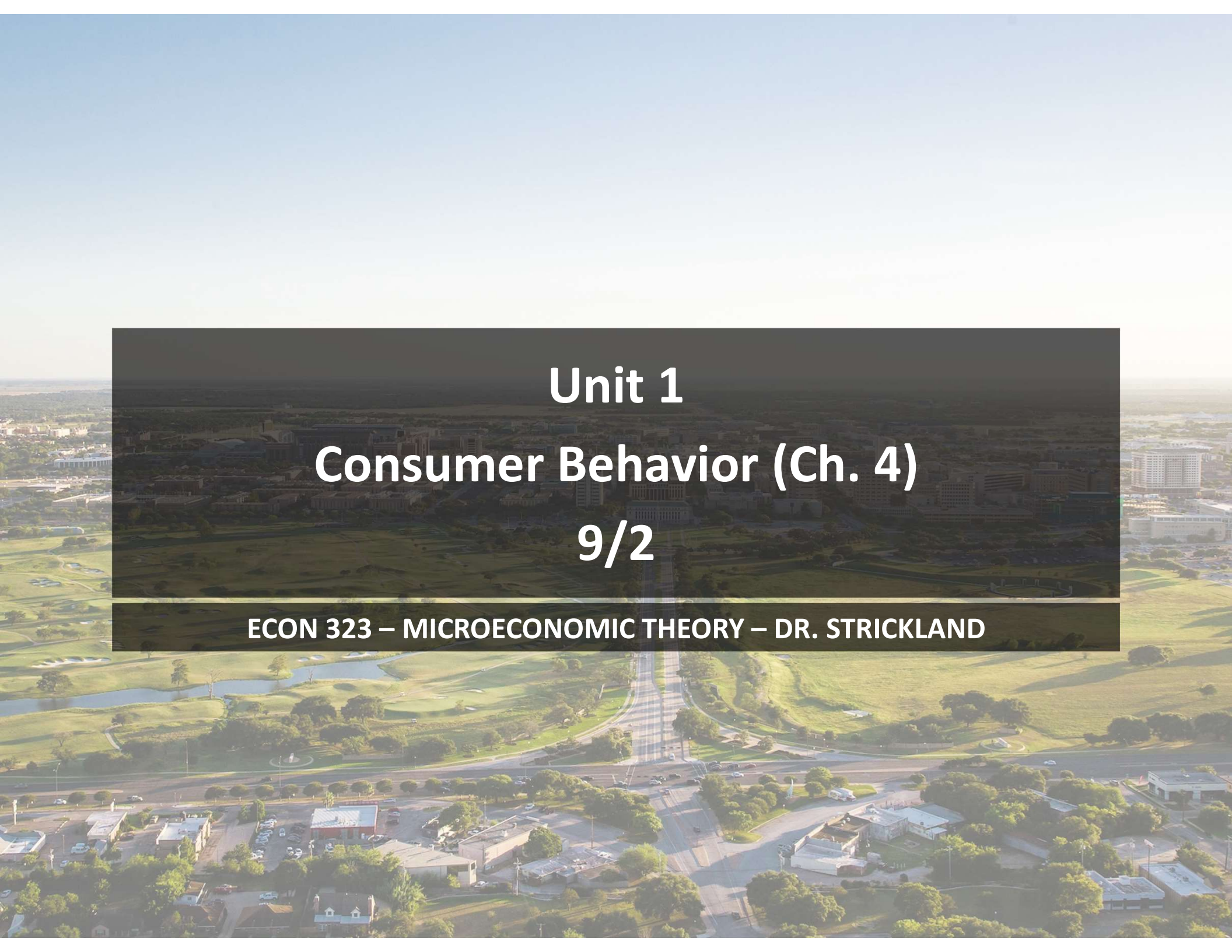


Unit 1
Consumer Behavior (Ch. 4)
9/2

ECON 323 – MICROECONOMIC THEORY – DR. STRICKLAND

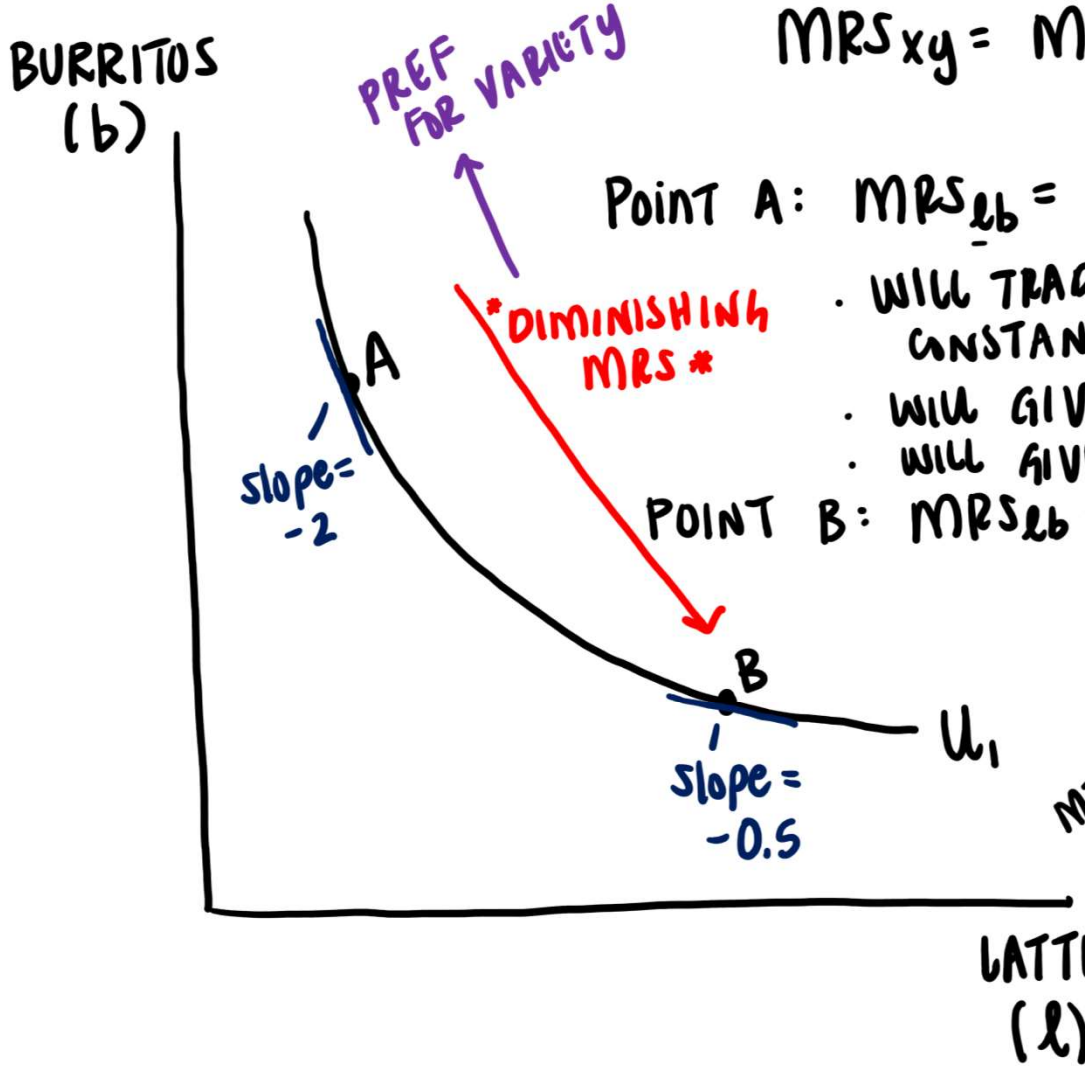
Announcements

Fix your Student ID in iClicker

- This should be your TAMU UIN

If you are not seeing our course in your iClicker course list, use this QR code:

Marginal Rate of Substitution



$$MRS_{xy} = MRS_{lb} = -\left(\frac{\Delta b}{\Delta l}\right)$$

POINT A: $MRS_{lb} = -(-2) = 2$

- WILL TRADE 1 LATTE & 2 BURRITOS & KEEP U CONSTANT
- WILL GIVE UP 2 b FOR 1 l & KEEP U CONSTANT
- WILL GIVE UP 1 l FOR 2 b & KEEP U CONSTANT

POINT B: $MRS_{lb} = -(-0.5) = 0.5$

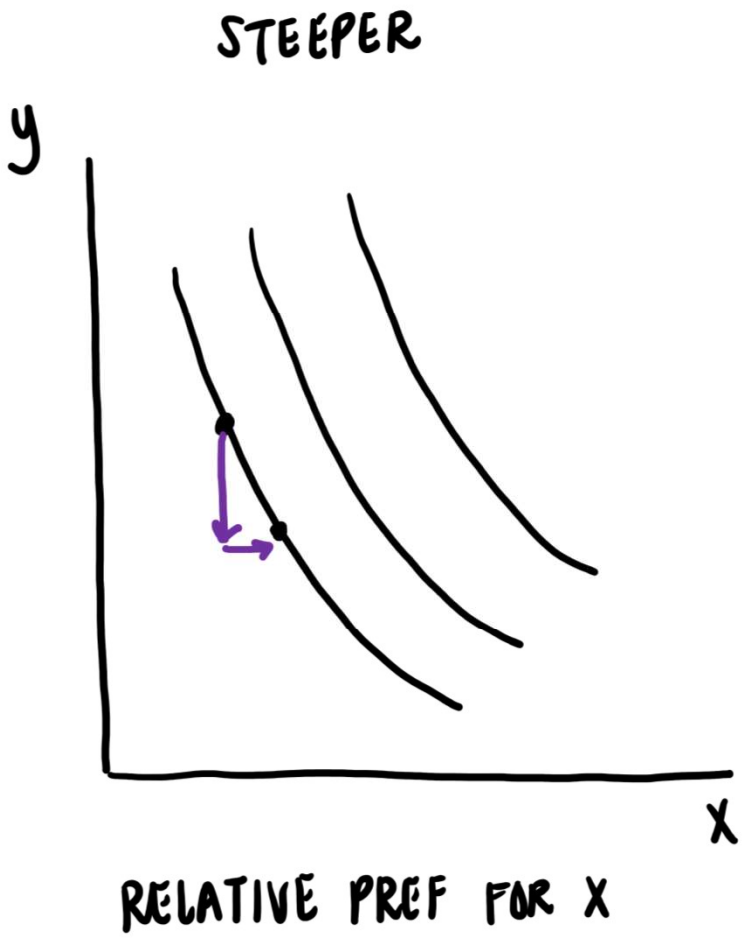
MRS_{yx}:

$$MRS_{bl} = -\left(\frac{\Delta l}{\Delta b}\right) = -\left(\frac{1}{\Delta b/\Delta l}\right)$$

POINT B: $MRS_{bl} = \frac{1}{0.5} = 2$

- WILL TRADE 1 b & 2 l & KEEP U CONSTANT

Steepness of Indifference Curves

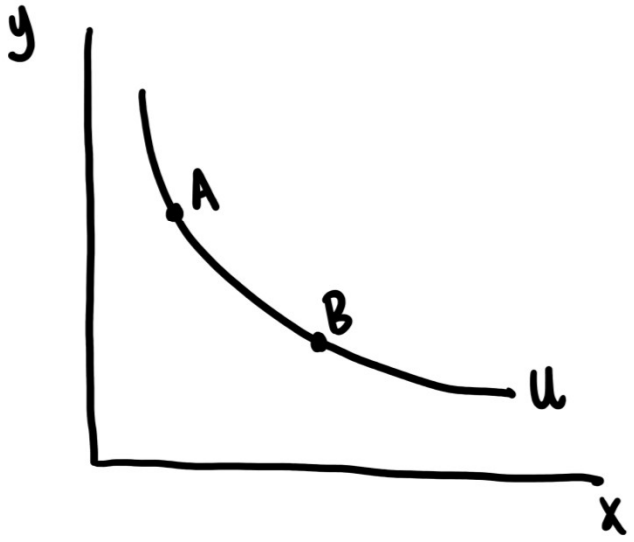


Marginal Rate of Substitution & Marginal Utility

A consumer's willingness to trade depends on each good's **relative marginal utility**

(MU)

- **Marginal utility**: the extra utility a consumer gets from consuming one more unit of a good



$A \to B : \Delta U = 0$

$\Delta U = \Delta x \cdot MU_x + \Delta y \cdot MU_y = 0$

$\Delta x \cdot MU_x = -\Delta y \cdot MU_y$

$-\frac{\Delta y}{\Delta x} = \frac{MU_x}{MU_y}$

$* \boxed{MRS_{xy} = \frac{MU_x}{MU_y}}$

Let's practice!

Assume Stanley's utility function for pretzels (P) and days off (D) is given by $U = 4P^2 + D^2$. His marginal utility for pretzels is $MU_P = 8P$ and his marginal utility for days off work is $MU_D = 2D$.

Answer the following:

a. Write an equation for Stanley's MRS_{PD}.

b. Would bundles of (P=2 and D=2) and (P=1 and D=4) be on the same indifference curve?

c. Is Stanley's MRS_{PD} diminishing?

Let's practice!

$$U = 4P^2 + D^2, MU_P = 8P, MU_D = 2D$$

(a) $MRS_{PD} = ?$

$$MRS_{PD} = -\left(\frac{\Delta D}{\Delta P}\right) = \frac{MU_P}{MU_D}$$

$$MRS_{PD} = \frac{MU_P}{MU_D} = \frac{8P}{2D} = \boxed{\frac{4P}{D}}$$

(b) BUNDLE A: $(P=1, D=4)$

$$U = 4(1)^2 + (4)^2$$

$$= 4 + 16 = 20$$

BUNDLE B: $(P=2, D=2)$

$$U = 4(2)^2 + (2)^2$$

$$= 16 + 4 = 20$$

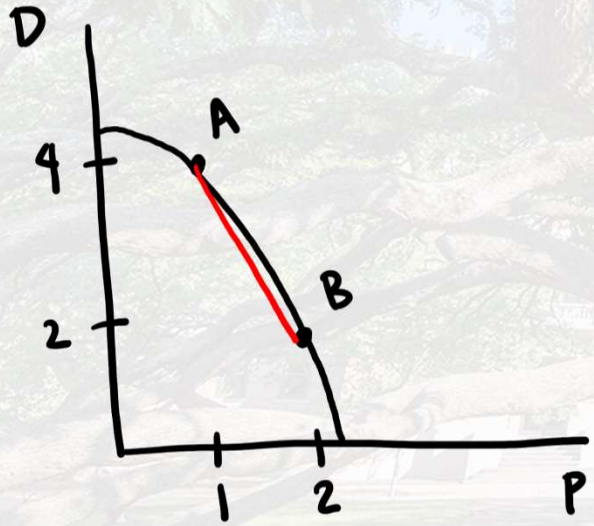
Yes

Let's practice!

$$U = 4P^2 + D^2, MU_P = 8P, MU_D = 2D$$

(c) MRS_{PD} DIMINISHING?

↳ AS P↑ & D↓, MRS_{PD} ↓



BUNDLE A: (P=1, D=4)

$$MRS_{PD} = \frac{4P}{D} = \frac{4(1)}{4} = 1$$

BUNDLE B: (P=2, D=2)

$$MRS_{PD} = \frac{4P}{D} = \frac{4(2)}{2} = 4$$

NO | MRS_{PD} is ↑

Curvature of Indifference Curves: Perfect Substitutes

* WILLING TO TRADE AT A CONSTANT RATE
* TOTAL CONSUMPTION MATTERS

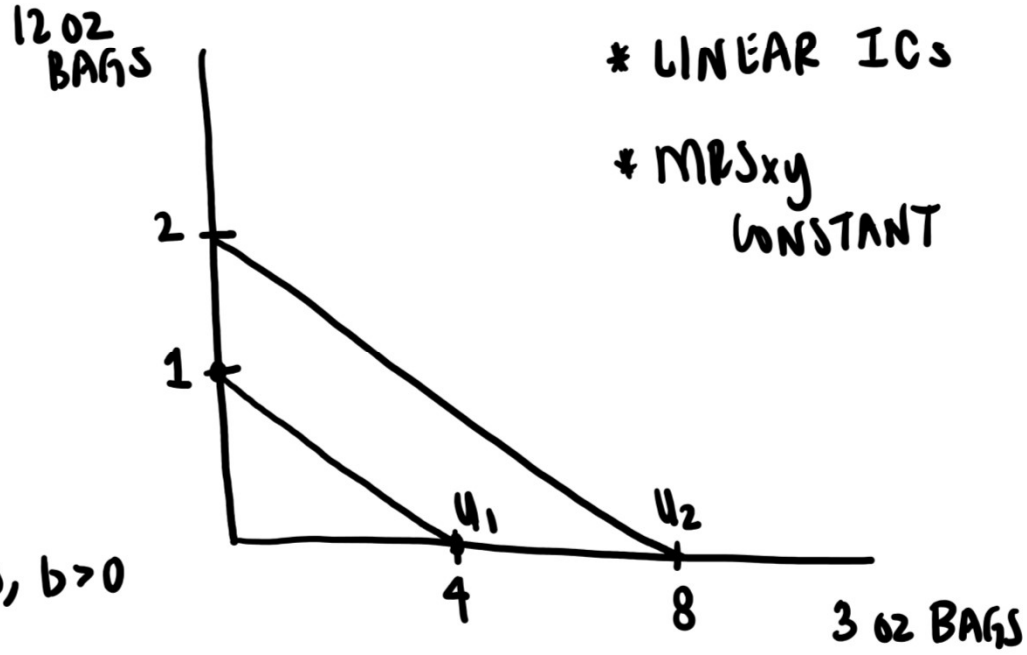
ex. 1: WANT 12 oz CHIPS

1 12 oz BAG OR 4 3oz BAGS

ex. 2: WANT 24 oz CHIPS

2 12oz BAGS OR 8 3oz BAGS

* UTILITY FUNCTION: $U = ax + by$, $a>0$, $b>0$

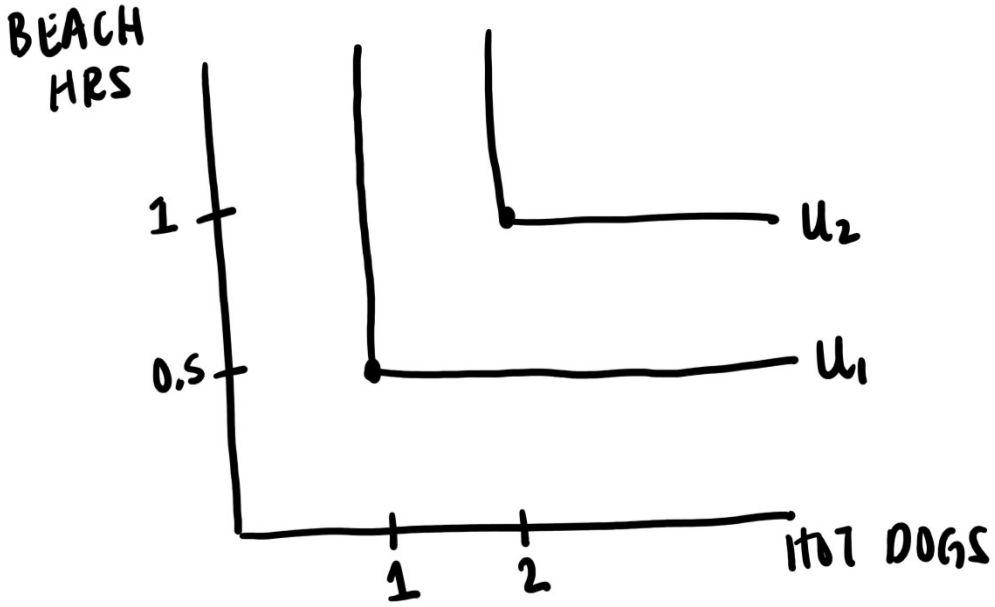


* LINEAR ICs
* MRSxy CONSTANT

Curvature of Indifference Curves: Perfect Complements

* CONSUMES GOODS TOGETHER IN FIXED PROPORTION

ex. KEVIN WANTS 1 HOT DOG WITH EVERY 0.5 HR AT BEACH



* L-SHAPED ICs
* $MRS_{xy} = 0$
* UTILITY FUNCTION:

$$U = \min\{ax, by\}, \quad a>0, b>0$$

ex. $U = \min\{4, 1\} = 1$