Intermediate Microeconomics (Fall 2023)
Lecture 3
Preference, Utility and Indifference Curve

Part I

Margin and Rational Behavior

- **Marginal Benefit (MB)** – An increase (or decrease) in _____ that is caused by a _____ in the level of that activity, all other factors remaining constant.

- **Marginal Cost (MC)** – An increase (or decrease) in _____ that is caused by a _____ in the level of that activity, all other factors remaining constant.

- **Rational Behavior**

  For each additional unit

  o If MB _____ MC,
     Go for it! (Consume this extra unit)

  o If MB _____ MC,
     Avoid it! (Do not consume this extra unit)

  o Thus, keep consuming until MB _____ MC.

     ➤ Optimal behavior for a rational person: MB _____ MC.

Part II

Preference – _____.

❖ Bundle of goods: _____ and _____.

❖ Notation:

➢ _____: _____.

➢ _____: _____

– the consumer is _____ between the two bundles of goods,

i.e., the consumer would be just _____

_____.

⇒ ▪ _____: the consumer

_____

– the consumer _____

_____.

▪ _____: the consumer

_____

– the consumer _____

_____

or is _____

_____.

⇒ If _____ and _____, then _____.

- **Basic Properties of Preference Ordering**

① _____ – For any 2 bundles A and B, either

_____, or _____, or _____, i.e., either

_____, or _____, or _____.

② _____ – _____

_____: _____.

③ _____ – "_____":

if _____

_____, then _____.

④ _____ – _____.

▪ For any 3 bundles, if _____ and _____, then _____.

▪ For any 3 bundles, if _____ and _____, then _____.

Part III

Utility – A _____ representing the

_____ that a _____

_____, which is to describe _____.

Example 1: Like an orange better than an apple

- **Utility Function** – A _____ of _____ a

  _____ of _____ to _____

  such that _____

  _____.

Example 2

Utility function for food (F) and clothing (C) is given by u (F, C) = F + 2C.

① Bundle A with 8 units of food and 3 units of clothing generates a utility level of

② Bundle B with 6 units of food and 4 units of clothing generates a utility level of

③ Bundle C with 4 units of food and 4 units of clothing generates a utility level of

○ **Ordinal Utility** – A theory of _____ that emphasizes on

_____ bundles of goods: the _____

of the _____

is only important insofar as it _____ the

_____; the

_____ of the _____

_____.

▪ **Monotonic Transformation** – A way of _____

_____

in a way that _____ the _____ of the

_____, represented by a _____

that _____

_____

in the sense that _____.

❖ The rate of change in f (u) as u changes can be measured by:

⇒ For a monotonic transformation, _____

always has the _____ as _____.

⇒ A monotonic function always has a _____

of _____.

⇒ The graph of a monotonic function will always have a _____

_____.

Example 3: A positive monotonic transformation

v
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|
|
|
|
|
|
|
|
|_____ u

v
|
|
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|
|
|
|
|
|
|_____ u

A   **B**
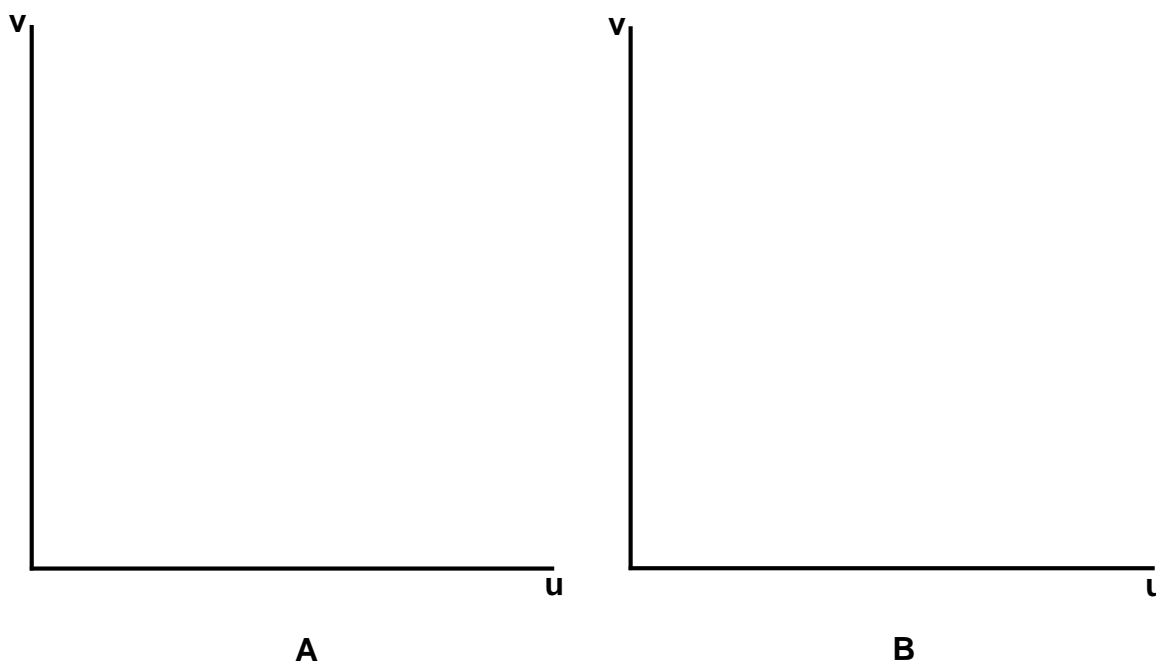
① Panel A illustrates a _____
– one that is always _____.

② Panel B illustrates a function that is _____,
since it sometimes _____ and sometimes _____.

o **Cardinal Utility** – A theory of _____ that attach a
_____ to the _____
of _____, i.e., the _____ of the
_____ between two bundles
of goods is supposed to have some sort of _____.

- **Marginal Utility (MU)** – _____ obtained

  from _____ of a good.

  MU = _____

      = _____

  o **Law of Diminishing MU** – As _____ of a _____

    is _____, the _____ of

    _____ will

    _____ to _____.

- **Marginal Rate of Substitution (MRS)** – _____ a

  _____ to

  _____ to

  _____ of the _____.

  Mathematically defined as a _____ whose

  _____ is the _____ at which

  _____

  _____.

  Suppose we have Goods X and Y.

Part IV

Indifference Curve (IC) – A curve showing _____

_____ of _____ that _____ the

_____ of _____.

- **Draw the IC**

  o Given a utility function, u (x_1, x_2), plot all the points (x_1, x_2) such that u (x_1, x_2) equals

    a _____.

  o For each _____ of the _____,

    there is a _____.

- **The Slope of the IC** – The _____.

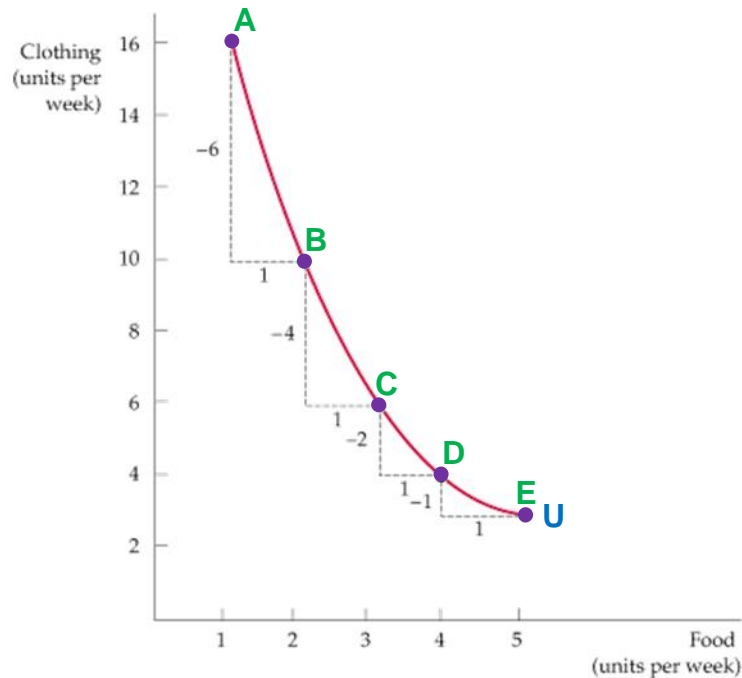X_2

X_1

  o   Monotonicity implies that the ICs have a _____ slope.

  o   Think of the IC as being described by a function _____, such that

⇒ If _____ of _____,
_____, is _____ the
_____, could _____,
an _____ that is _____ to
_____,
so that he is _____
_____
_____.

8

- **The Shape of the IC** – _____ (_____).

Example 4: Clothing and food per week
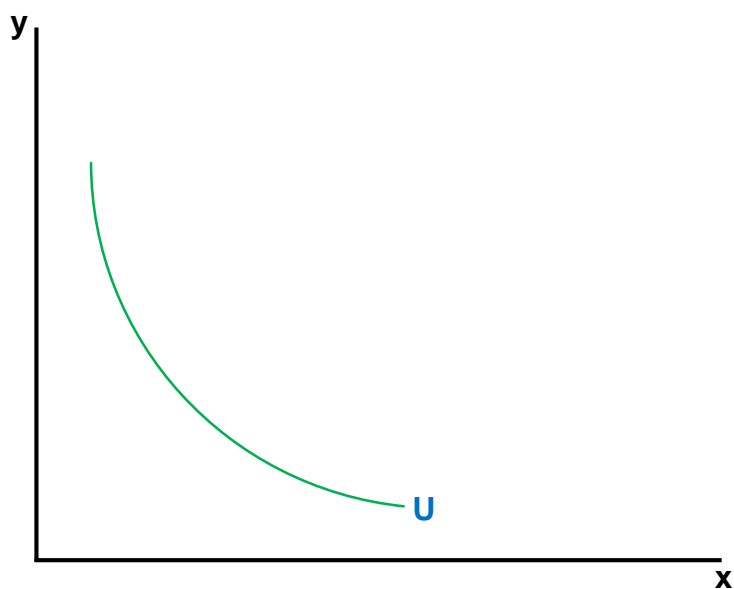

Law of diminishing MU

⇒ _____: As we move along an IC

A → B → C, _____. Because as _____ of one good

is consumed, consumers would prefer to _____

of a _____ to _____

of the _____.

⇒ _____ the _____ of the _____.

o **Law of Diminishing MRS** – The _____ of

_____ that a person is willing to _____

for an _____ of

_____ as the _____

of _____.

- o **Implications of Convexity** – _____ are
  _____ to _____.

```
y
|
|
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    \
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      \
       \___
           \___
               \____ U
|_____ x
```

If _____, then

- _____
- _____

for _____ such that _____.

Exercise 1

Refer to the figure.

A

Space

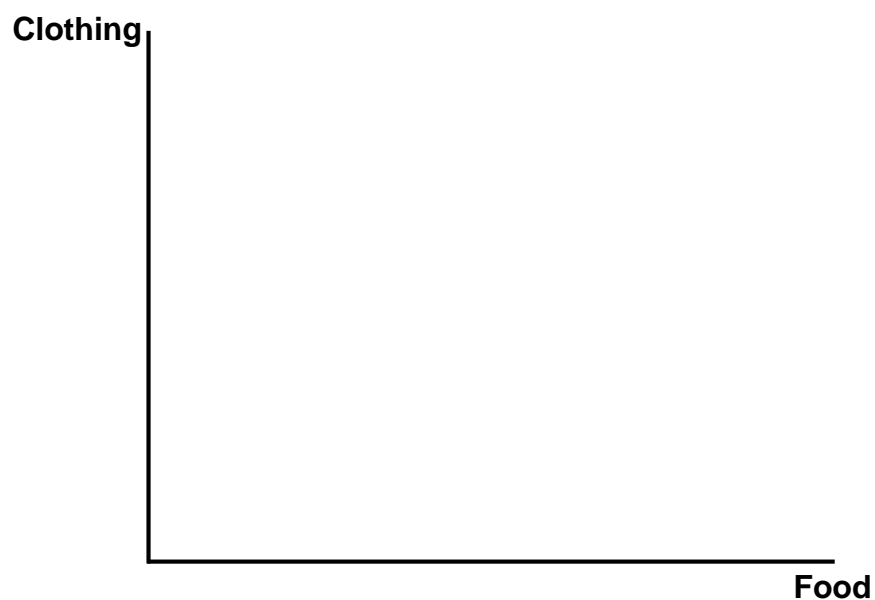**Acceleration**

B

Space
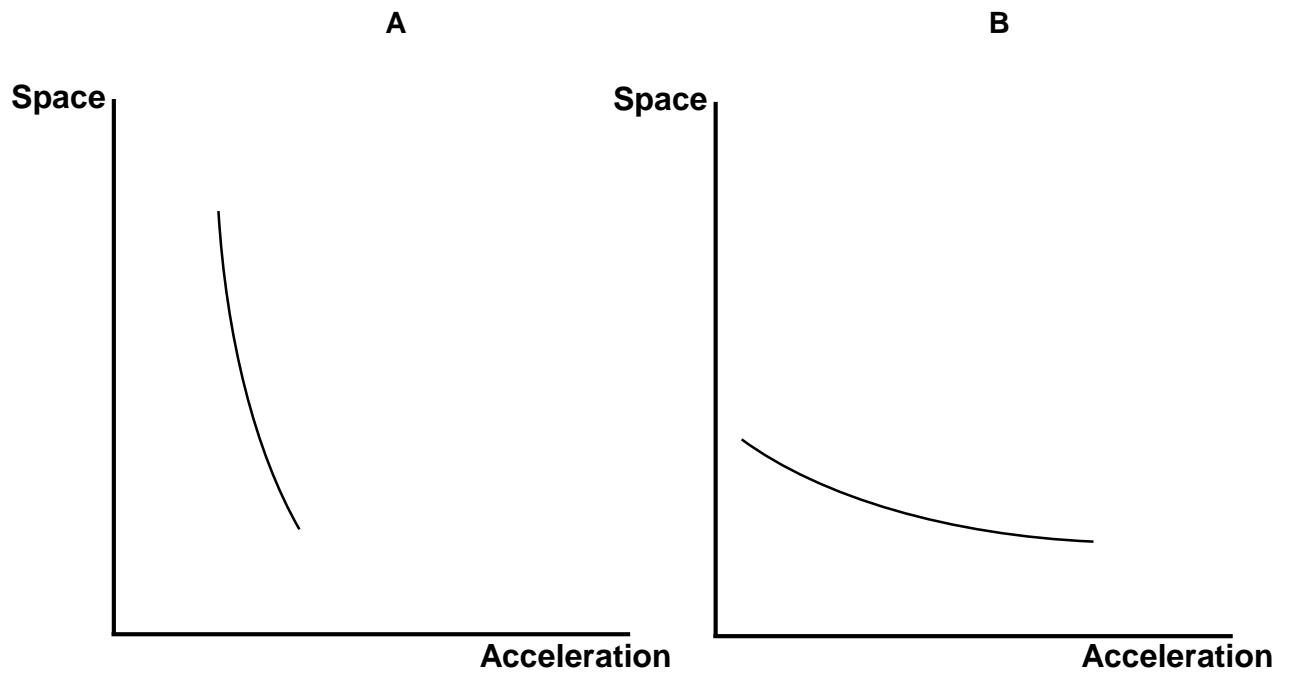
Acceleration

The figure shows the indifference curve for car consumers A and B. Compared with Consumer B, Consumer A

    A. cares more about acceleration than space.
    B. cares more about space than acceleration.
    C. is indifferent between acceleration and space.
    D. prefers more expensive rather than less expensive cars.
    E. None of the above.

- **Indifference Map** – A graph _____

   that _____ a person's _____.

Clothing

Food

- **ICs** _____!

    ⇒ _____ of _____

    _____ and _____.

Clothing

Food

- **ICs** _____!

    ⇒
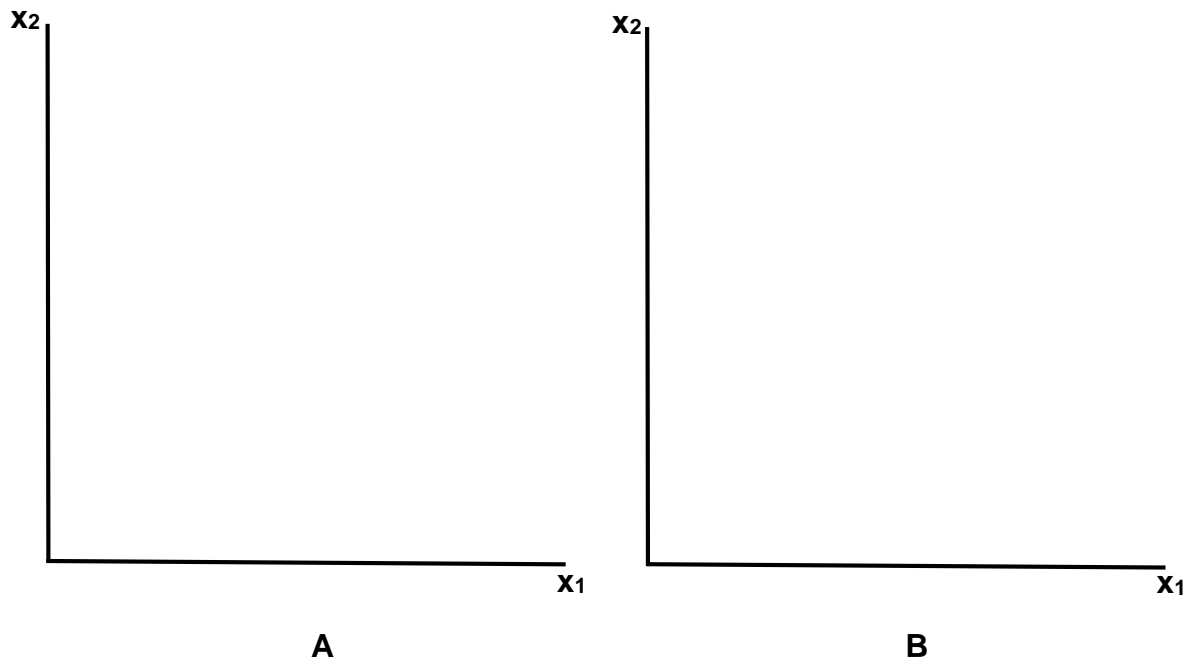
Part V

    Examples of Preferences

- **Cobb-Douglas Preferences**

  o **Utility Function of the Cobb-Douglas Preferences**

    where _____ and _____ are _____ that _____ the _____ of the consumer.

Example 5: Cobb-Douglas ICs

    A   **B**

1) Panel A shows the case where $c = \frac{1}{2}$ and $d = \frac{1}{2}$

2) Panel B shows the case where $c = \frac{1}{5}$ and $d = \frac{4}{5}$

- **Monotonic Transformation of the Cobb-Douglas Utility Function**

  ❖

  ❖

  Define _____

  ⇒ _____

  ⇒ Always take a monotonic transformation of the Cobb-Douglas utility function that make the _____ to _____

- **MRS for the Cobb-Douglas Utility Function**

  ❖ **The Exponent Representation:** _____

  ❖ **The Log Representation:** _____

  ⇒ The _____ as the _____.

  ⇒ A monotonic transformation would _____ the _____.

  ➢ It is customary to have _____ and _____ and _____.

- **Perfect Substitutes** – The consumer is willing to _____
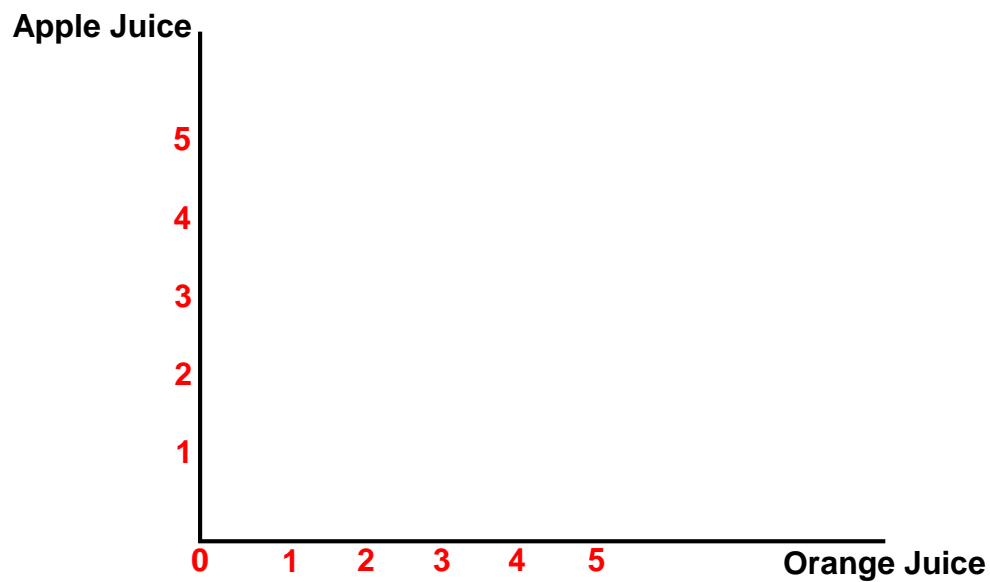 _____ for the _____ at a _____.

Example 6: Entirely indifferent between one glass of apple juice and one glass of orange juice

Apple juice and orange juice are perfect substitutes.

⇒ _____ is a _____.

⇒ _____ have a _____.

⇒ _____ are _____.

Apple Juice

5

4

3

2

1

0   1   2   3   4   5   **Orange Juice**

o **Utility Function of Perfect Substitutes**

where _____ and _____ are _____

that _____ the _____

of Good 1 and Good 2 to the consumer.

$\Rightarrow$ Put x_1 on the horizontal axis and x_2 on the vertical axis, then the _____

of a typical indifference curve is given by _____.

▪ Any _____ of

_____ will also represent the perfect-substitutes preferences.

➢ If the consumer is willing to substitute Good 1 for Good 2 at a rate of one-to-one

$\Rightarrow$ _____

➢ If the consumer would require two units of Good 2 to compensate for giving up

one unit of Good 1

$\Rightarrow$ Good 1 is _____ to the

consumer as Good 2

$\Rightarrow$ _____

$\Rightarrow$ Put x_1 on the horizontal axis and x_2 on the vertical axis, then the _____

of the indifference curve is _____

- **Perfect Complements** – Goods that are always _____ _____ in _____.

Example 7: Left shoe and right shoe

A left shoe will _____ unless _____ the _____.

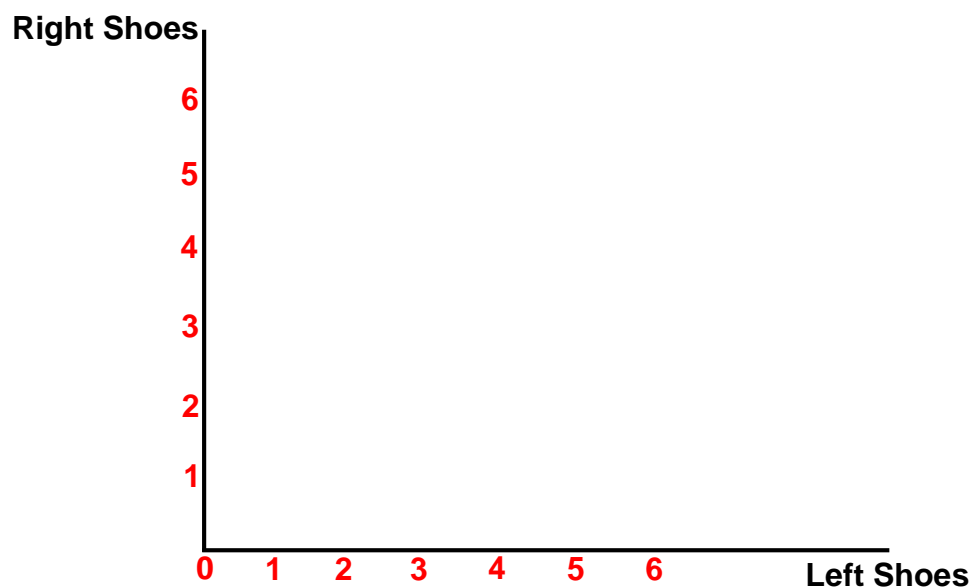① When there are _____ left shoes than right shoes, we will _____ right shoes to _____ left shoes.

⇒ _____ is _____.

② When there are _____ right shoes than left shoes, we will _____

right shoes to obtain an additional left shoe.

⇒ _____ is _____.

With ①②

⇒ _____ are _____.

⇒ _____.

- o **Utility Function of Perfect Complements**

where _____ and _____ are _____

that _____ the _____

in which Good 1 and Good 2 are consumed.

- ▪ Any monotonic transformation of u (x_1, x_2) will also represent the perfect-complements preferences.

- ➢ If the consumer wants to consume Good 1 and Good 2 in a proportion of one-to-one

  ⇒ _____

- ➢ If the consumer would require two units of Good 2 for each unit of Good 1
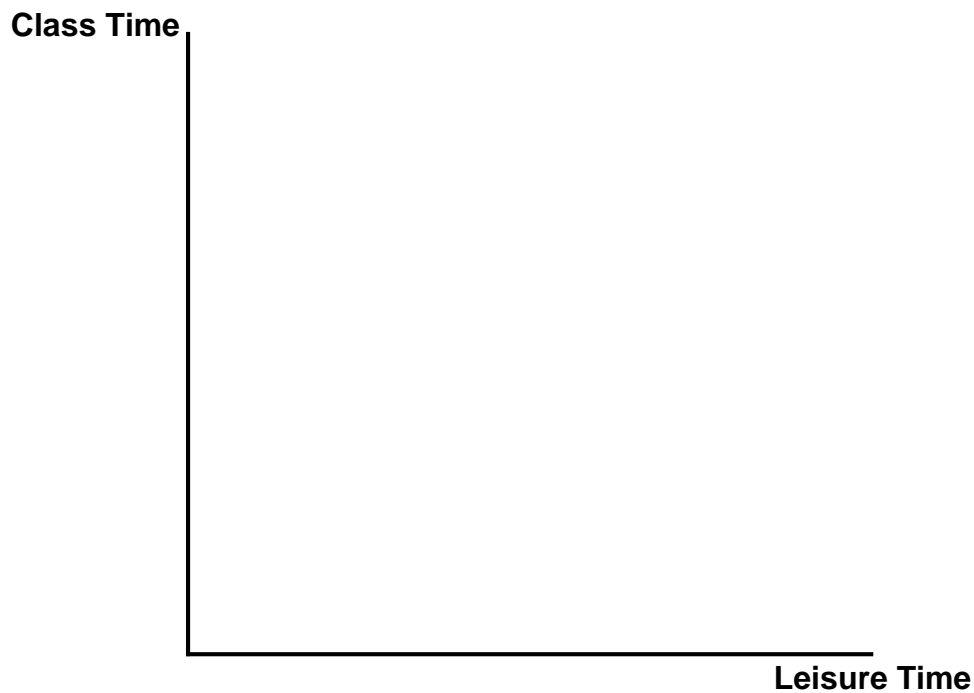
  ⇒ _____

  ⇒ By _____,

  _____

- **Economic Bad** – Items of which _____ is _____ to _____, i.e., commodities that the consumer _____.

Example 8: Class time

Leisure time: economic good

Class time: economic bad

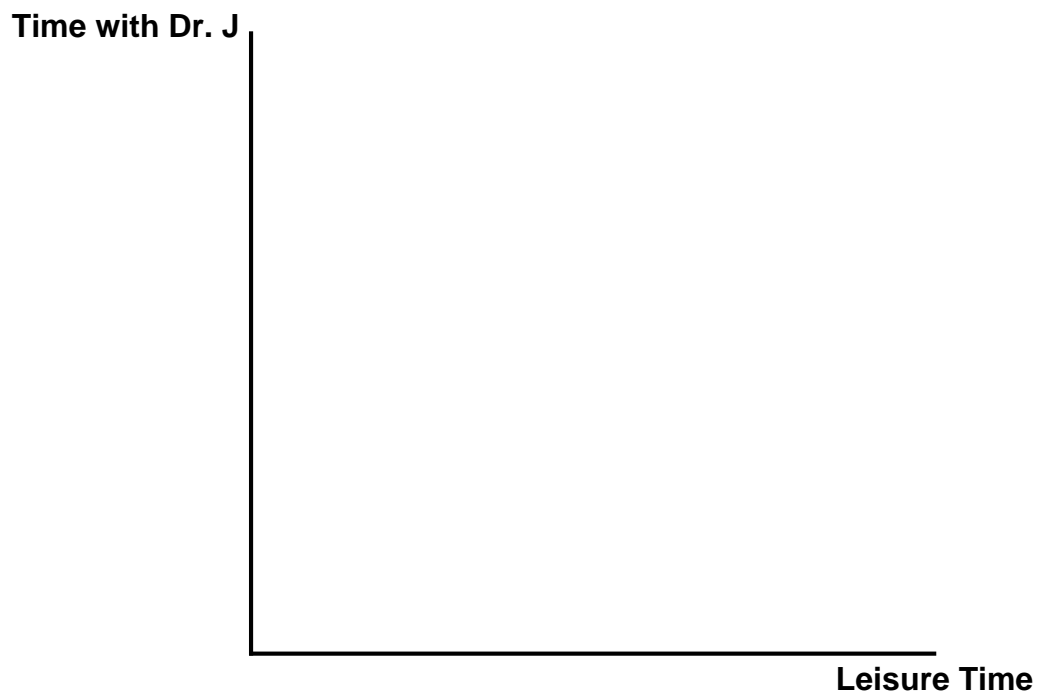**Class Time**

Leisure Time

① At t_1: _____ time, _____ time has higher utility.
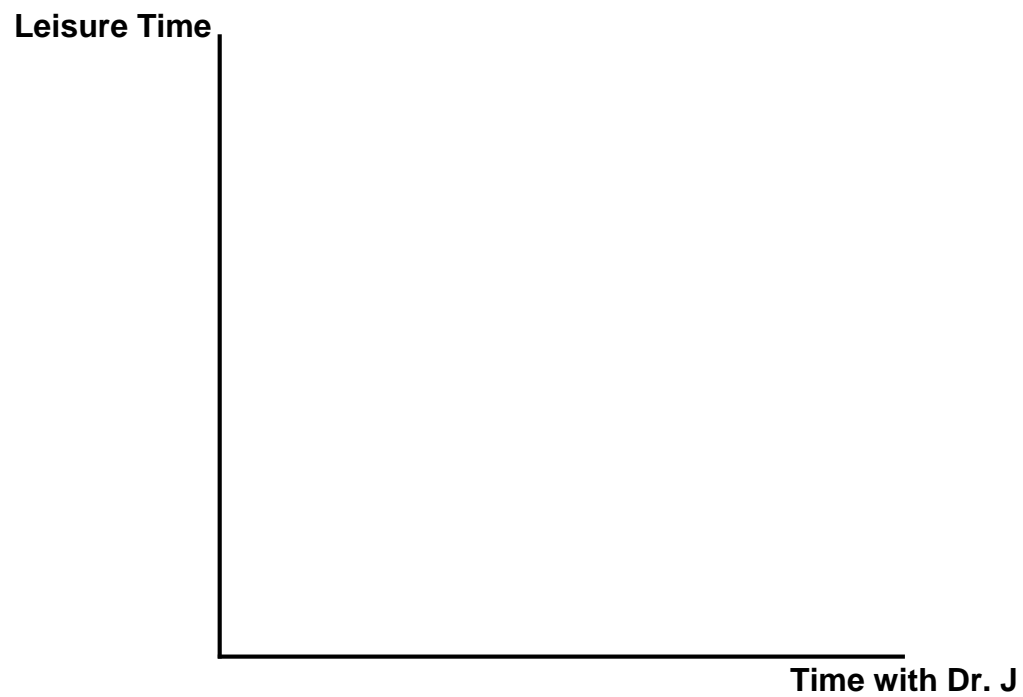
② At t_2: _____ time, _____ time has higher utility.

⇒ _____

- **Economic Neuter** – Items that the consumer _____
_____.

Example 9: Time with Dr. J

Time with Dr. J does not contribute to anything, only leisure time contributes to a higher utility.

Time with Dr. J

Leisure Time

Leisure Time

Time with Dr. J

- **Quasilinear Preferences** – _____.

  o **Utility Function of the Quasilinear Preferences**

    where the utility function is _____ in Good 2, but _____ in Good 1, e.g.,