

UTILITY MAXIMIZATION



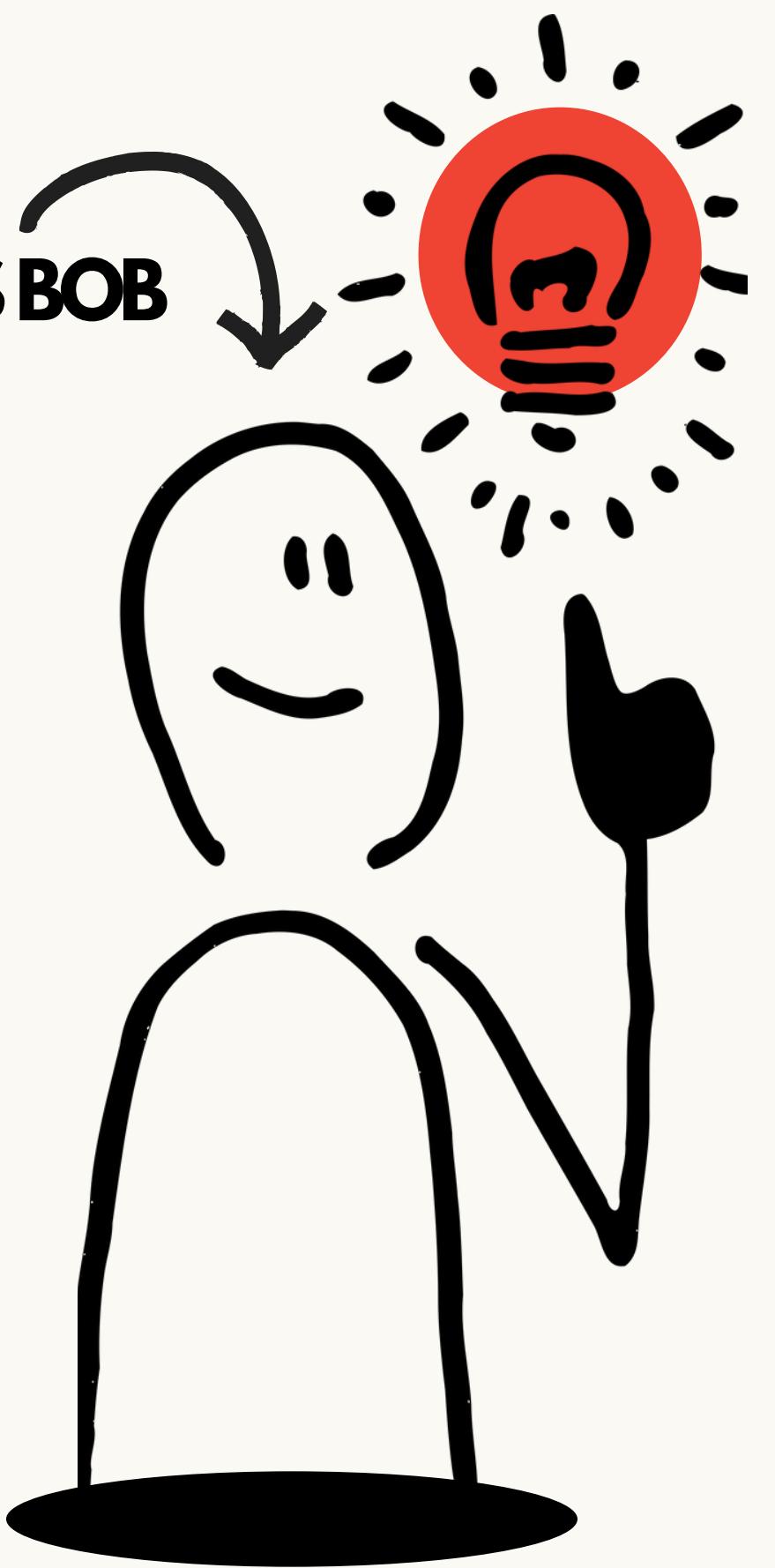
**Making Smart
Choices**

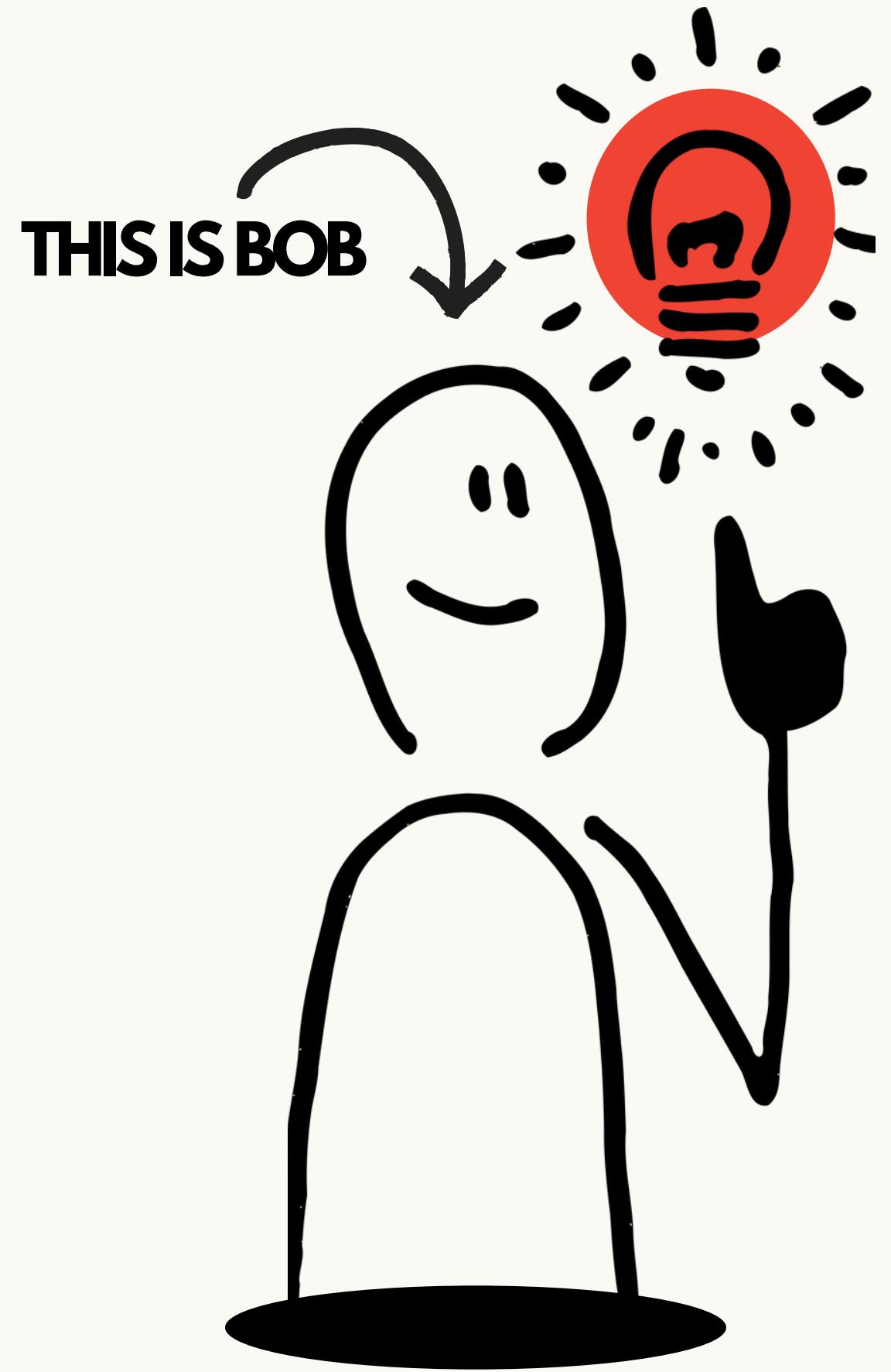
- SHRAVANI K

Understanding How Consumers
Maximize Satisfaction with
Limited Resources



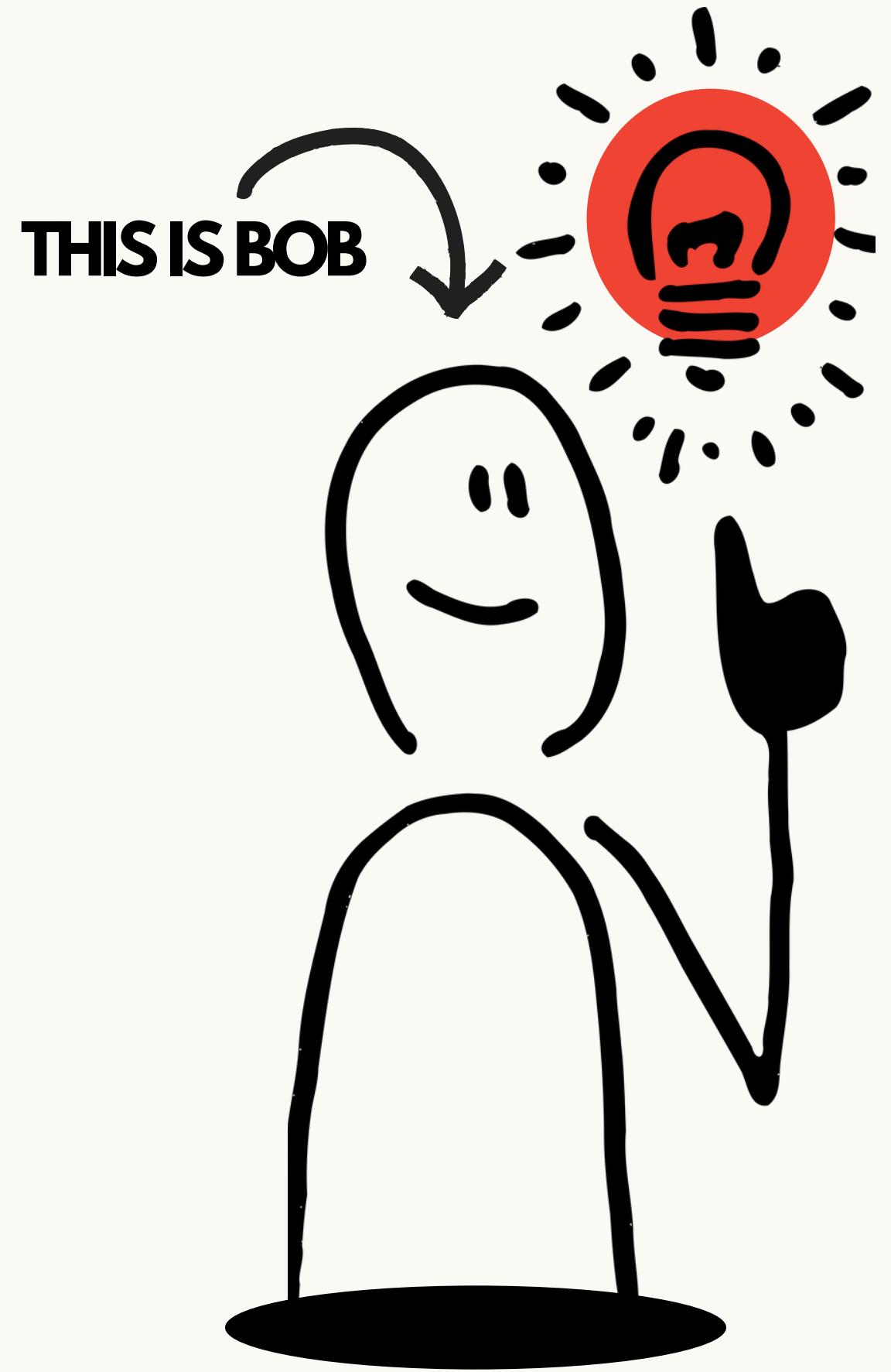
THIS IS BOB





BOB IS A CONSUMER

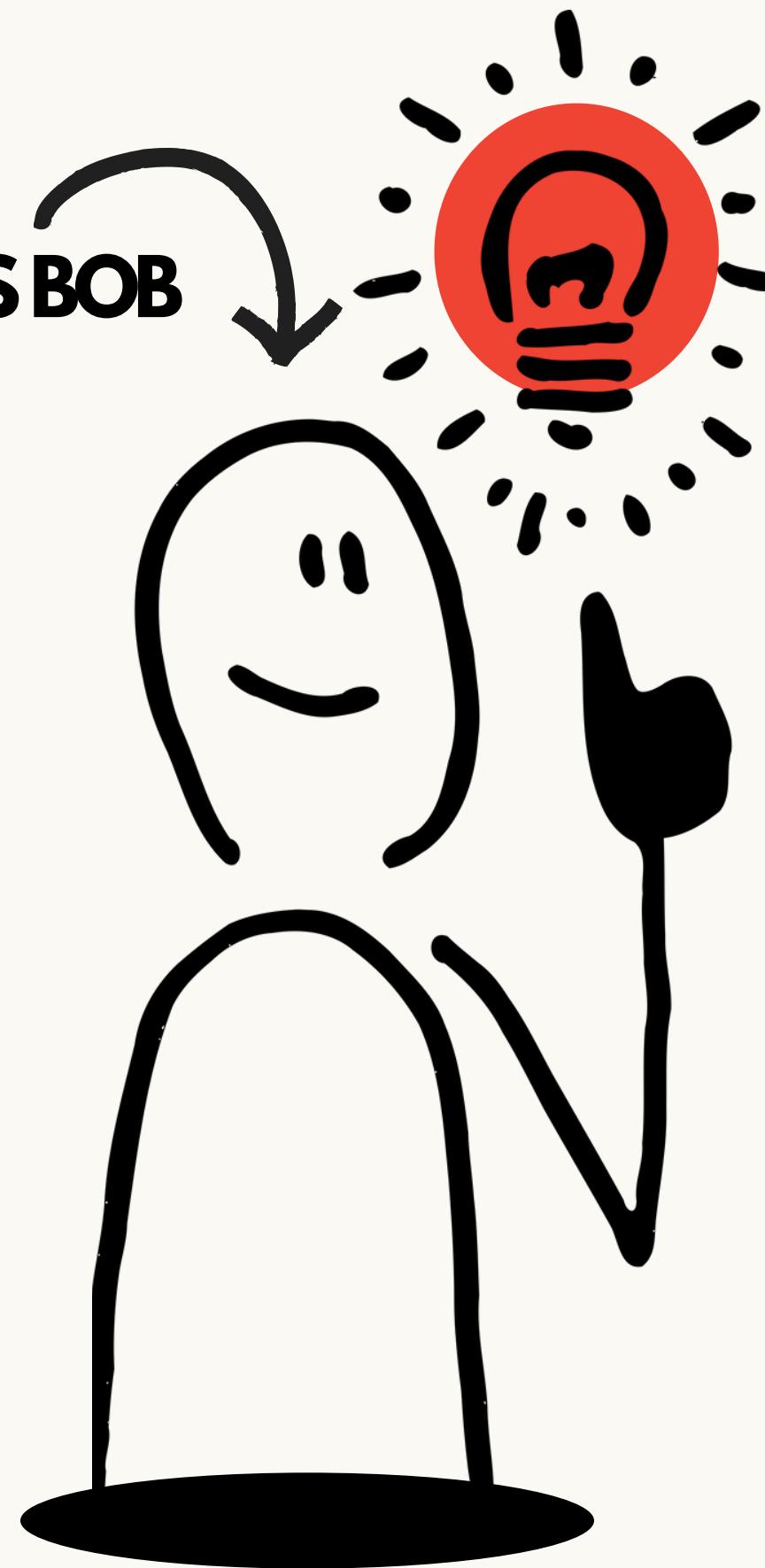




BOB HAS A QUESTION

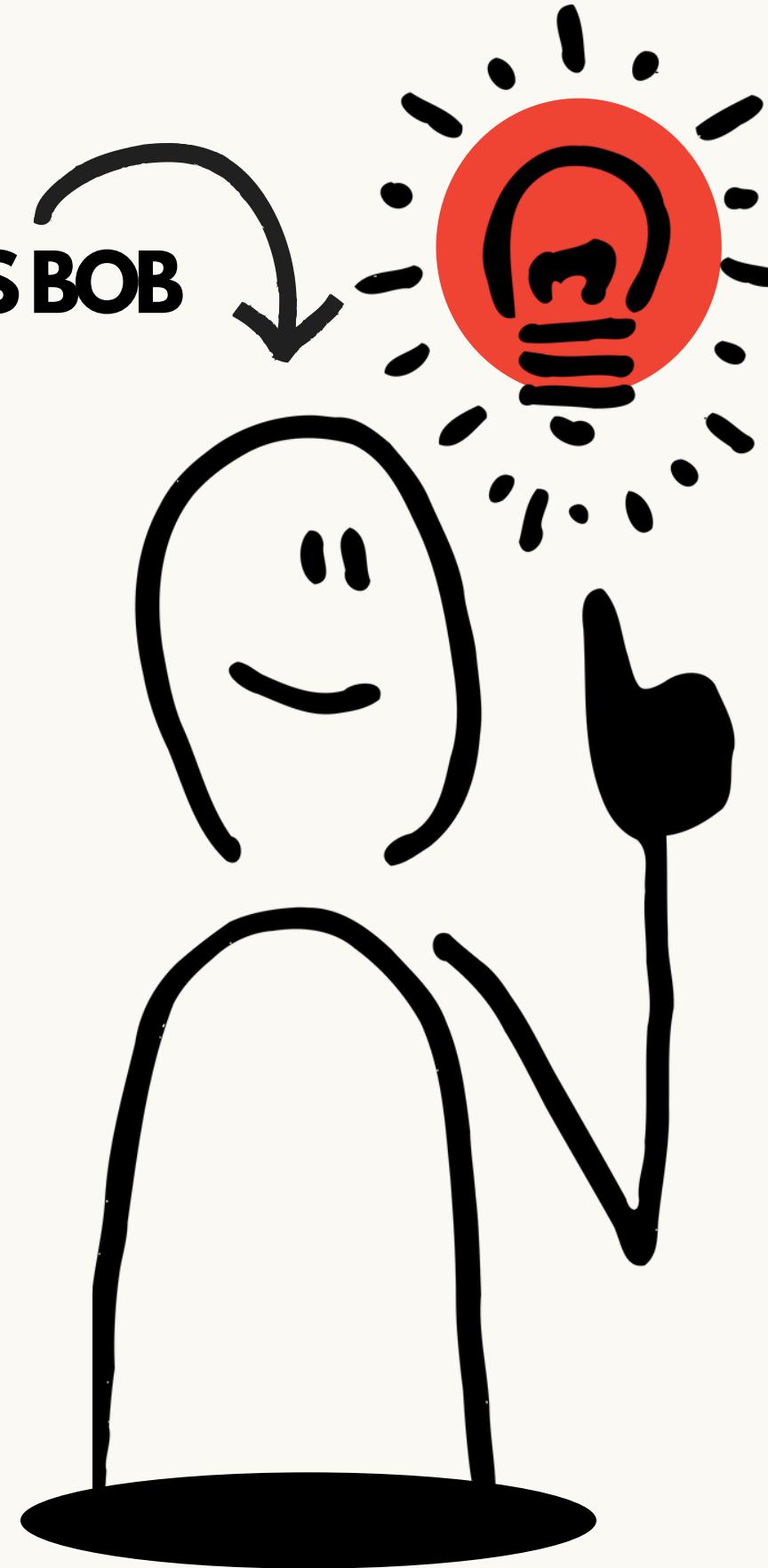


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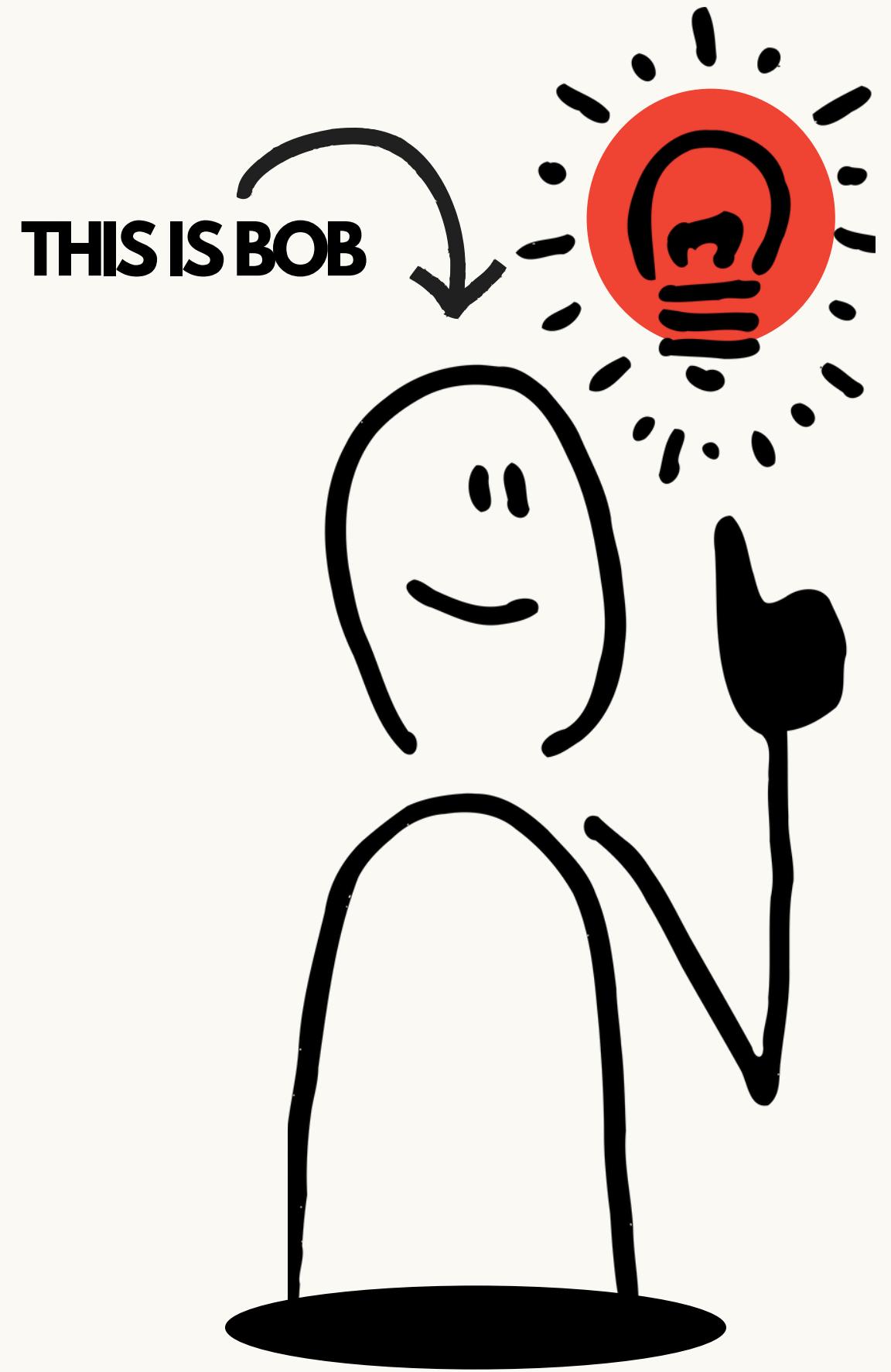


How can I make choices to
achieve the highest
satisfaction possible with my
limited money?

THIS IS BOB

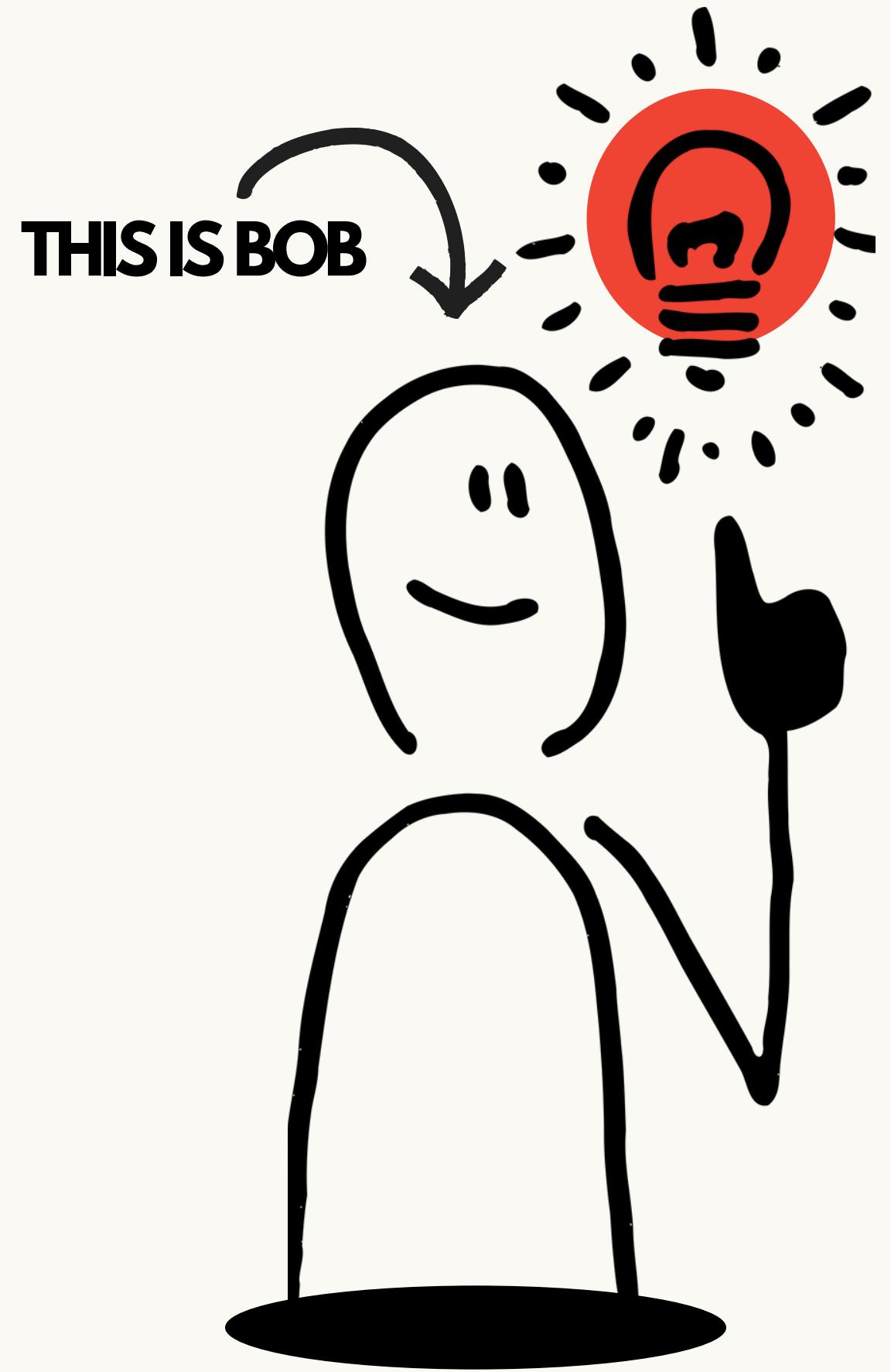


Oh wait, I'm an economist, I
can answer this question!
Hmm... so how can I choose
my purchases to maximize
my satisfaction

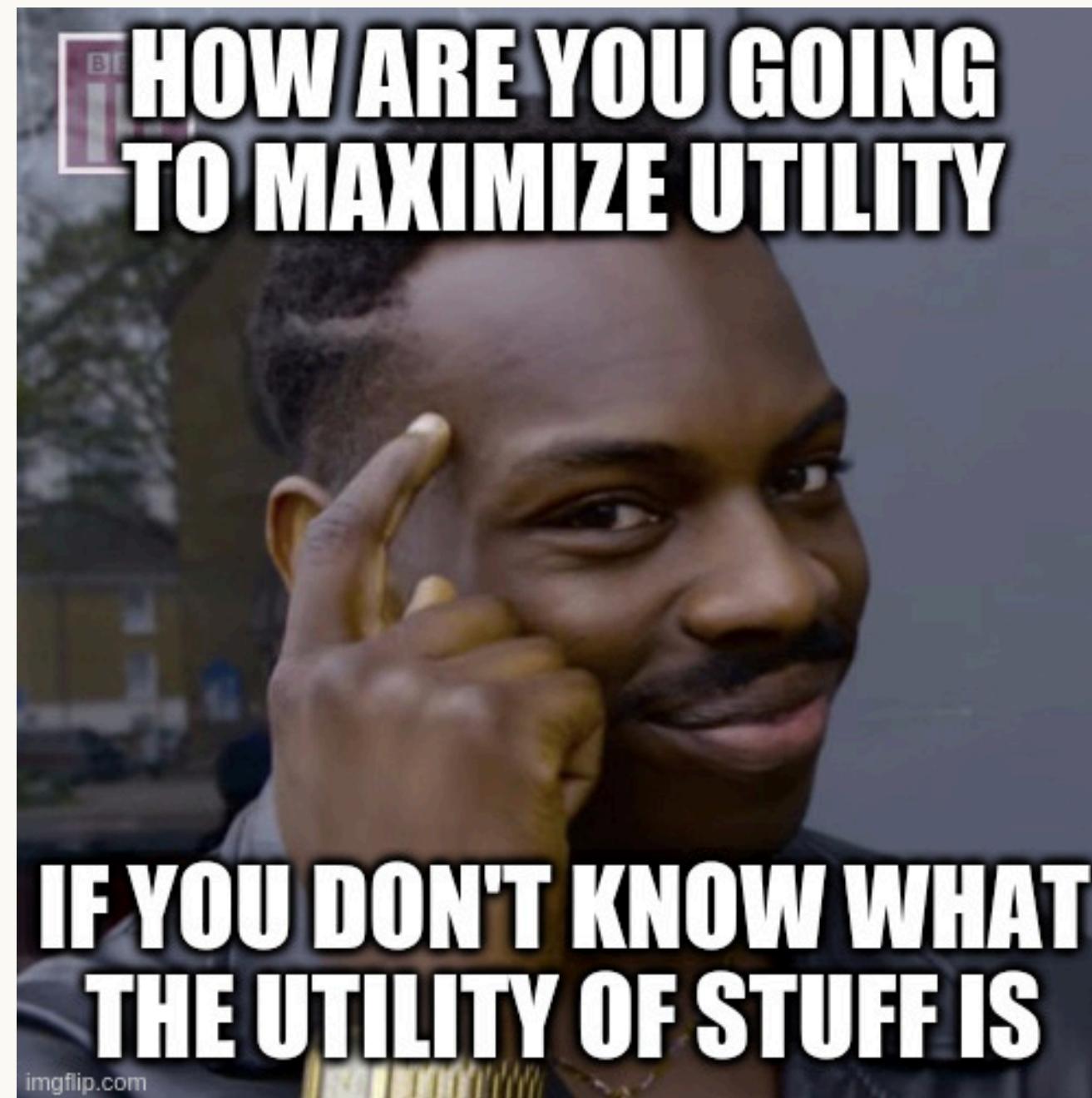


So Bob says...

As a consumer, I can allocate my income to purchase goods and services in a way that maximizes their utility, keeping in mind the budget constraints.



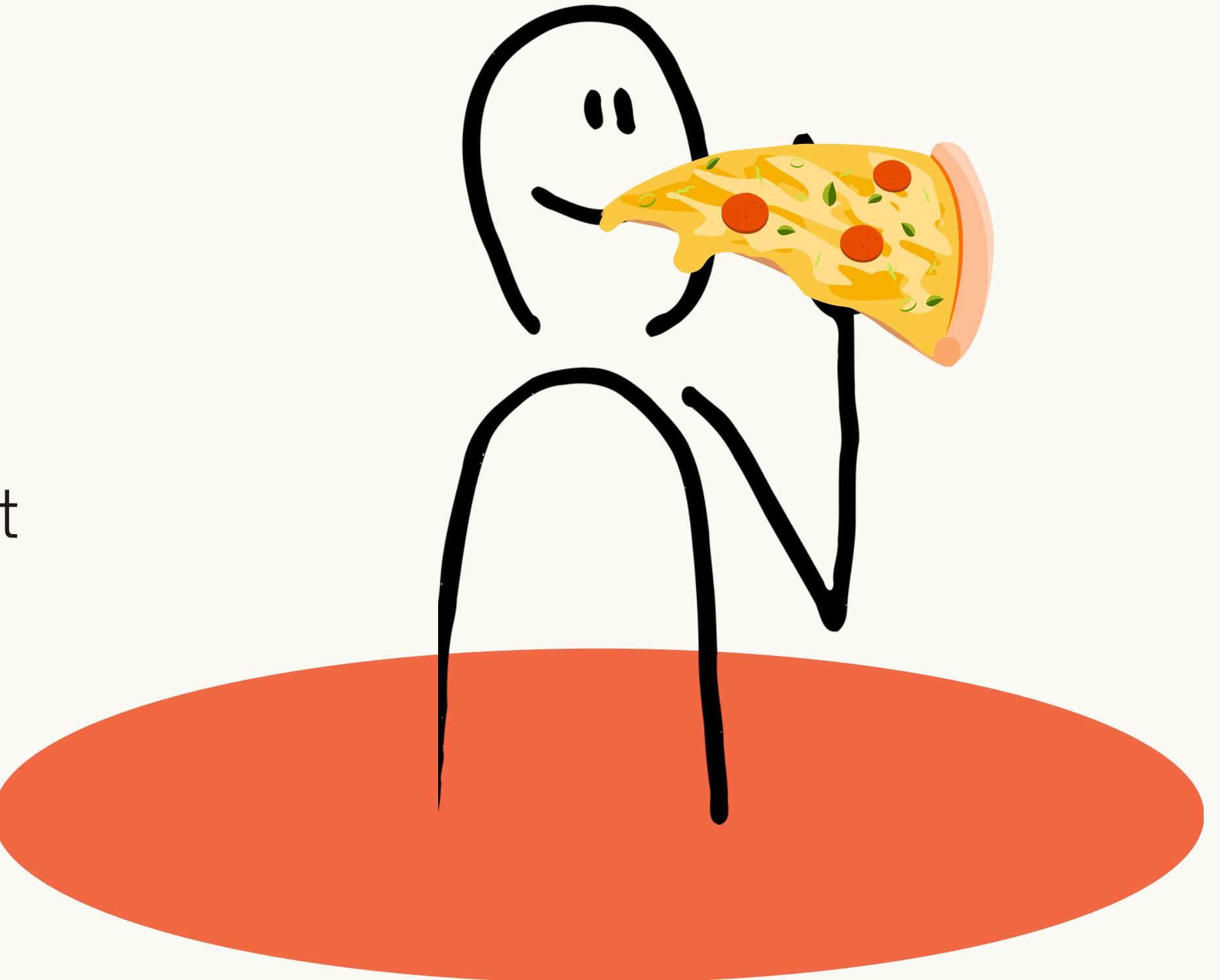
But Bob...



UTILITY

Utility refers to the want-satisfying power of a commodity

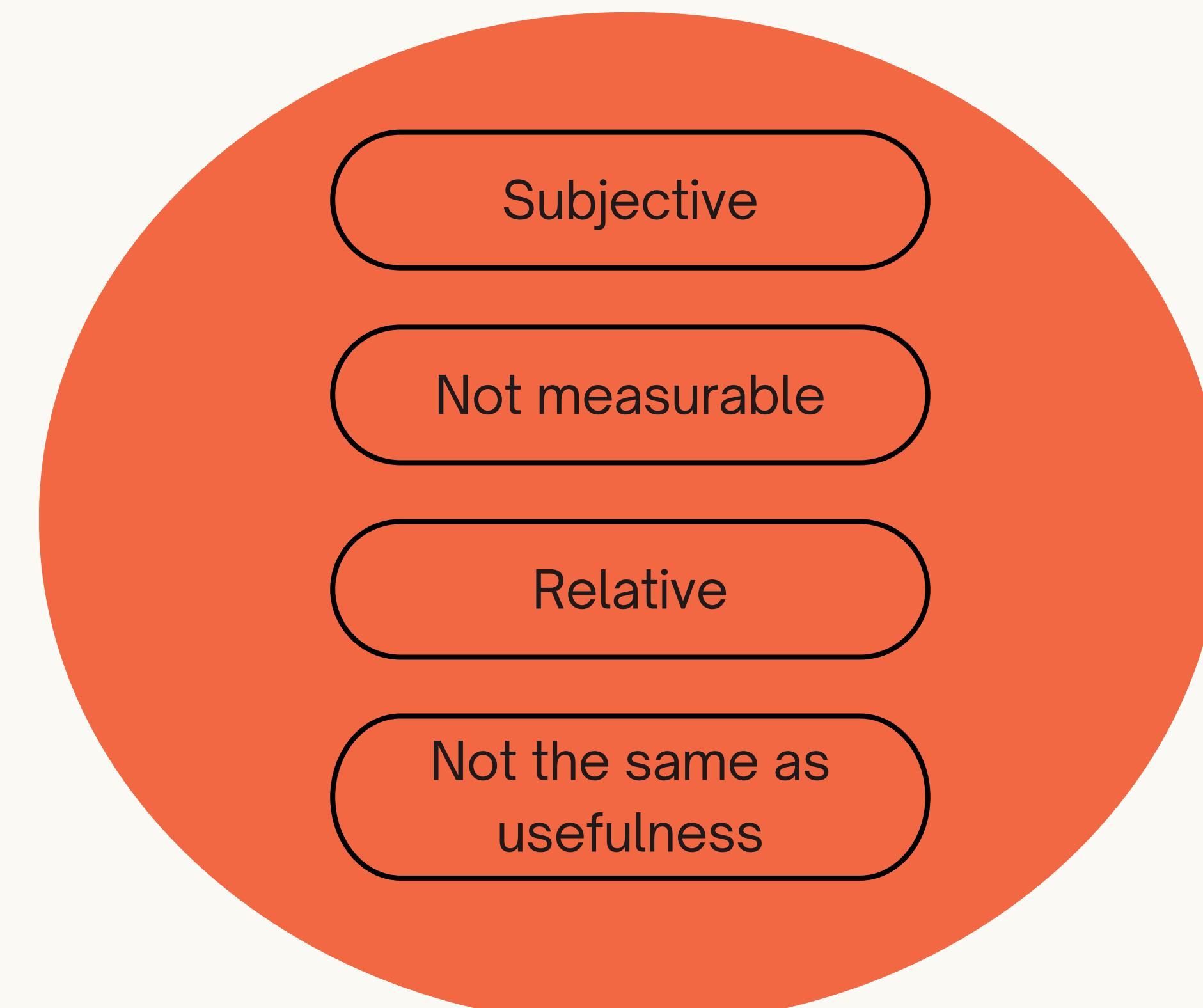
Utility can be defined as the amount of satisfaction derived from the consumption of a commodity



UTILITY

Utility refers to the want-satisfying power of a commodity

Utility can be defined as the amount of satisfaction derived from the consumption of a commodity



Subjective

Not measurable

Relative

Not the same as usefulness

Total Utility and Marginal Utility

→ **Total Utility**

The total satisfaction derived by the consumer from the consumption of a specific quantity of a commodity

→ **Marginal Utility**

The additional utility derived from the consumption of an additional unit of a commodity

Total Utility and Marginal Utility

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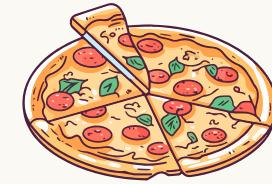
→ Marginal Utility

The additional utility derived from the consumption of an additional unit of a commodity

Total Utility V/S Marginal Utility



$MU_1 = 10$ utils
 $TU_1 = 10$ utils



$MU_2 = 7$ utils
 $TU_2 = 17$ utils



$MU_3 = 5$ utils
 $TU_3 = 22$ utils

Total Utility and Marginal Utility

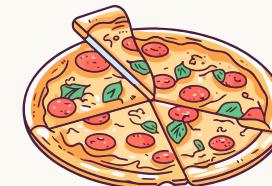
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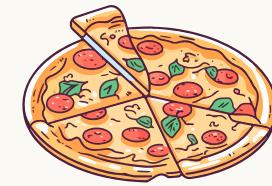
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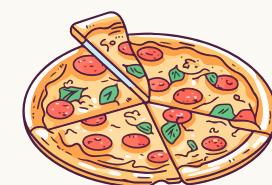
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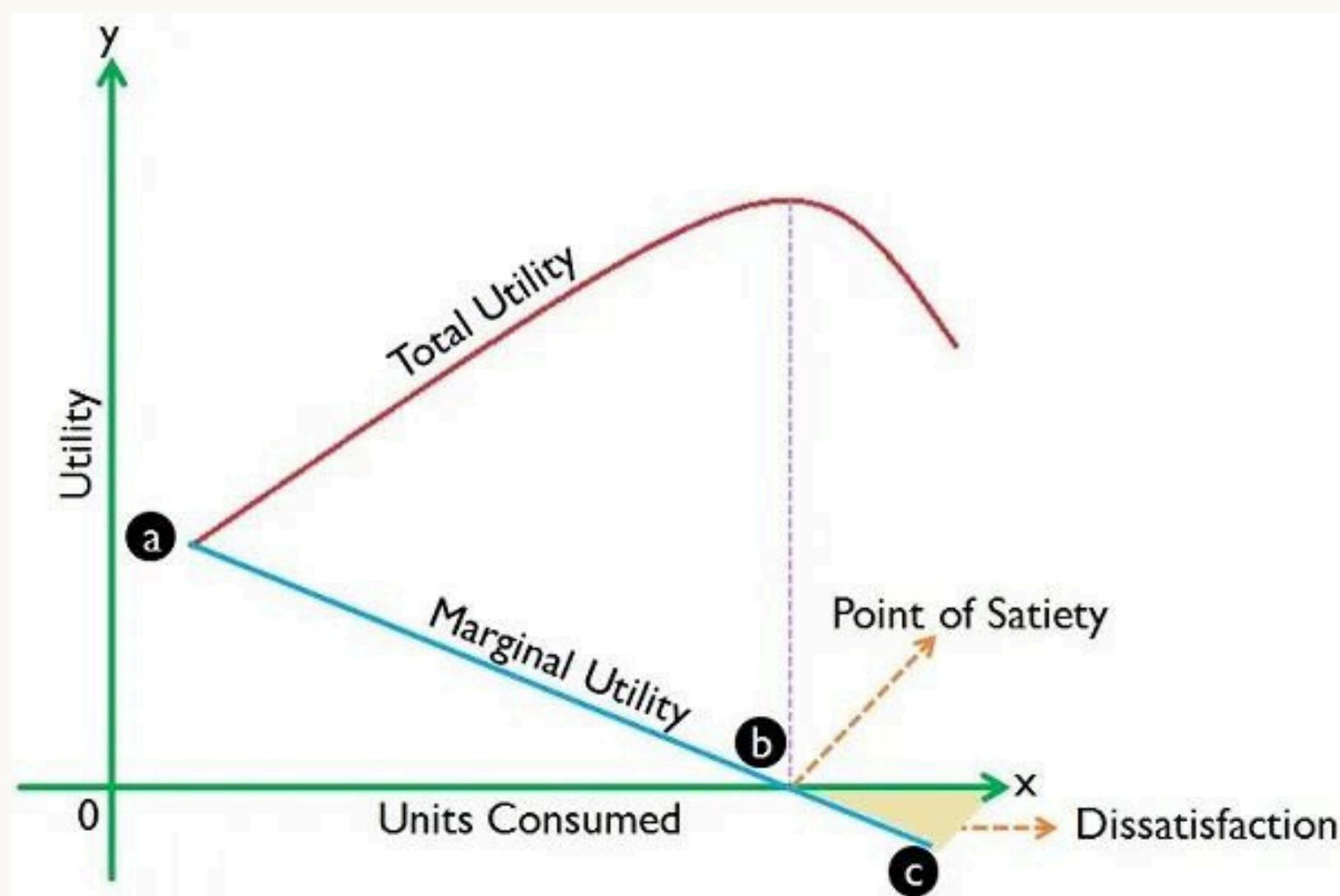


$$\text{MU}_3 = 5 \text{ utils}$$
$$\text{TU}_3 = 22 \text{ utils}$$

$$\text{TU}_n = \text{MU}_1 + \text{MU}_2 + \dots + \text{MU}_n$$

$$\text{MU}_n = \text{TU}_n - \text{TU}_{(n-1)}$$

Total Utility and Marginal Utility



Beyond the Satiation point, additional consumption reduces total utility

Total Utility V/S Marginal Utility



$$\begin{aligned} MU_1 &= 10 \text{ utils} \\ TU_1 &= 10 \text{ utils} \end{aligned}$$



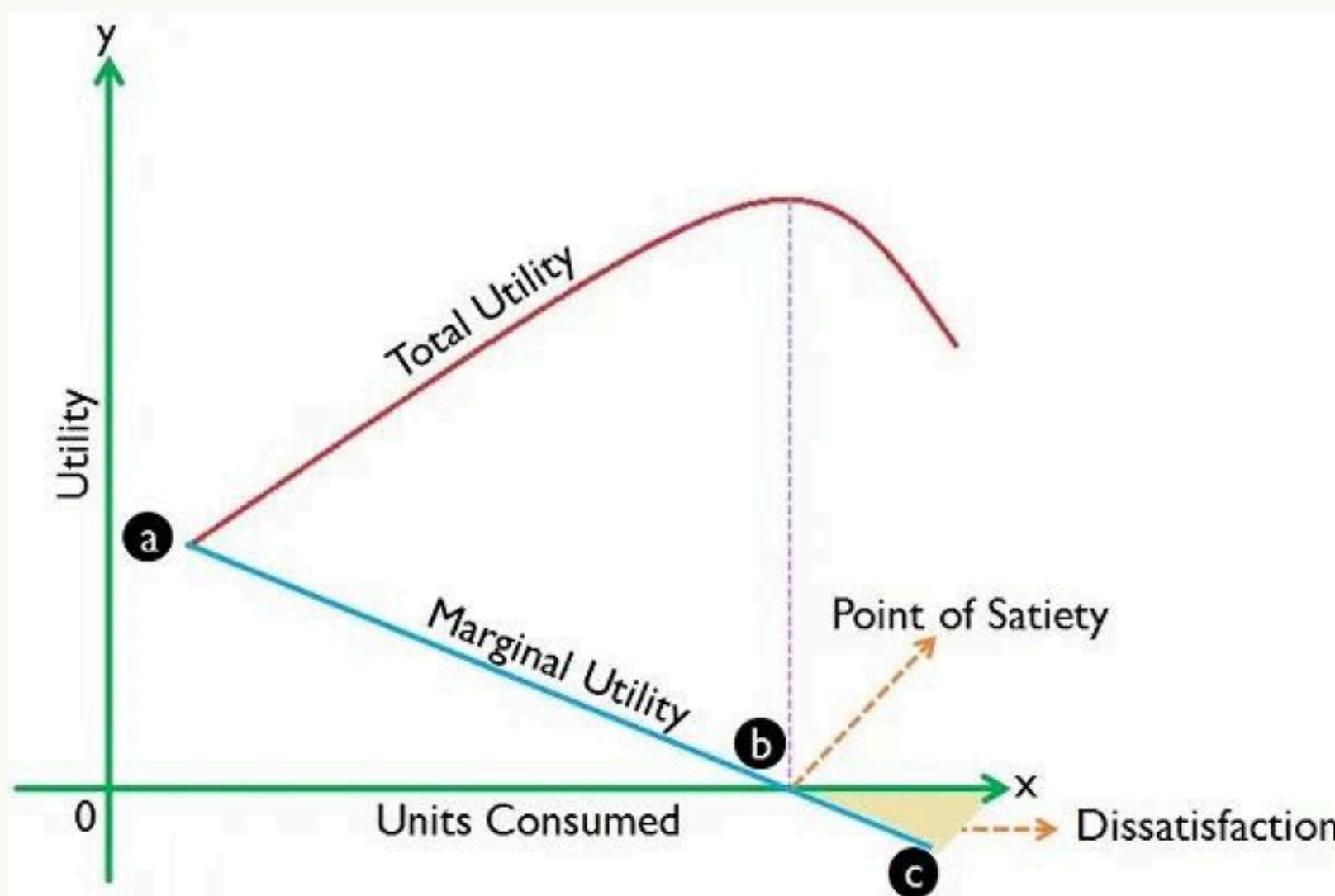
$$\begin{aligned} MU_2 &= 7 \text{ utils} \\ TU_2 &= 17 \text{ utils} \end{aligned}$$



$$\begin{aligned} MU_3 &= 5 \text{ utils} \\ TU_3 &= 22 \text{ utils} \end{aligned}$$

$$\begin{aligned} TU_n &= MU_1 + MU_2 + \dots + MU_n \\ MU_n &= TU_n - TU_{(n-1)} \end{aligned}$$

Total Utility and Marginal Utility



Beyond the Satiation point, additional consumption reduces total utility

- TU increases as long as MU is positive
- TU is at max when MU is 0
- TU starts to decrease when MU becomes negative

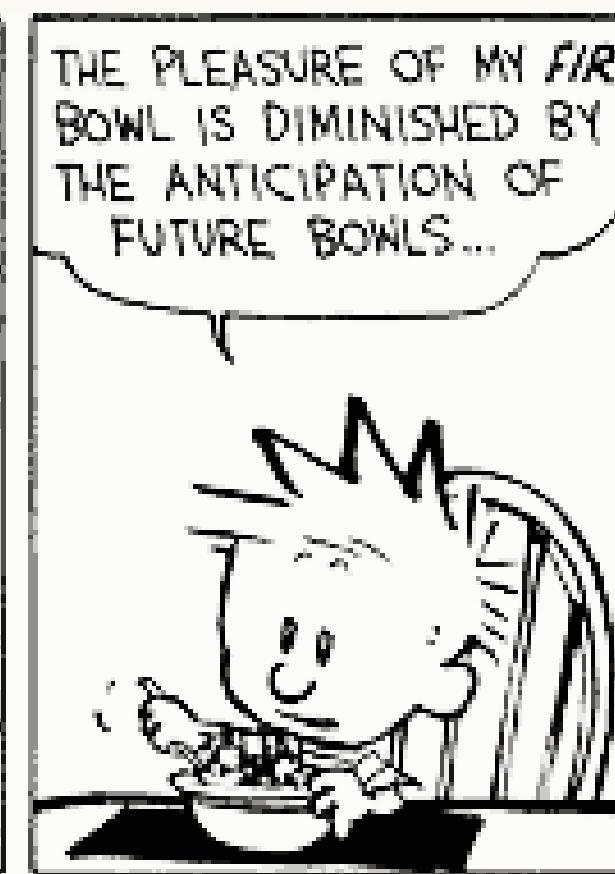
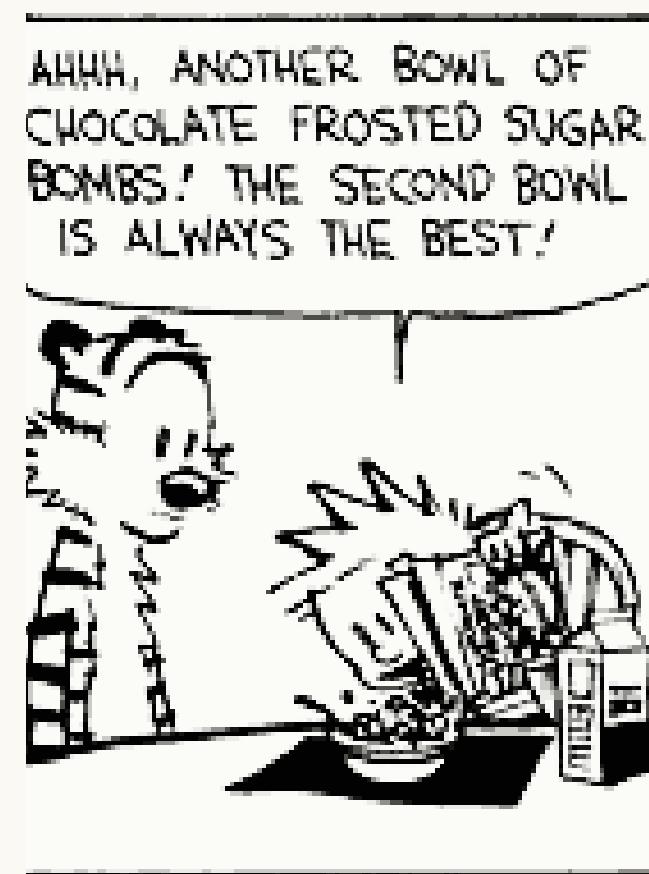
The point of Satiety is when $MU=0$

Law of Diminishing Marginal Utility

- The Law of Diminishing Marginal Utility states that as more of a good is consumed, the additional satisfaction from consuming an extra unit decreases.

Law of Diminishing Marginal Utility

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- Example: Eating chocolate frosted sugar bombs – the first bowl is satisfying, the second gives maximum satisfaction but with each additional bowl after that, the satisfaction decreases.



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Law of Equi-Marginal Utility

AKA Utility Maximization rule

To maximize utility, consumers allocate their income where the marginal utility per unit money i.e MU/P spent is equal for all goods.

Law of Equi-Marginal Utility

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Remember Bob?



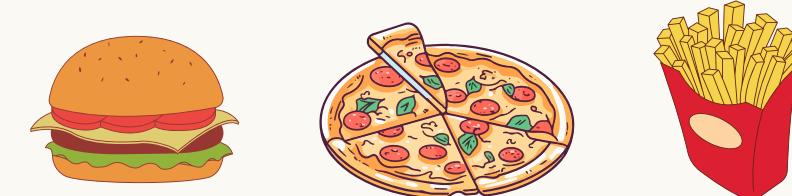
Law of Equi-Marginal Utility

To maximize utility, consumers allocate their income where the marginal utility per unit money i.e MU/P spent is equal for all goods.

Remember Bob?



So Bob has 40Rs and wants to buy food



But he wants to maximize his utility

Law of Equi-Marginal Utility

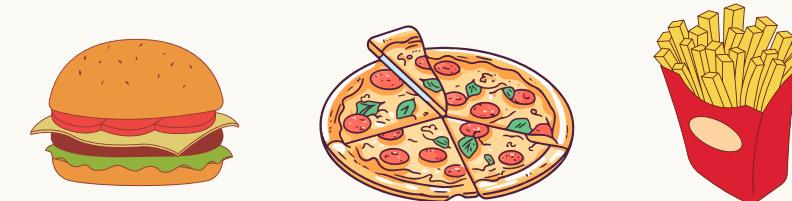
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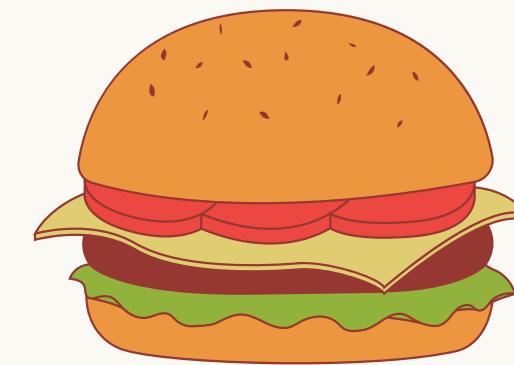
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Thus the consumers(Bob) must make choices and trade-offs due to budget constraints



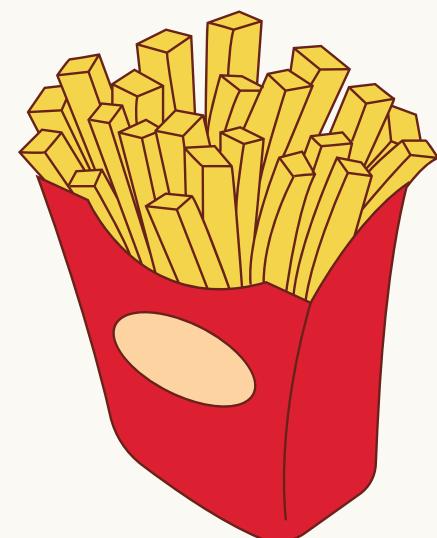
MU = 100 utils
Price = 10Rs

MU/P = 10



MU = 200 utils
Price = 20Rs

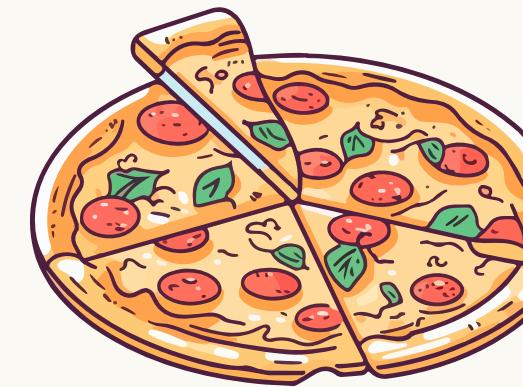
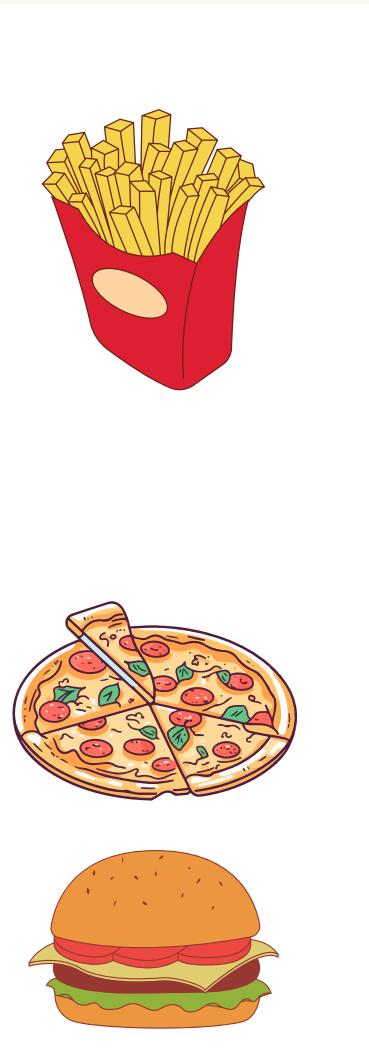
MU/P = 10



MU = 100 utils
Price = 20Rs

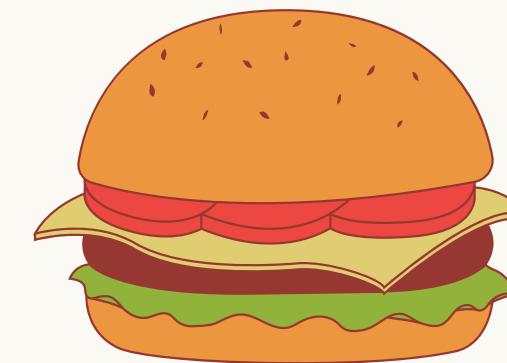
MU/P = 5

Law of Equi-Marginal Utility



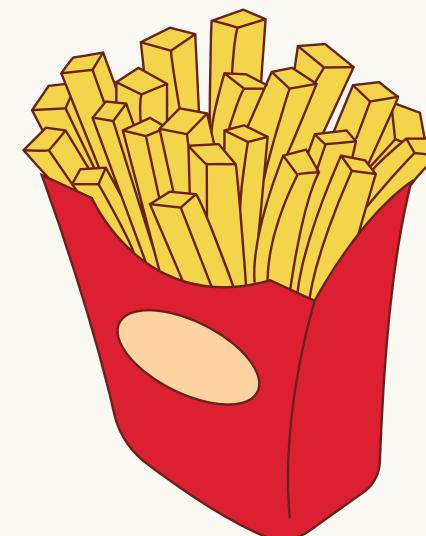
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Price = 20Rs

MU/P = 10



MU = 100 utils
Price = 20Rs

MU/P = 5

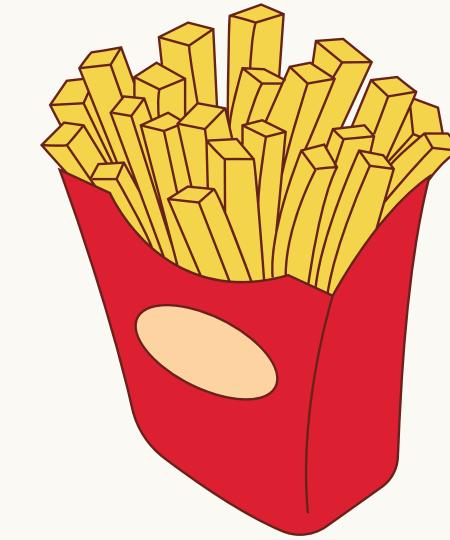
Law of Equi-Marginal Utility

Consumer's equilibrium will be when $MU_x/P_x = MU_y/P_y$ and at the same time the consumer must spend the entire income on the purchase of the two commodities



$MU_1 = 100 \text{ utils}$
 $MU_2 = 50 \text{ utils}$
Price = 10Rs

$MU_1/P = 10$
 $MU_2/P = 5$



$MU_1 = 100 \text{ utils}$
 $MU_2 = 80 \text{ utils}$
Price = 20Rs

$MU_1/P = 5$
 $MU_2/p = 4$

The goal is to equalize the utility gained from the last rupee spent on each good, which maximizes overall satisfaction.

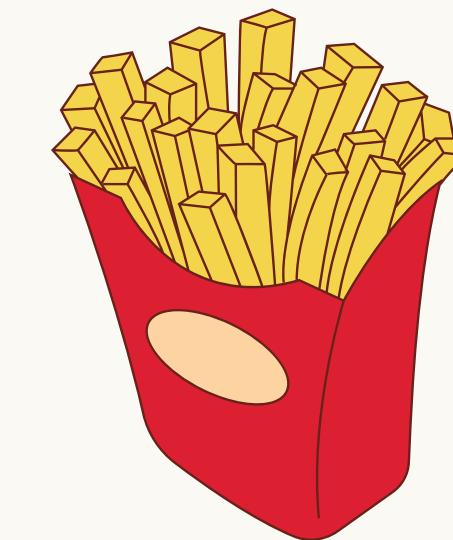
Law of Equi-Marginal Utility

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$$\begin{aligned}MU_1 &= 100 \text{ utils} \\MU_2 &= 50 \text{ utils} \\ \text{Price} &= 10\text{Rs}\end{aligned}$$

$$\begin{aligned}MU_1/P &= 10 \\MU_2/P &= 5\end{aligned}$$



$$\begin{aligned}MU_1 &= 100 \text{ utils} \\MU_2 &= 80 \text{ utils} \\ \text{Price} &= 20\text{Rs}\end{aligned}$$

$$\begin{aligned}MU_1/P &= 5 \\MU_2/p &= 4\end{aligned}$$

$$\begin{aligned}\mathbf{MU_2/P \text{ of pizza} = MU_1/P \text{ of fries}} \\ \mathbf{2*10(\text{pizza}) + 1*20(\text{fries}) = 40\text{Rs}}\end{aligned}$$

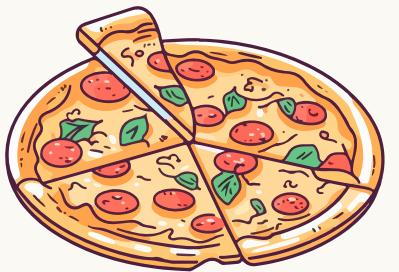
Since Bob had 40Rs and he is spending 40Rs, this is the equilibrium state where he has reached maximum utility

Deriving the Demand Curve

As the price of a good decreases, consumers buy more of it due to the increase in marginal utility per dollar spent.

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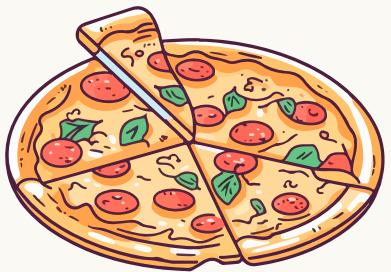


Old price = 4\$

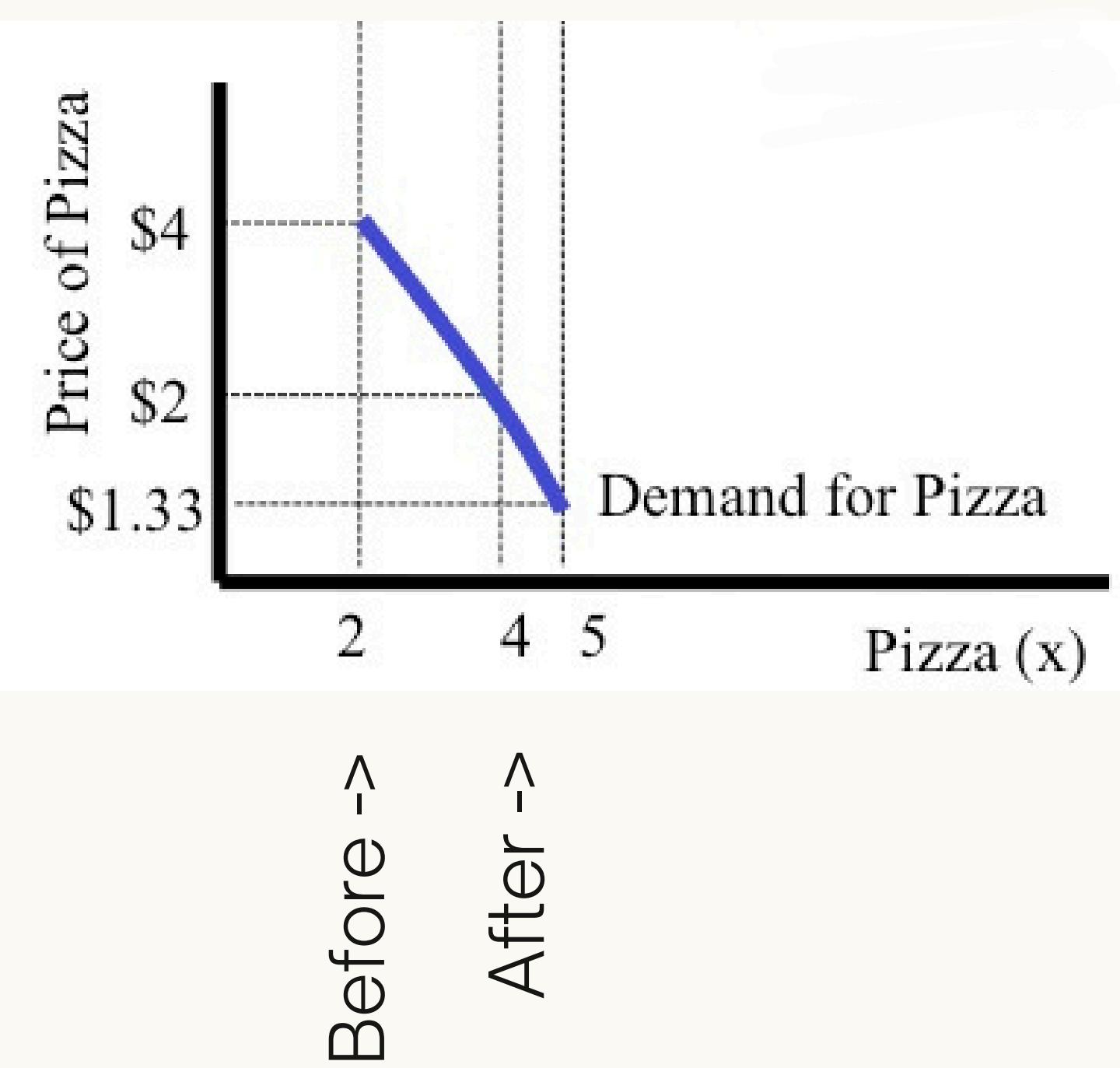
New price = 2\$

Deriving the Demand Curve

As the price of a good decreases, consumers buy more of it due to the increase in marginal utility per dollar spent.



Old price = 4\$
New price = 2\$



Applications of Utility Maximization

- Vending Machines Example:
 - Newspaper vending machines allow consumers to take multiple papers after purchase because the marginal utility of a second paper is low.
 - Soda vending machines dispense only one soda at a time because the marginal utility of an additional soda is still significant.

Behavioral Economics and Utility

Traditional theory assumes rational decision-making, but behavioral economics suggests decisions are often influenced by psychological factors and emotions.

For example: Bob might buy a product labeled as “80% lean” instead of one labeled “20% fat,” just because it sounds healthier even though they are essentially the same.

this is because people tend to fear losses more than they value gains of the same magnitude, and this influences their consumption choices.

THIS WAS
BOB



BOB HAD A QUESTION
AND BOB GOT HIS ANSWER

THANKYOU
-SHRAVANI

