

Microeconomics: Lecture 3

Consumer Behavior (Part I)

Consumer Theory: Roadmap

Building Blocks:

Part I

- **Preferences and Axioms of Rationality**

Part II

- **Representation of Rational Preferences: Utility**
- **Affordable Bundles: Budget Set**

Part III

- **A Model of Consumer Choice: Utility Maximization**
- **Derivation of Individual Demand**

Part IV

- **Derivation of Market Demand**

Roadmap for Part I:



Preferences and
assumptions

Indifference curves

Marginal rate of
substitution

Examples

A Model of Consumer Theory

- A model of consumer theory is a formal description of how consumers behave
- Goals:
 - predict consumers' choices, in order to determine **demand** of goods
 - evaluate effects of price increases on well-being of consumers

Applications of Consumer Theory

1. To what extent did the food stamp program provide individuals with more food versus merely subsidizing food they bought anyway?
2. How would General Mills determine the price to charge for a new cereal before it went to the market?
3. How will drivers react to lower prices for gasoline, will they buy more cars and move further out to the suburbs?

Building Blocks of Consumer Theory

Preferences

- What people like

Budget Constraints

- What people can afford

How consumers decide how to make choices

- Do they choose randomly or do they behave in way that allows them to achieve the highest possible well-being?

Preference Relations

A *preference relation* (“”) describes an individual's attitude towards alternatives

It is a *binary relation* on the set of possible alternatives

Basic Assumptions: Axioms of Rational Choice

Axiom 1: Completeness

If A and B are any two bundles, an individual can always specify exactly one of these possibilities:

A is (weakly) preferred to B: $A \succsim B$

B is (weakly) preferred to A: $B \succsim A$

Basic Assumptions: Axioms of Rational Choice

Axiom 2: Transitivity

If a consumer prefers A to B and B to C,
then the consumer also prefers A to C

In other words, we assume that individuals
choices are internally consistent

Basic Assumptions: Axioms of Rational Choice

Axiom 3: Continuity

if A is preferred to B, then situations suitably
“close to” A must also be preferred to B

This axiom allows us to analyze an
individual's response to relatively small
changes in income and prices

Basic Assumptions: Axioms of Rational Choice

Axiom 4: Strict Monotonicity

More is better: If A, B are real numbers and $A > B$
then $A \succ B$

Axiom 5: Convexity

If $A \succ B$ then $tA + (1-t)B \succ B$, where t is a number
in $[0, 1]$

Consumer Preferences

Consumer preferences can be represented graphically using *indifference curves*

A person will be *indifferent* to all bundles on a given indifference curve

This means that a person will be equally satisfied with the choice of any bundles that lie on the same indifference curve

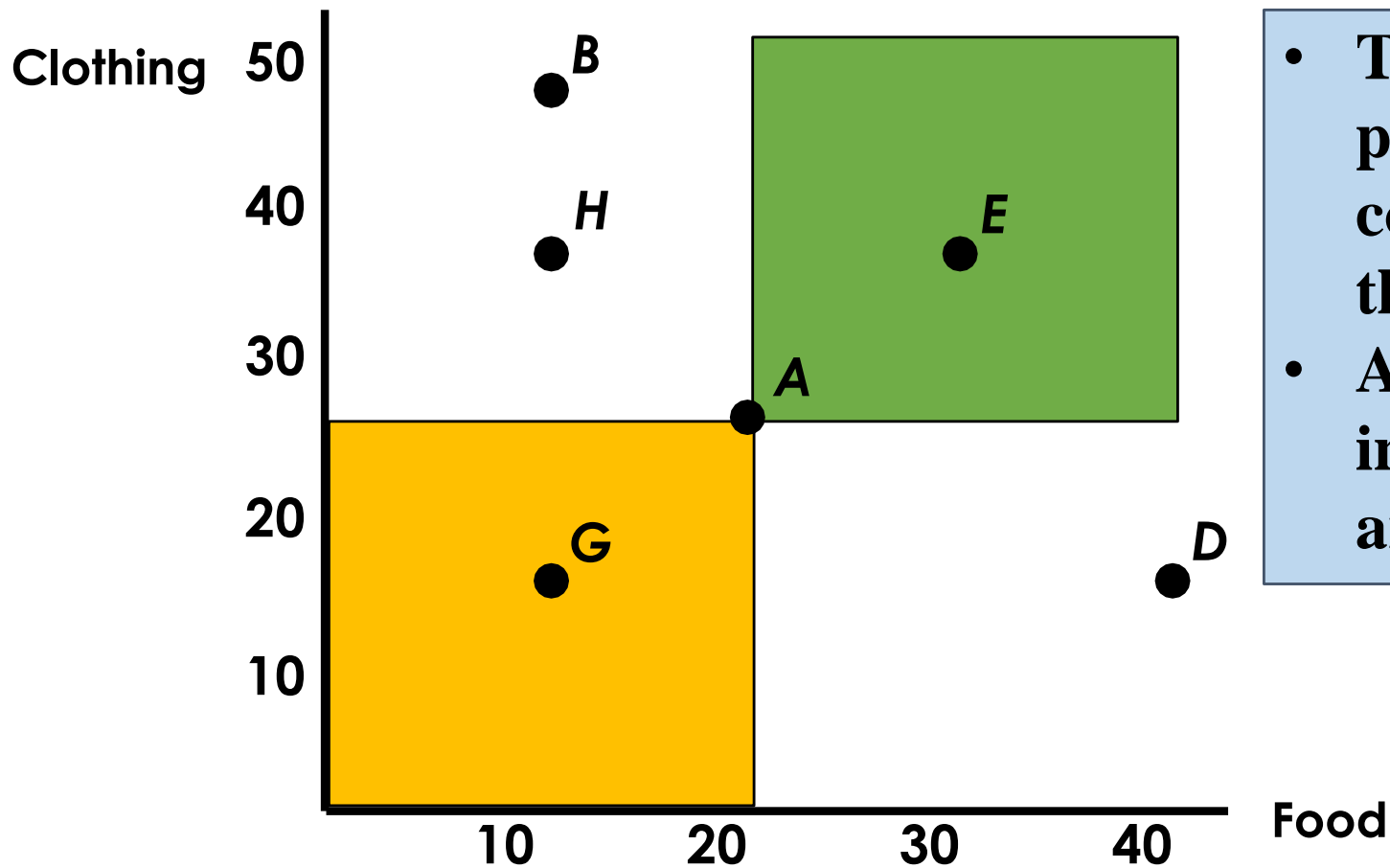
Indifference Curves: An Example

Graph the points with one good on the x-axis and the other good on the y-axis

Plotting the points, we can make some immediate observations about preferences

More is better

Indifference Curves: An Example



- The consumer prefers *A* to all combinations in the yellow box
- All combinations in the green box are preferred to *A*

Indifference Curves: An Example

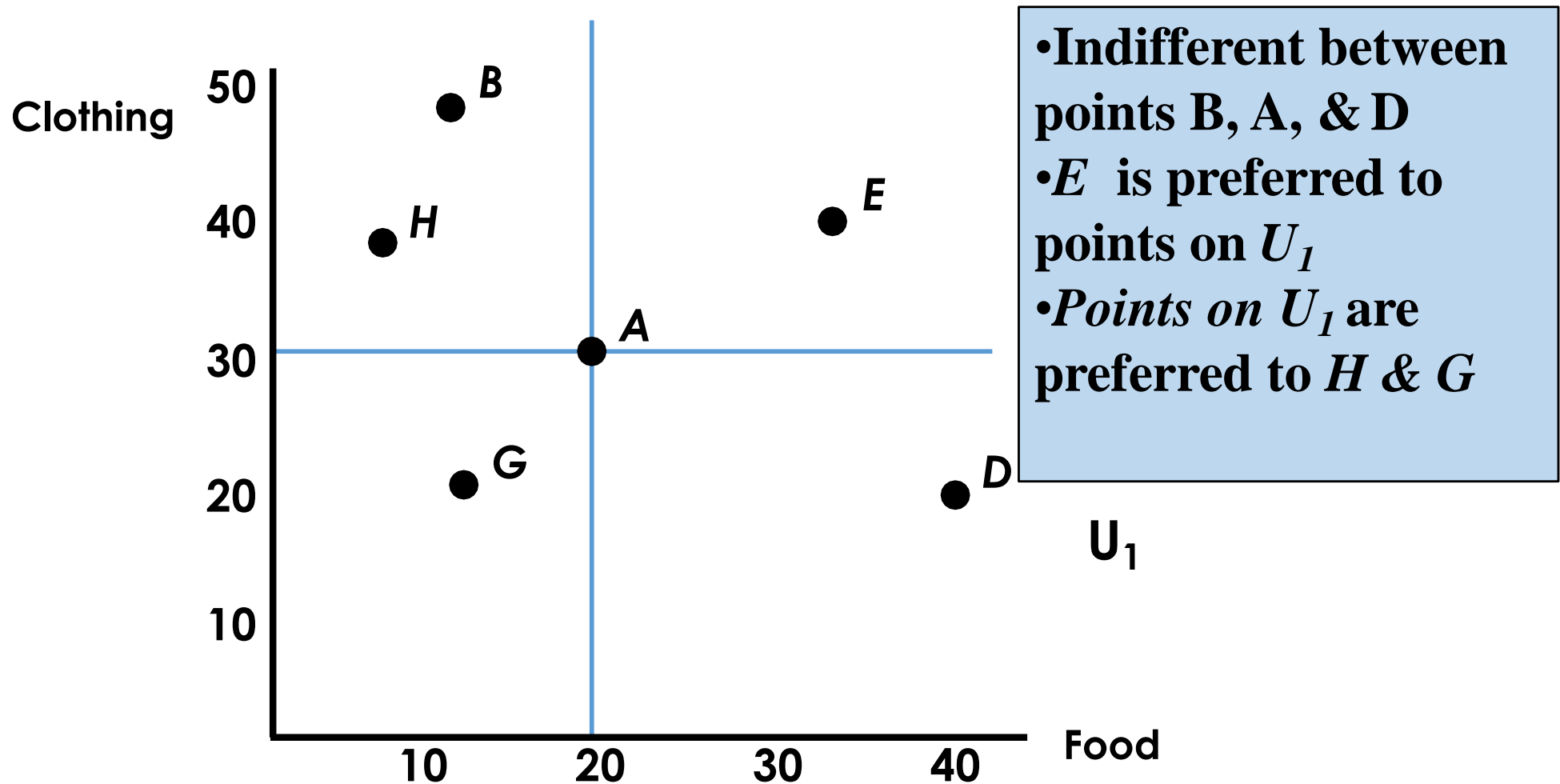
Points such as B and D have more of one good but less of another compared with point A

Need more information about consumer ranking

Consumer may decide that they are indifferent between B, A and D

We can then connect those points with an indifference curve

Indifference Curves: An Example



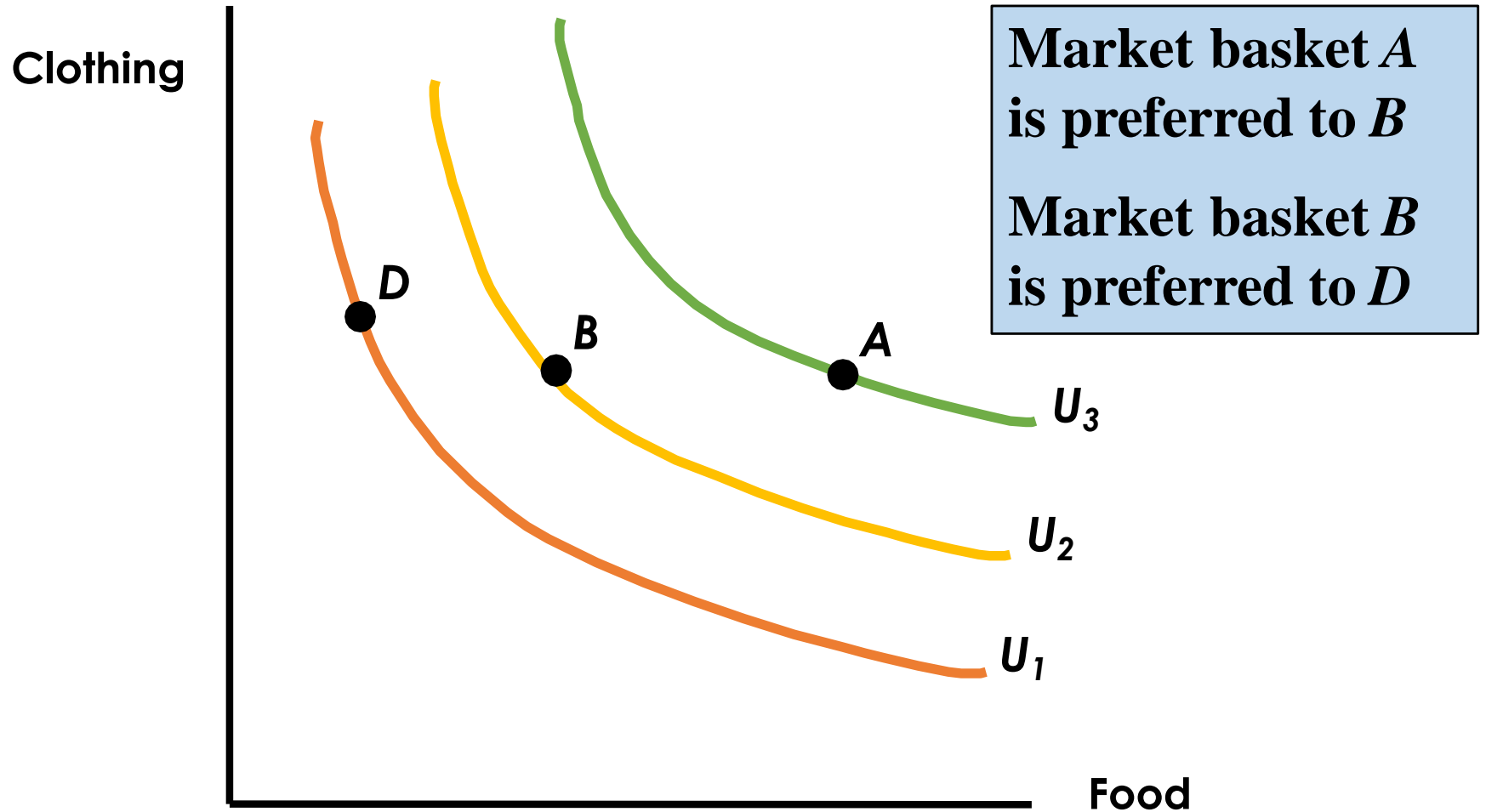
Indifference Curves

A set of indifference curves (*indifference map*) describes preferences for all combinations of goods/services

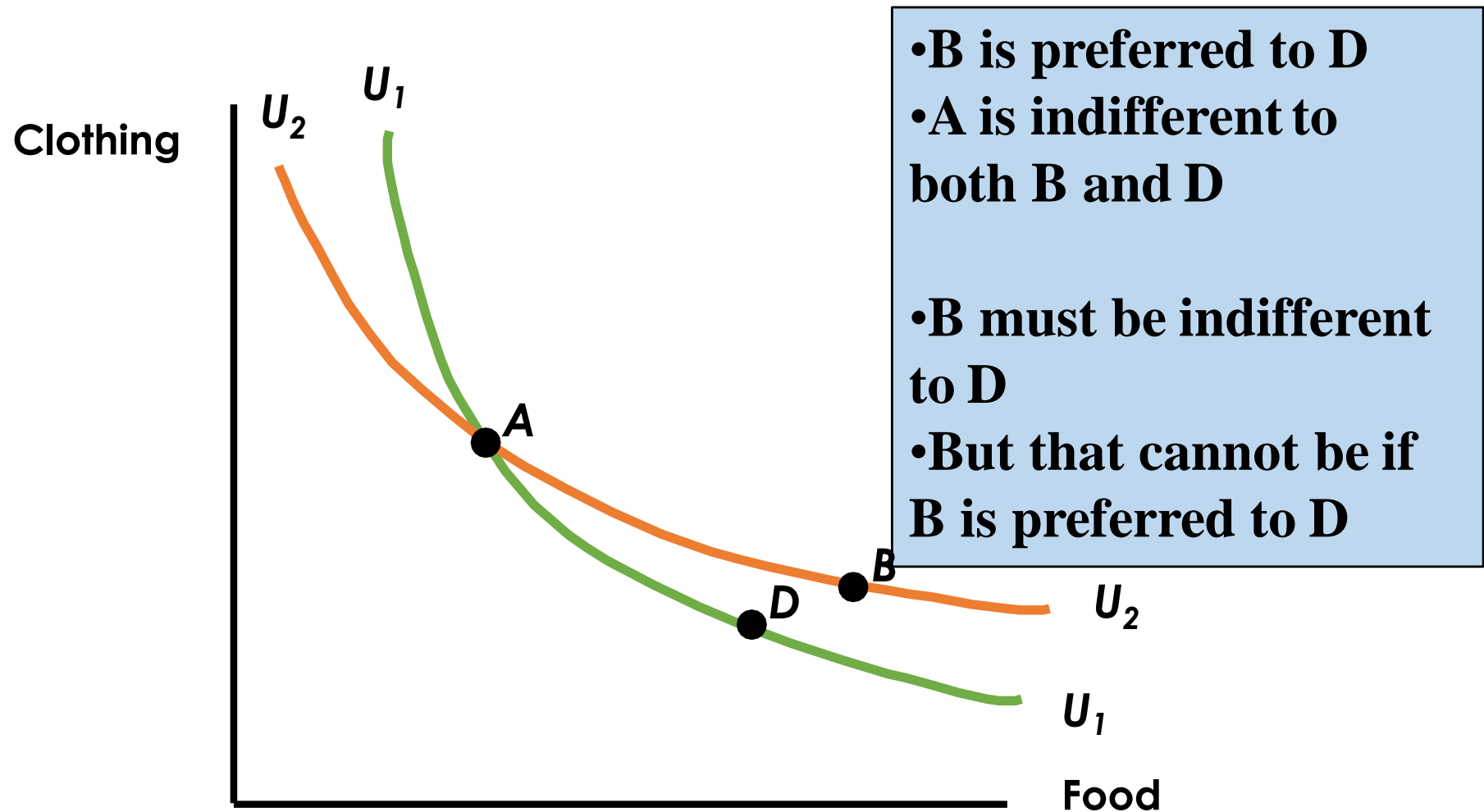
Each indifference curve in the map shows the market baskets among which the person is indifferent

Indifference curves further away from the origin are ‘better’: they offer higher utility

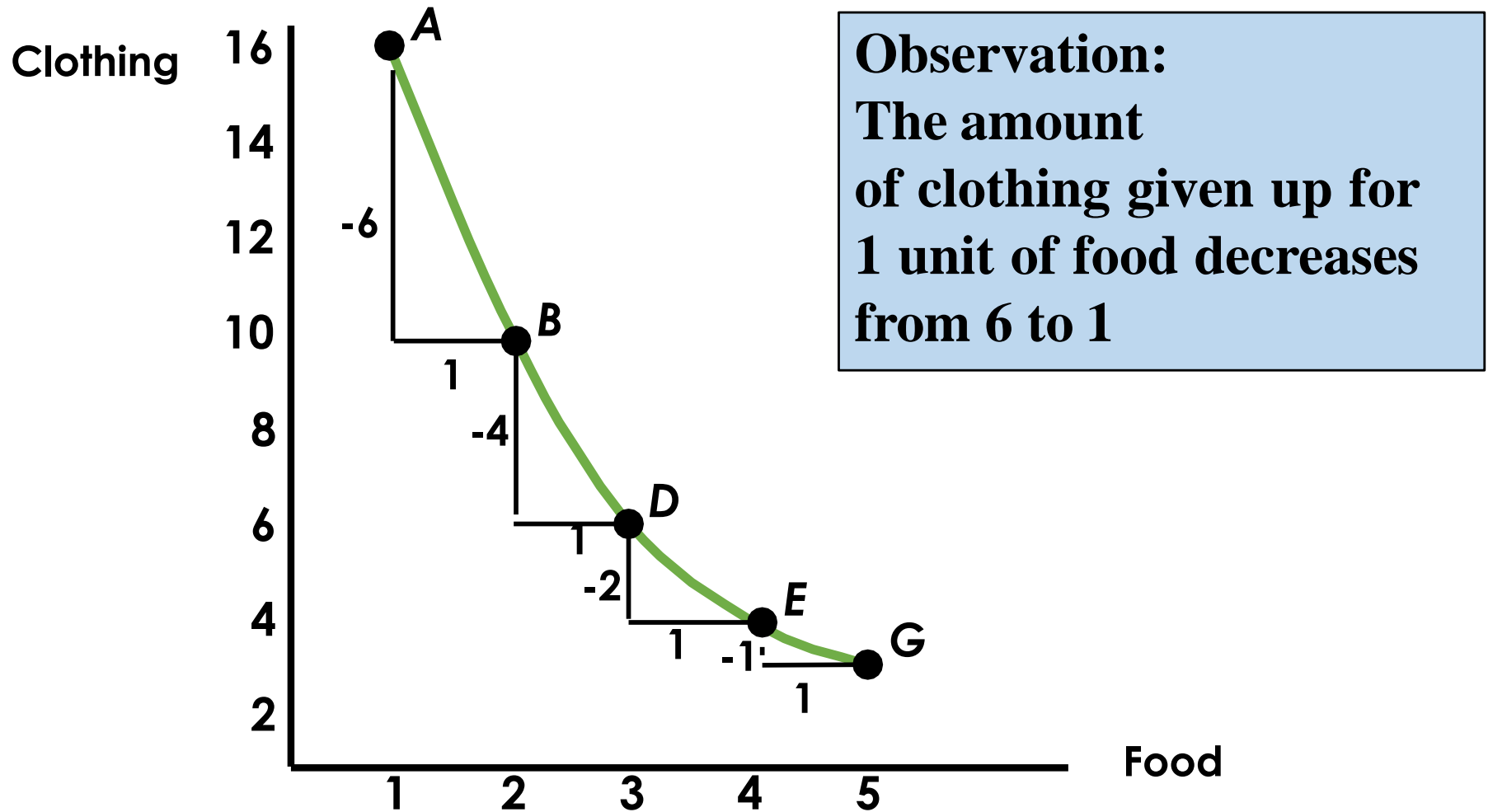
Indifference Map



Indifference Curves Cannot Cross



Indifference Curves



Indifference Curves

The shapes of indifference curves describe how a consumer is willing to substitute one good for another

A to B, give up 6 clothing to get 1 food

D to E, give up 2 clothing to get 1 food

The more clothing and less food a person has, the more clothing they give up to get more food

Marginal Rate of Substitution

We measure how a person trades one good for another using the *marginal rate of substitution (MRS)*

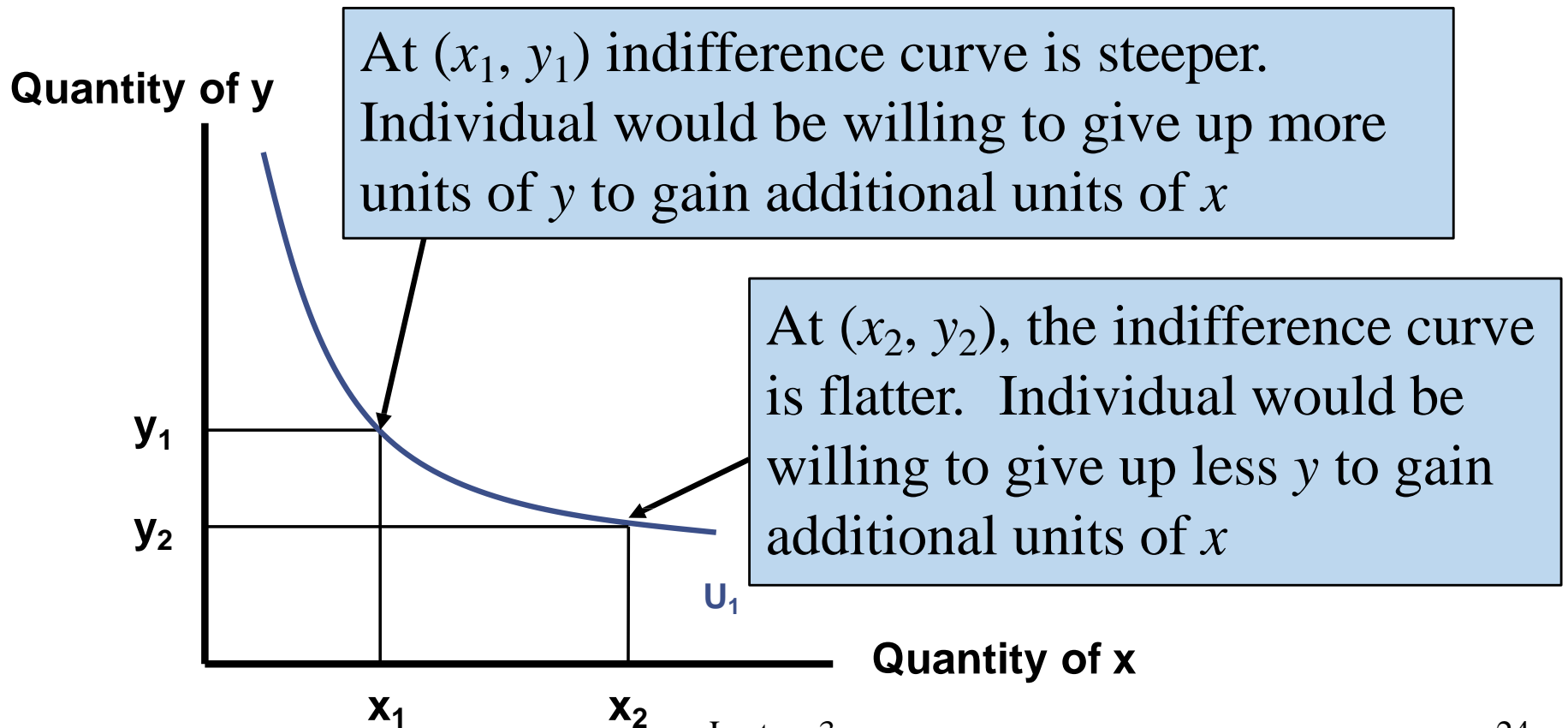
It quantifies the amount of one good a consumer will give up to obtain more of another good

The negative of the slope of the indifference curve is the marginal rate of substitution of y for x

Marginal Rate of Substitution

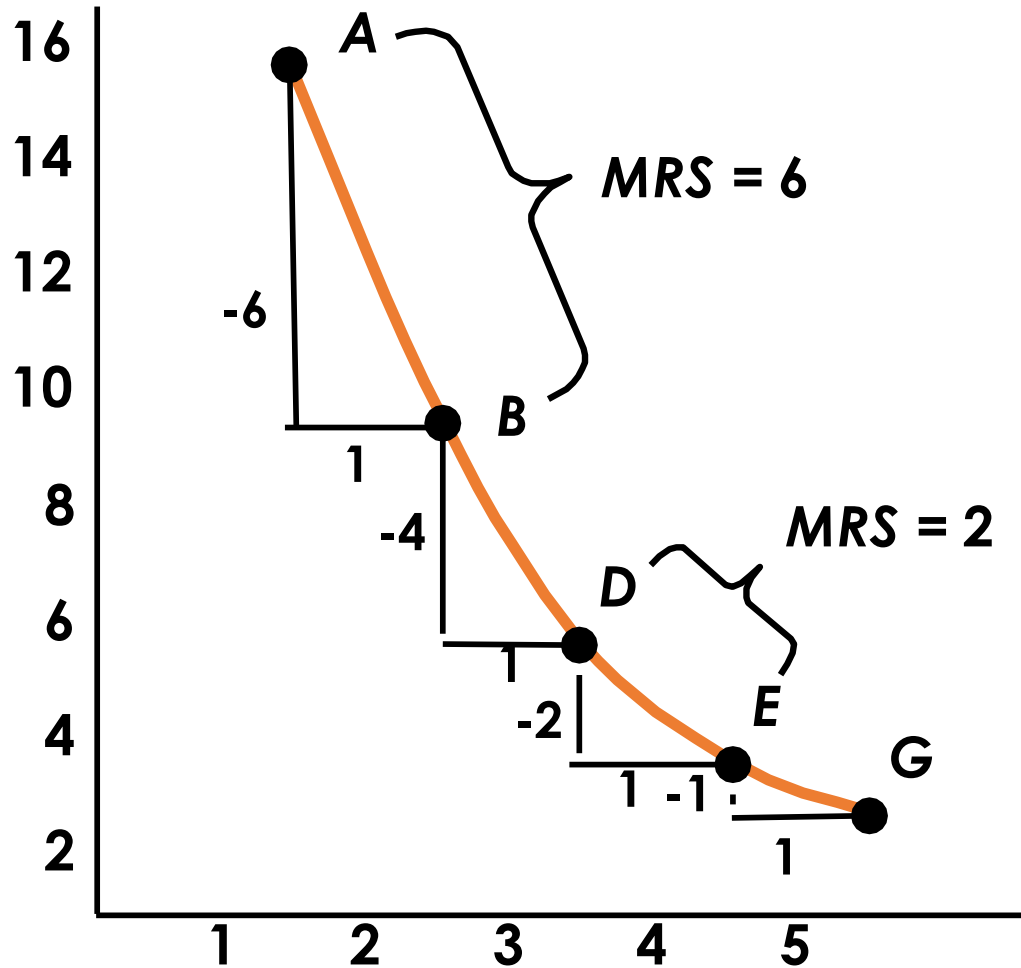
MRS changes as x and y change

Reflects individual's willingness to trade y for x



Marginal Rate of Substitution

Restaurants
Nearby



$$MRS = -\frac{\Delta R}{\Delta SF}$$

1000 of Square Feet
House Size

Marginal Rate of Substitution

Indifference curves are convex

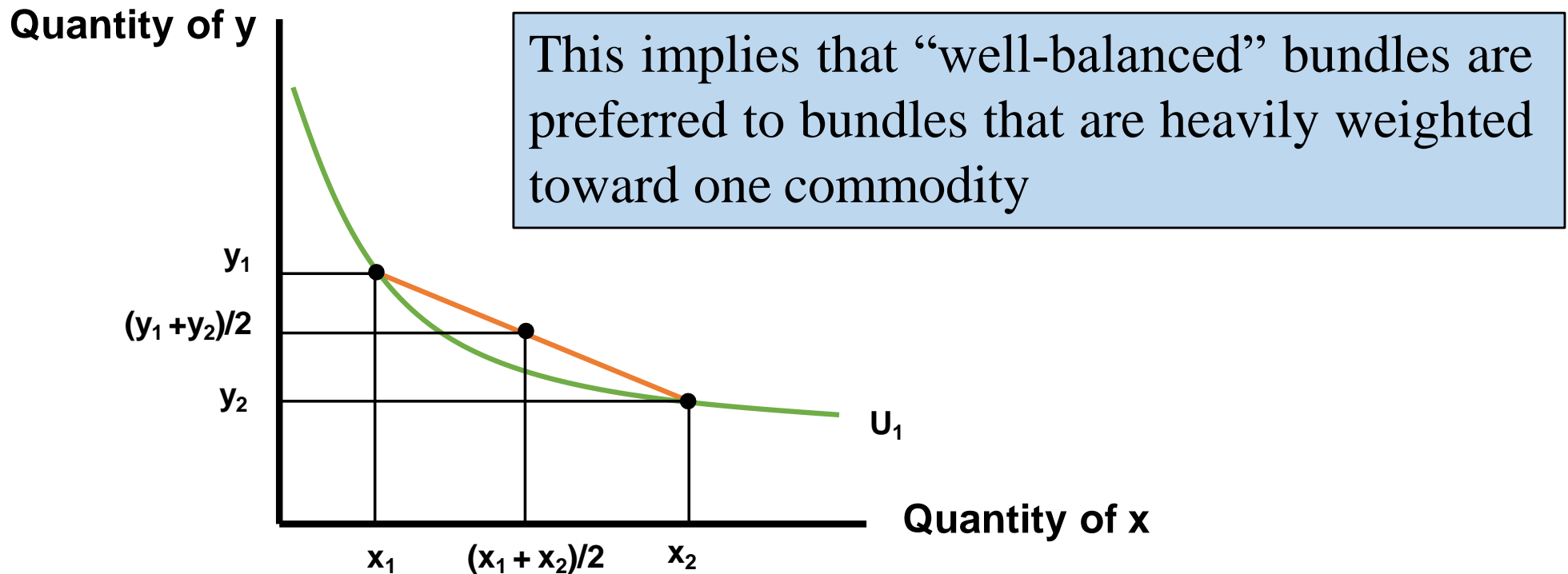
As more of one good is consumed, a consumer would prefer to give up fewer units of a second good to get additional units of the first one

Along an indifference curve there is a *diminishing marginal rate of substitution*

Consumers generally prefer a balanced market basket

Convexity

If the indifference curve is convex, then the combination $(x_1 + x_2)/2, (y_1 + y_2)/2$ will be preferred to either (x_1, y_1) or (x_2, y_2)



Marginal Rate of Substitution

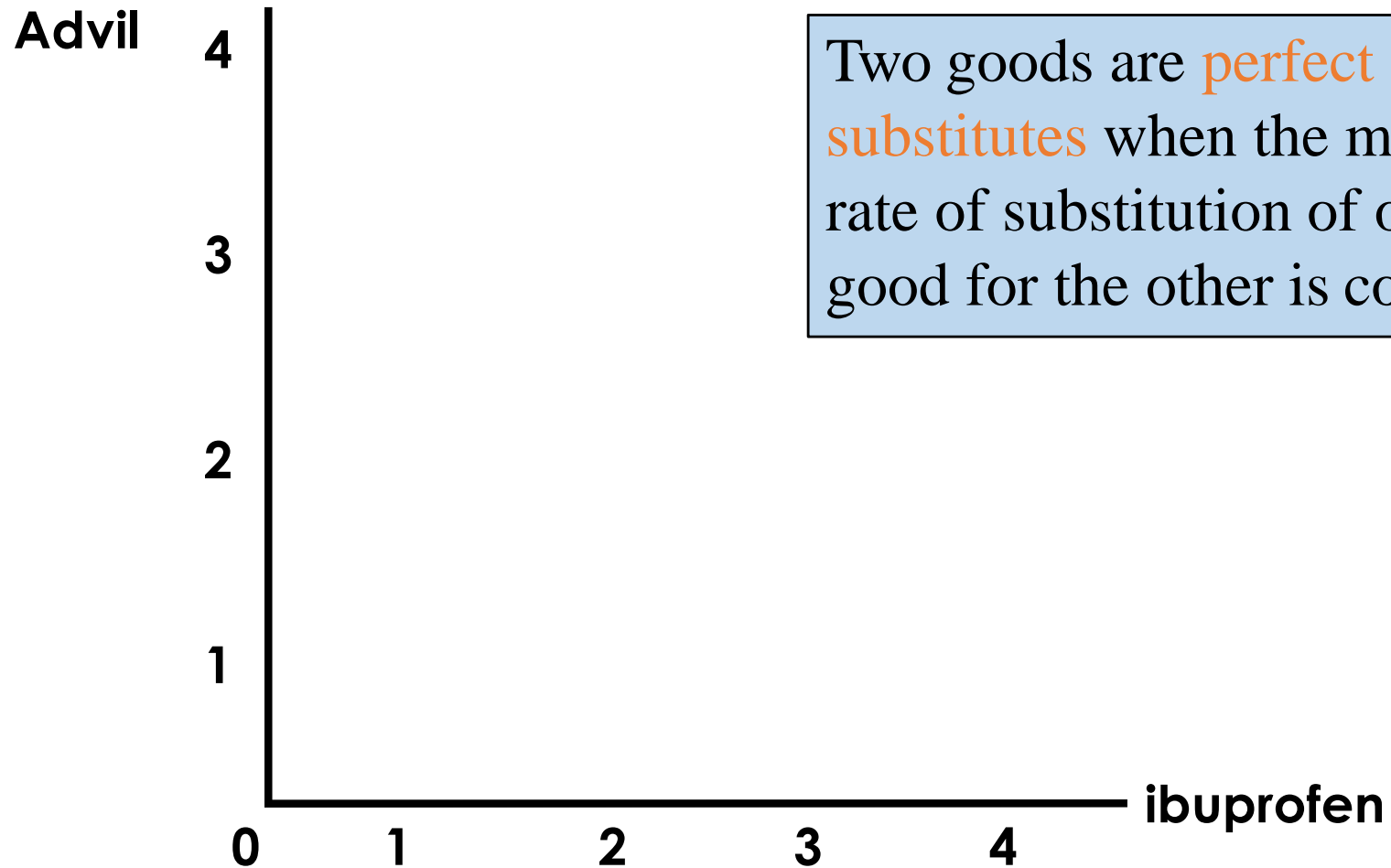
Indifference curves with different shapes imply a different willingness to substitute

Two polar cases are of interest

Perfect substitutes (advil vs. ibuprofen)

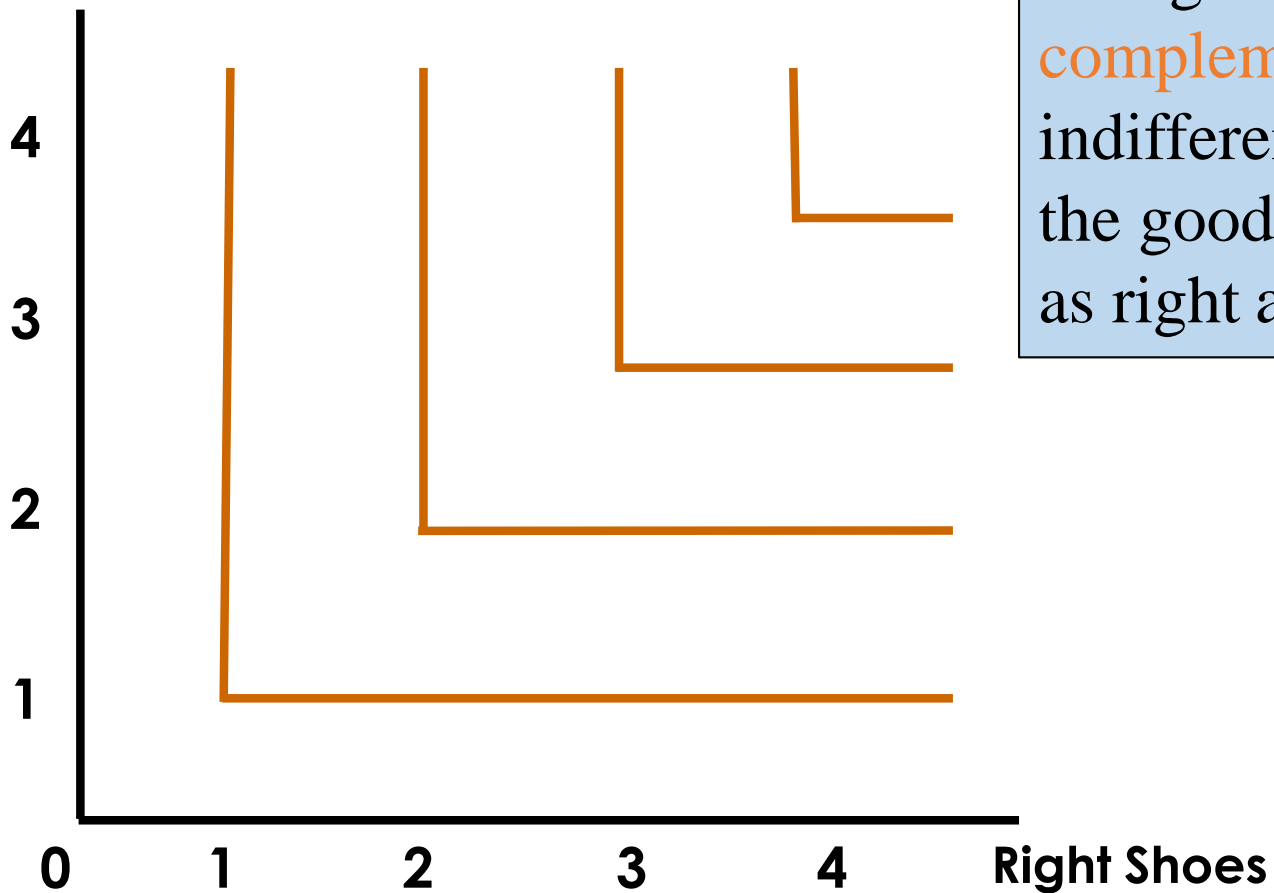
Perfect complements (left glove and right glove)

Perfect Substitutes



Perfect Complements

Left
Shoes



Two goods are **perfect complements** when the indifference curves for the goods are shaped as right angles