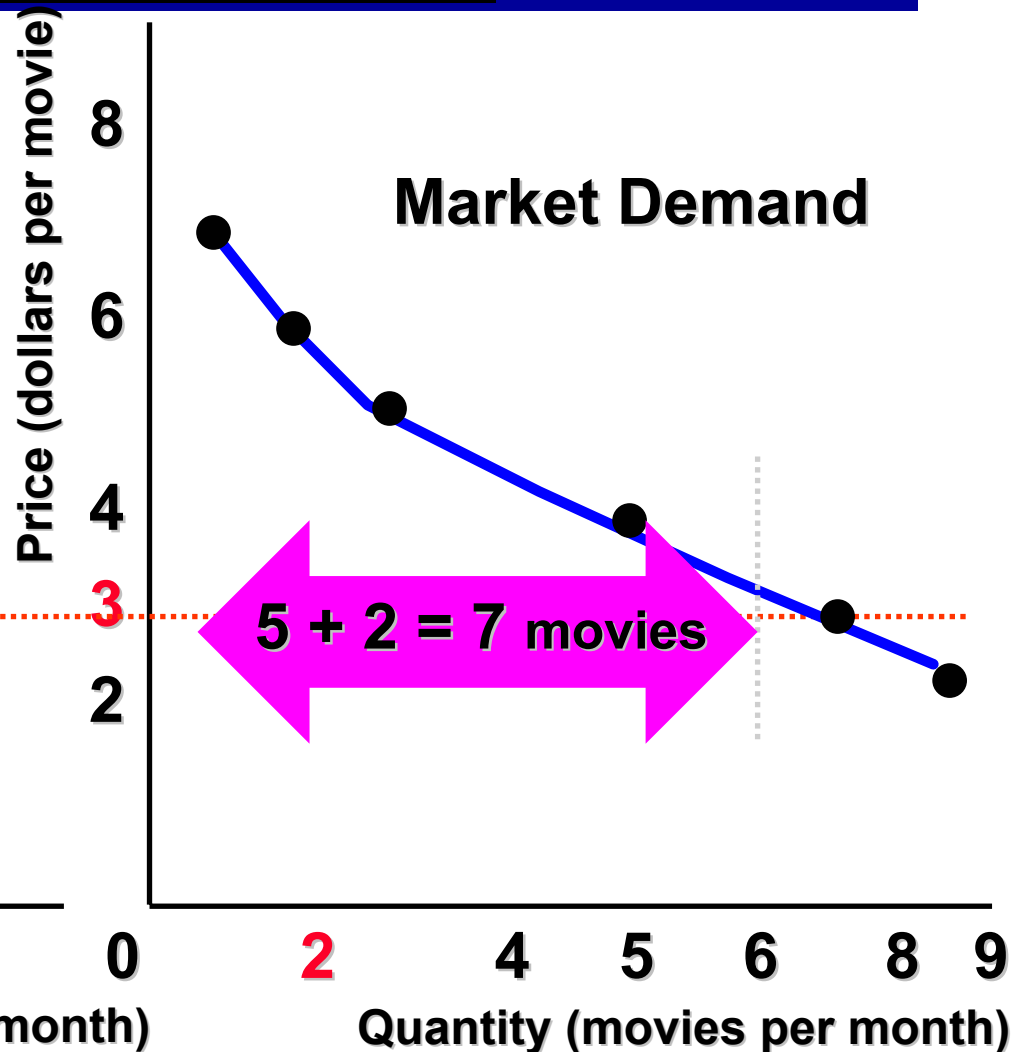
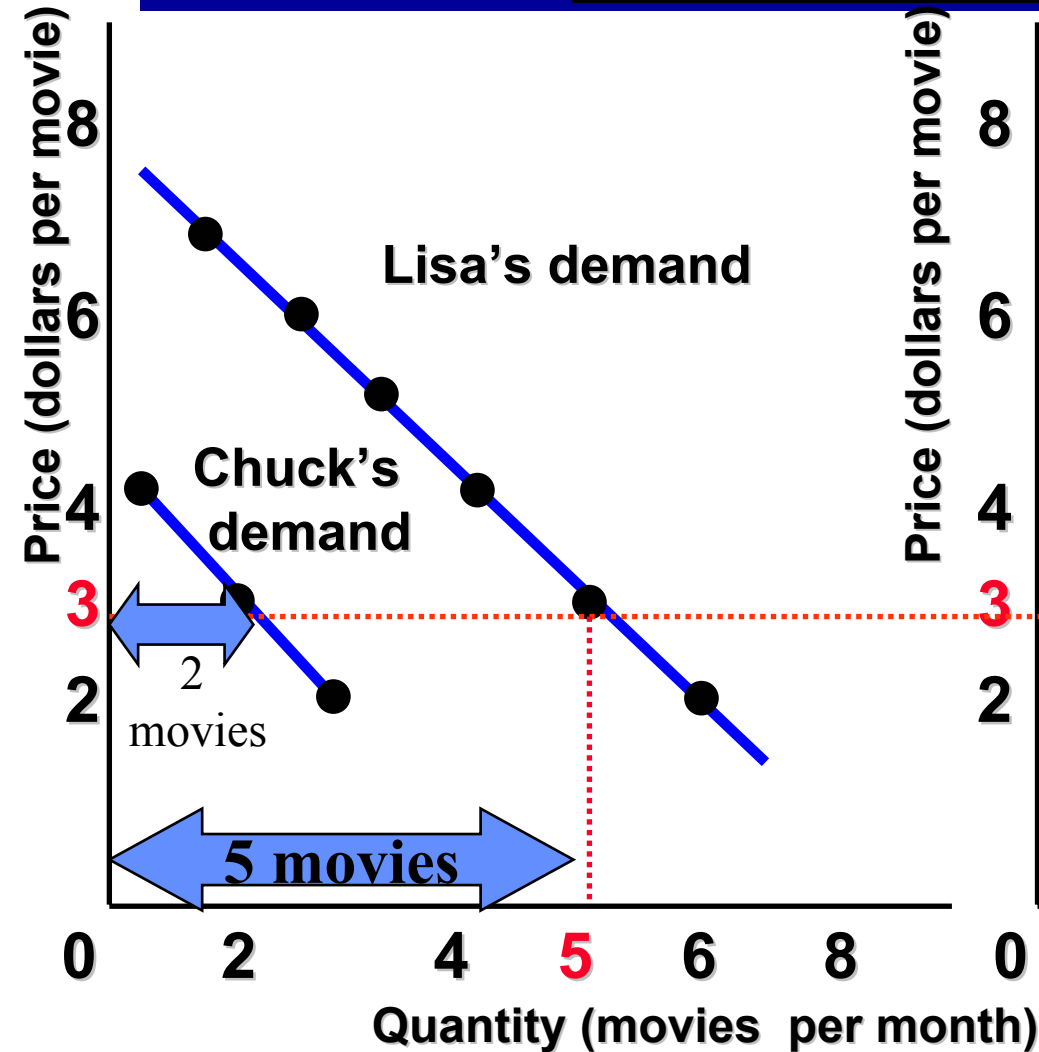
Market demand is the relationship between the total quantity demanded of a good and its price.

Individual demand is the relationship between quantity demanded of a good by a single individual and its price.

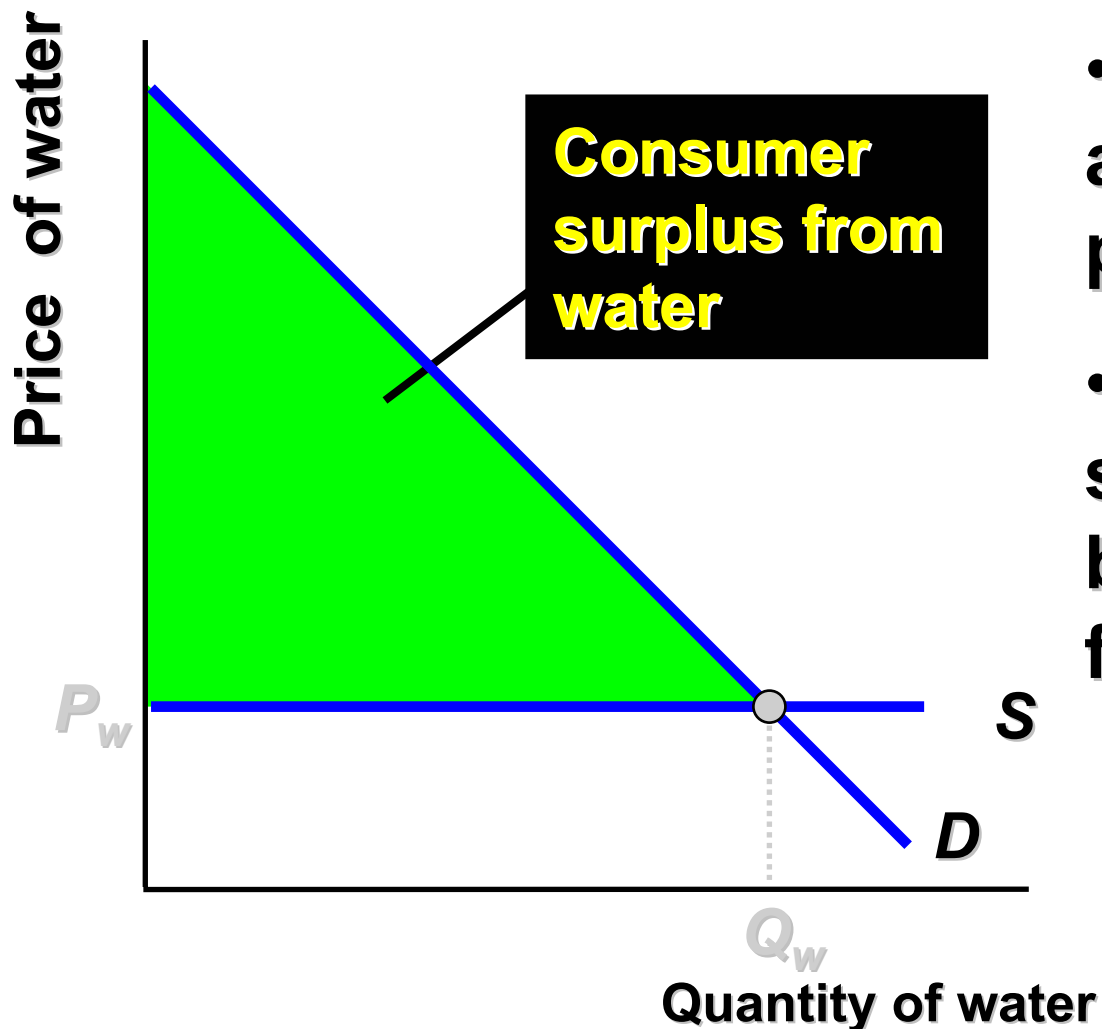
Individual and Market Demand Curves

Price (dollars per movie)	Quantity of movies demanded				
	Lisa		Chuck		Market
7	1	+	0	=	1
6	2	+	0	=	2
5	3	+	0	=	3
4	4	+	1	=	5
3	5	+	2	=	7
2	6	+	3	=	9

Individual and Market Demand Curves

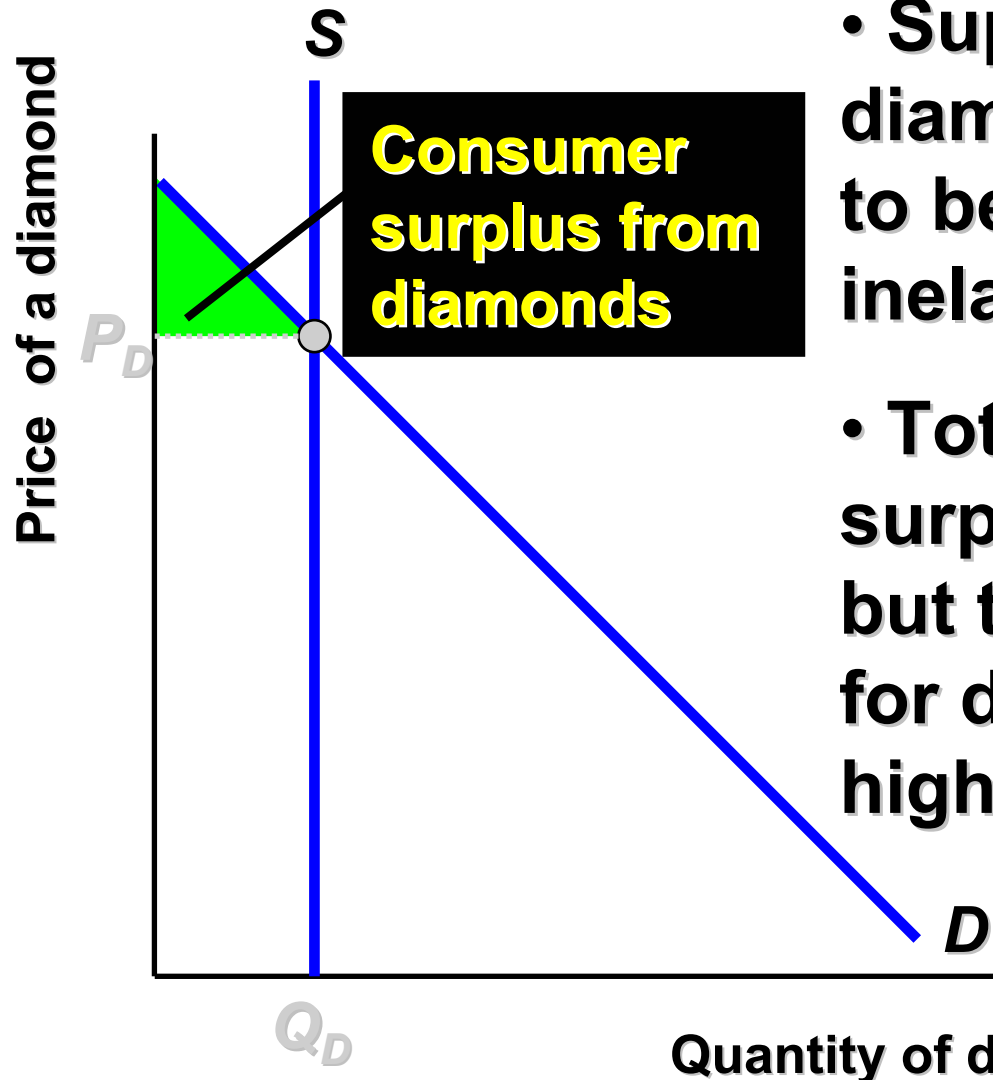


The Paradox of Value



- Supply of water assumed to be perfectly elastic.
- Total consumer surplus is large, but the price paid for water is low.

The Paradox of Value



- Supply of diamonds assumed to be perfectly inelastic.

- Total consumer surplus is small, but the price paid for diamonds is high.

The Paradox of Value

Diamonds have a high price and a high marginal utility, while water has a low price and a low marginal utility.

At consumer equilibrium, the marginal utility per dollar spent is the same for diamonds as for water.