EC 120

Ryan Kofsky & Alex Clayton

Thursday, October 3, 2019

Pitched on Dragons' Den!

DRIVER BENEFITS

No service fees

In app payments

Personalized Prefernces

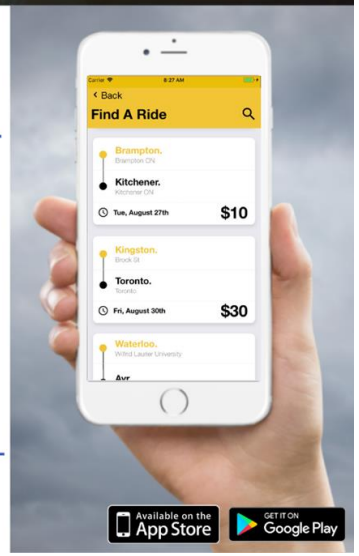
RIDER BENEFITS

Interest based ride recommendations

Verified drivers

GPS Tracking/ 911 support

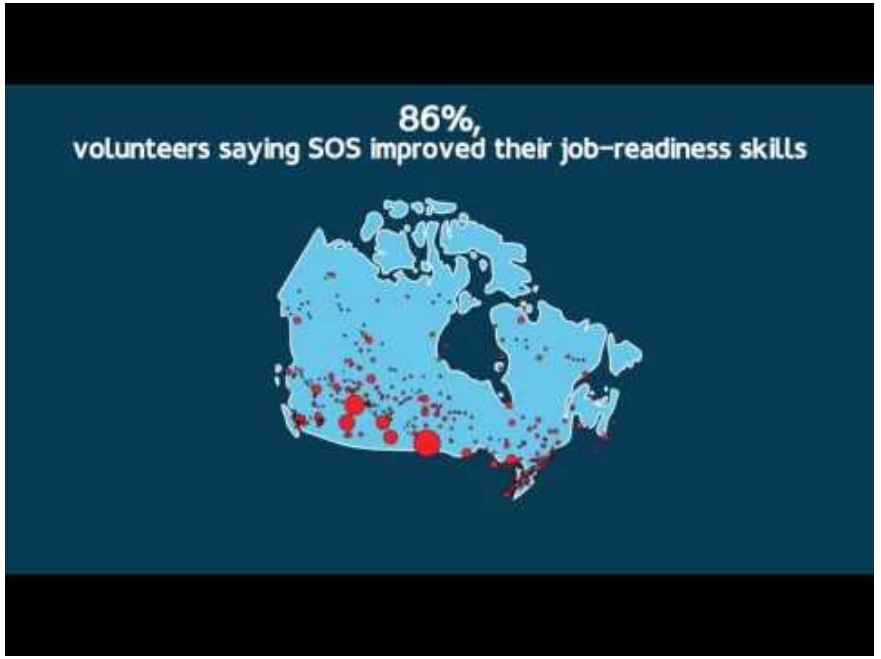
Sign up today for a chance to win 1 of 500 Starbucks gift cards and more giveaways!



Did you know more than 100,000 students have been helped by our Exam-AIDs on 25 University campuses?

- **SOS has raised $2.5 MILLION DOLLARS for educational projects in Latin America.**

- **With more than 2,000 active volunteers, SOS is one of the largest student organizations in Canada.**



STUDENTS OFFERING SUPPORT

WE'RE HIRING

INTERNATIONAL DEVELOPMENT EXECUTIVES & COURSE COORDINATORS

DEADLINE TO APPLY:

FRIDAY OCTOBER 4TH

CLUBS & ASSOCIATIONS

International Development

- The face of Raising Roofs and SOS Outreach Trips
- Recruit & interview applicants for Outreach Trips
- Build community with trip participants through social media, meetings, and recruitment & engagement event

Course Coordinator

* BU127, MA129, BI110, CH110 needed *

- Liaison between professor, students, & exam aid instructor
- Give course info, topics, & deadlines to instructor
- Help with session logistics & creating Exam Aid materials

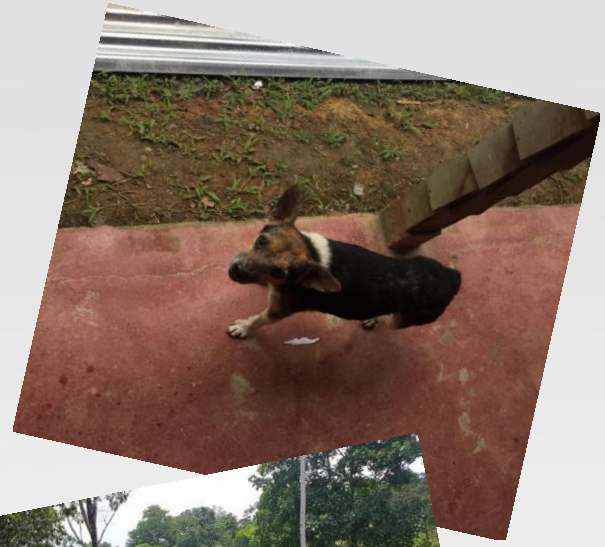
Did you know that…

- **Your donation DIRECTLY supports an education development project** in Latin America?
- AND <u>you</u> can go <u>build</u> the project funded THIS SUMMER with us!!

STUDENTS OFFERING SUPPORT

We're Running Trips!

- Every year at least 2 trips are run through Laurier!
  - **For Who?** ANYONE interested in a life-changing experience!
  - **When?** Beginning of May and end of August 2020!!



STUDENTS OFFERING SUPPORT

This Year's Trips

- Guatemala
- Costa Rica
- Belize

- Opportunity to Learn and Practice Spanish, Help With Classroom Construction, Be Part Of A Community

STUDENTS OFFERING SUPPORT

How to Apply!

- www.lauriersos.com :
  - Visit the 'Trips' section to see upcoming opportunities at your school.
  - Click the trip and fill out the online application form.
- **With questions e-mail laurieroutreachsos@gmail.com**
  - *If the dates don't work, e-mail outreach@studentsofferingsupport.ca to see if there is a trip that can work!*

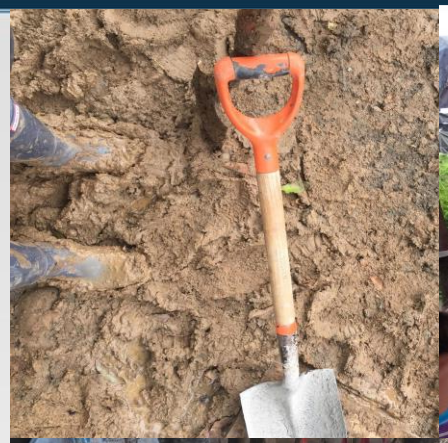
STUDENTS OFFERING SUPPORT

Previous Trips: Namaldi, Costa Rica

Project: Construction of a High School Classroom

STUDENTS OFFERING SUPPORT

Brisas De San Luis, Nicaragua



Project: Construction of a new elementary school

STUDENTS OFFERING SUPPORT

SOS STUDENTS OFFERING SUPPORT

JDCC

- Annual undergraduate business competition between 14 universities in Central Canada
- We compete in:
  - Academic (8 teams)
  - Debate
  - Sports
  - Social
  - Charity
- Laurier has won School of the Year 7 of the past 10 years!

- Training ground for international competitions (Spain, Serbia, Hungary, Japan, Thailand, Florida, etc.) Where Laurier has 3, 1st place wins and 2, 2nd place wins

Instructor Profile – Ryan Kofsky

- 3rd Year BBA – Finance
- Laurier JDCC Debate/Finance, Gluskin Sheff

  Equity Research Analyst, BU 111 TA
- Toronto Maple Leafs and Raptors Fan

Instructor Profile – Alex Clayton

- 3rd Year BBA & Financial Math Double Degree – Finance
- Laurier JDCC Finance, CBRE Caledon Private Equity Analust, BU 111 TA
- Avid Leafs fan, love watching sports and fantasy hockey
- Camping, Ultimate Frisbee

FYI

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Agenda

1. Scarcity, Choice and Opportunity Cost
2. Supply, Demand & Price
3. Elasticity and Tax Incidence
4. Break
5. Consumers, Producers, and the Efficiency of Markets
6. Consumer Behaviour
7. Budget Constraint

Scarcity, Choice and Opportunity Cost

What is Economics?

- Economics is the study of the allocation of **scarce** resources
  - Scarcity:
    - is the fundamental **economic** problem of having seemingly unlimited human wants and needs in a world of limited resources. It states that society has insufficient productive resources to fulfill all human wants and needs

Key Economic Terms

- **Microeconomics** is related to the branch of economics concerned with single factors and the effects of individual decisions.
  - Deals with households, firms, markets and relative prices.
- **Macroeconomics** is the part of economics concerned with large-scale or general economic factors.
  - Deals with inflation, unemployment and economic growth.

Key Economic Terms Continued

- **Positive statements** are statements about what is or what will be and can be verified by appealing to facts.
  - Example: John Tavares signed with the Toronto Maple Leafs
- **Normative statements** are statements are what ought to be, involve value judgements and **can not** be verified by facts.
  - Example: LeBron James would beat Michael Jordan if they played against each other in their prime.
- **Economic theory –** Use simplifying assumption to make predictions. Test these predictions with data.
  - Key: **Not Assumptions**

Opportunity Cost

- **Definition**: The opportunity cost is the value of the choice in terms of the best alternative while making a decision
- Includes:
  - Explicit costs (out of pocket expenses)
    - $1000 for my new machine
  - Implicit costs (foregone earnings)
    - By going to school I am losing out on a $40,000 job
- Does not include:
  - Sunk costs (unrecoverable)
    - These are basically the costs that must be incurred regardless of which course of action is taken.
  - Costs incurred for all courses of action
- Key Point: A person should engage in the activity if the benefits of said activity exceed the opportunity cost of that activity

Opportunity Cost Example 1

1. Gilbert can fix his bathroom plumbing by paying a plumber $200 or by doing it himself. If he does it himself he will need to take a day off work and will lose $200 in wages. The opportunity cost of fixing his bathroom plumbing is __ if he hires a plumber and __ if he does it himself.

a)	zero	$200
b)	$200	$200
c)	$200	zero
d)	zero	zero

Answer to Example 1

- **The answer is B!**

- If he hires a plumber and chooses to go to work, he will have to pay the plumber $200 (explicit cost), which is an out of pocket expense; hence it will be included as an opportunity cost. If he does it himself, his foregone earnings (implicit cost) that he could've made by working would be his opportunity cost.

Opportunity Cost Example 2

	Labour hours needed to make one unit:		Amount produced in 24 hours:	
	Baskets	Birdhouses	Baskets	Birdhouses
Alberta	6	2	4	12
Manitoba	3	4	8	6

Refer to table 3-4. What is the opportunity cost of one basket for Alberta?

a. 1/3 birdhouse
b. 1 birdhouse
c. 3 birdhouses
d. 4 birdhouses

Answer to Example 2

- **The answer is C!**

- Ask yourselves what would Alberta need to give up in order to produce one basket?

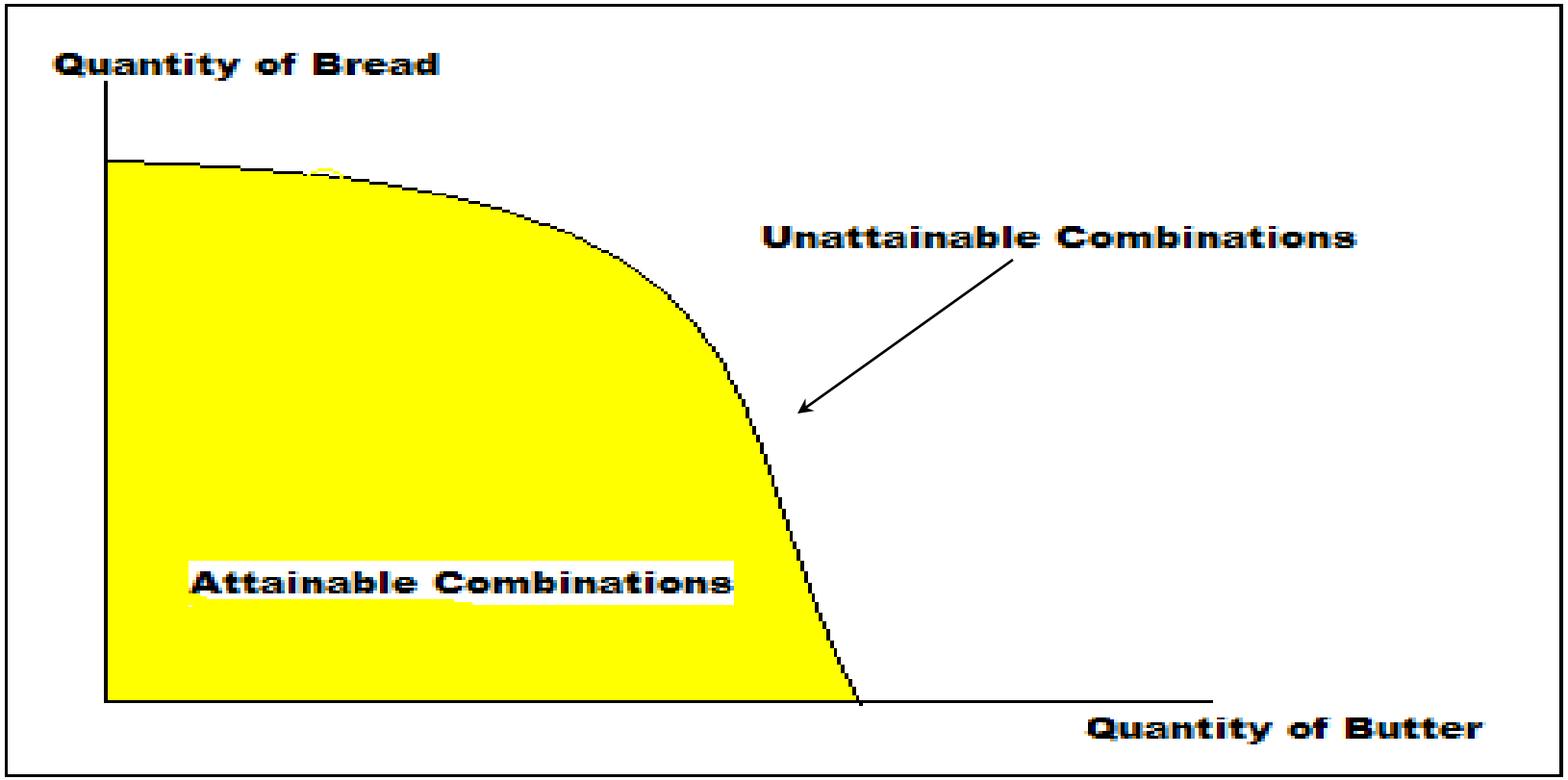
- From the rightmost columns, in 24 hours Alberta could produce 4 baskets or 12 birdhouses. We can scale that down to say that in 6 hours, Alberta could produce 1 basket or 3 birdhouses.

- Thus, in order to make one basket, we have to give up 3 birdhouses

The Production Possibilities Boundary

- Shows the combinations of goods that can be produced if all resources **are fully employed.**
  - On the curve of the PPB
- **Points inside the PPB are attainable**, but you are not fully using your resources.
- **Points outside are unattainable** and can only be attained by **new technology** or a **stronger labour force.**
  - PPB shifts if technology or resources change.
- **Slope** of the PPB indicates **opportunity cost** of the good
- **PPB has a concave (bow) shape** because the opportunity cost of producing one good increases as more of that good is made.

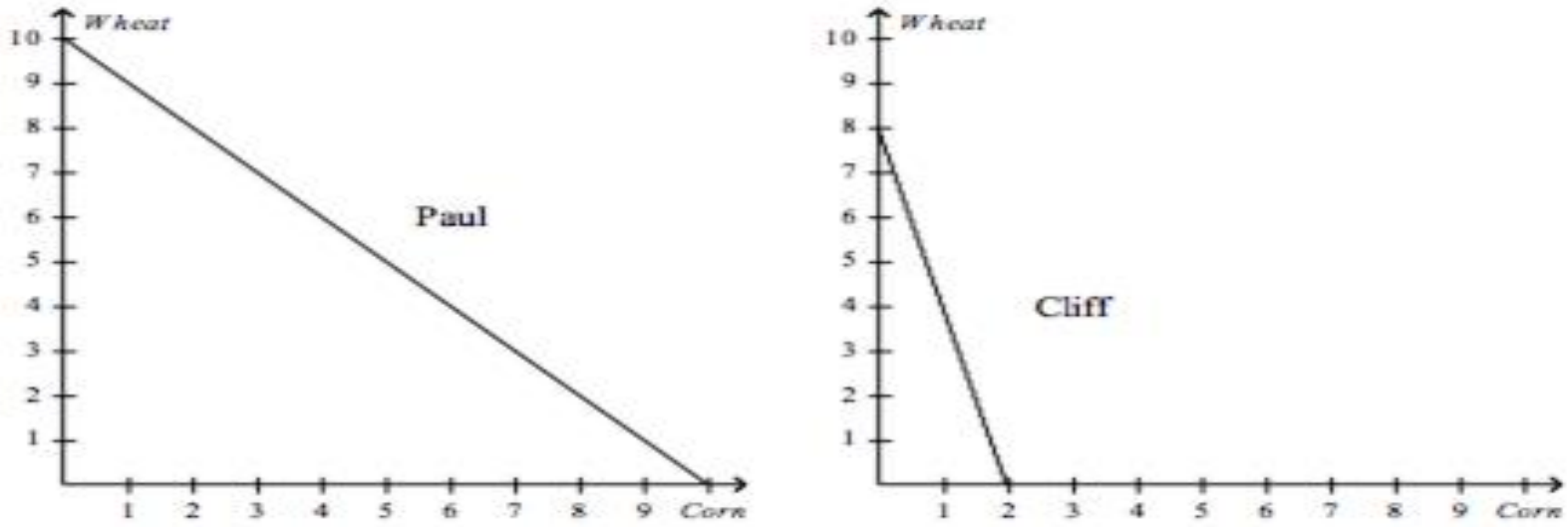
Production Possibilities Boundary



The negatively sloped boundary shows the combinations that are just attainable when all of society's resources are efficiently employed.

PPB Example

Figure 3-5



____ 1. **Refer to Figure 3-5.** The opportunity cost of 1 bushel of wheat for Cliff is
a. 1/4 bushel of corn.
b. 1/2 bushel of corn.
c. 1 bushel of corn.
d. 2 bushels of corn.
e. 4 bushels of corn.

Answer to Example

- **Answer is A !**

- In order to make 1 bushel of wheat, he must give up ¼ of a bushel of corn

- Remember that these are always ratios, so we can scale as needed! (Cliff's two options are 8 bushels of wheat or 2 bushels of corn)

Supply, Demand & Price

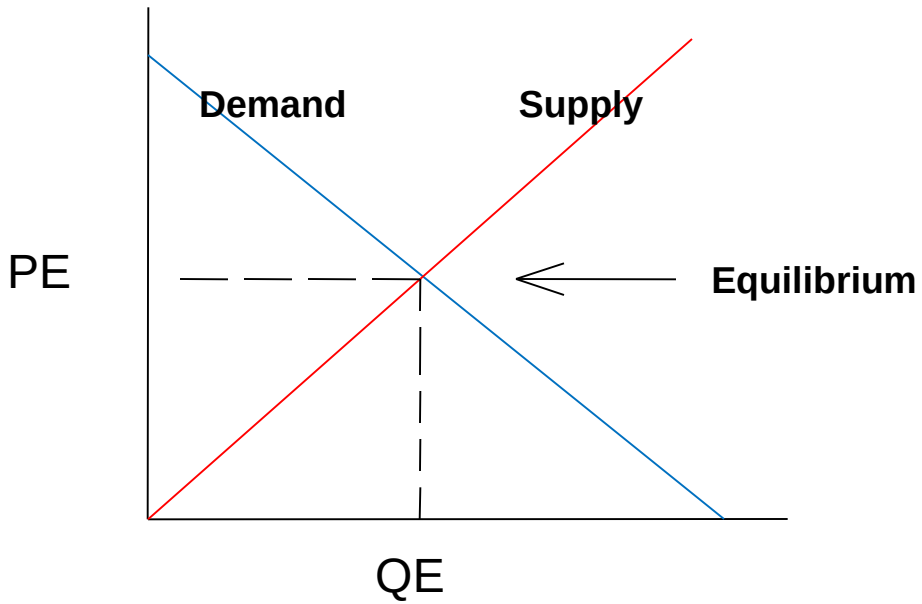
Why stuff cost money

Market

- **A market is the collection of buyers and sellers of a good or service**
  - Can vary in size and level of organization
- **Competitive markets require a large quantity of buyers, and freedom of choice**

Supply/Demand Basics

- **Quantity Demanded: total amount of any particular good or service that consumers wish to purchase in some time period at a certain price.**
- **Quantity Supplied: total amount of any particular good or service that suppliers wish to supply in some time period at a certain price.**



Equilibrium: Where the supply meets the demand

QE: Quantity Equilibrium

PE: Price Equilibrium

Y-axis: Price; X-axis: Quantity

Supply/Demand Theory

- Both quantity demanded and quantity supplied represent flows of those goods over a time period (not a stock of goods).
- Assumption of perfectly competitive markets (many buyers and sellers who have no appreciable influence over prices; market determines prices) **MARKET FORCES CAUSE PRICE TO MOVE TOWARDS EQUILIBRIUM** (Q_d=Q_s)
- Price rises when there is excess demand, price falls when there is excess supply
- **Change in a good's price (P)** causes a **MOVEMENT** along a demand or supply curve and a change in quantity demanded/supplied
- **Change in any factor of supply/demand (that is not price)** causes a **SHIFT** of a supply/demand curve

Factors of Demand

- **Change in the price of good**
  - ➢ Inverse relationship: Starbucks prices goes up; less people drink Starbucks
- **Change in the price of a substitute good**
  - ➢ Direct relationship (I.e. Pepsi prices increases, Coke Demand increases)
- **Change in the price of a complementary good**
  - ➢ Inverse relationship (I.e. Pillow prices rise, pillowcase demand falls)
- **Change in consumer income**
  - ➢ Direct relationship (I.e. minimum wage increases, demand for beer increases)
    - ➢ Rising Income leads to Rising Demand = Normal Good (I.E. High End Watches)
    - ➢ Rising Income leads to Reduced Demand = Inferior Good (I.E. Kraft Dinner)

- **Change in population**
  - ➢ Direct relationship (every fall, the population of Waterloo increases by about 30,000 students, demand for eating out increases)
- **Change in tastes and Preferences**
  - ➢ Direct Relationship (The people of Waterloo generally become more health conscious, the demand for healthy food increases)
- **Future expectations ***
  - ➢ Direct Relationship (Y2K example: the public thinks some crazy stuff is going to go down, therefore the demand for canned soup sky rockets now)
- **Direct = moves in same direction; Inverse = moves in opposite direction**

Factors of Supply

- **Price of an input**
  - ➢ Inverse Relationship: the price of yarn goes up, therefore the supply of Fiz's hand knitted mittens goes down (shifts left)
- **Price of good**
  - ➢ Direct relationship: falafels prices go up, more people go into the falafel business
- **Technology**
  - ➢ Direct relationship: new technology is discovered in regards to getting the caramel inside of the chocolate, so the supply of Caramilk bars goes up
- **Number of Suppliers**
  - ➢ Direct relationship: the number of restaurants being built in Waterloo goes up, therefore the supply increases
- **Expectations**
  - ➢ If suppliers expect prices to rise in the future, they may reduce supply in order to sell more later at a higher price
- **Natural Events ***
  - ➢ Weather that destroys crops, or a severe tornado that destroys machinery and a factory will decrease the supply of that good.

Supply/Demand Example 1

Which of the following would cause a "decrease in supply"?

a) An increase in the wage rate paid to workers in the industry
b) A decrease in average household income
c) Firms entering the industry
d) A decrease in the price of the product
e) Both a) and d) are correct

Example 1 Solution

Answer: The Answer is A!

a) Correct – Wages of workers are an input (for supply), when the price of an input goes up it causes supply to decrease.

b) Wrong – Decrease in household income is a factor of demand.

c) Wrong – An increase in the number of suppliers will *increase* the supply.

d) Wrong – A decrease in the price causes a decrease in the quantity supplied, not the actual supply. Price moves ALONG the curve.

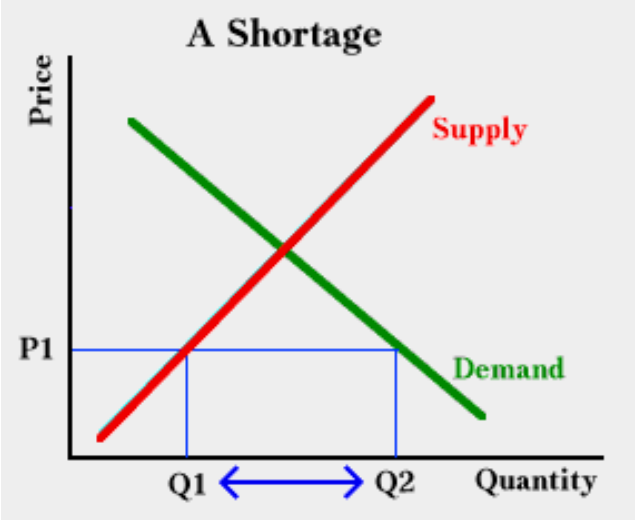
e) Wrong – Implicitly wrong because d) is wrong.

Four Laws of Supply/Demand

- **1. An increase in demand causes an increase in both the equilibrium price and the equilibrium quantity exchanged.**
- **2. A decrease in demand causes a decrease in both the equilibrium price and quantity exchanged.**
  - ➢(When demand shifts, P and Q move in the same direction!)
- **3. An increase in supply causes a decrease in the equilibrium price and an increase the equilibrium quantity exchanged.**
- **4. A decrease in supply causes an increase the equilibrium price and a decrease quantity exchanged.**
  - ➢(When Supply shifts, P and Q move in opposite directions!)

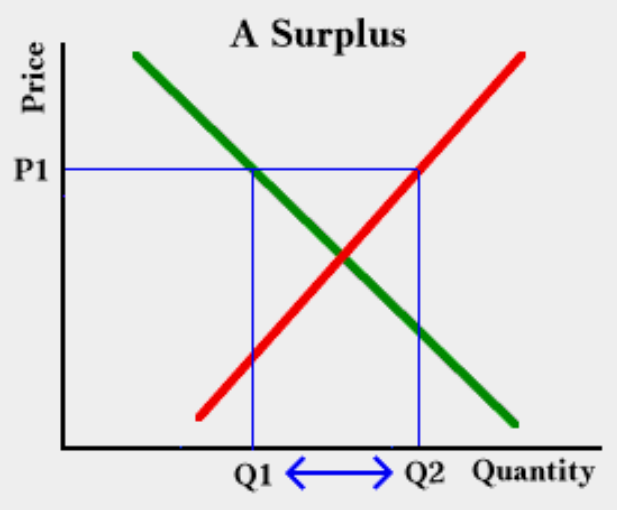
Shortage

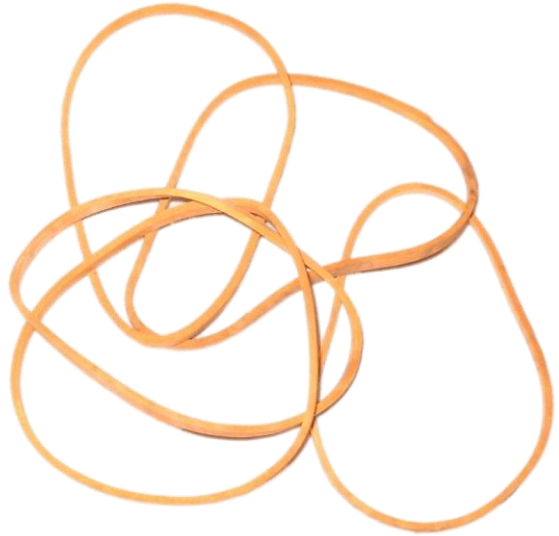
- **A shortage occurs when Quantity Demanded exceeds Quantity Supplied**
  - ➢Leads to sellers increasing their selling price without losing sales, or buyers paying more to guarantee their purchase. Returns to Equilibrium
  - ➢Grape crops are ruined because of climate change -> shortage of wine



Surplus

- **A Surplus occurs when Quantity Supplied exceeds Quantity Demanded**
  - ➢Leads to sellers decreasing their selling price to ensure they are able to sell all stock. Returns to Equilibrium
  - ➢T-shirt shop accidentally orders 200 t-shirts instead of 100 -> surplus of t-shirts





Elasticity and Tax Incidence

What is Elasticity?

- **Definition**: Elasticity measures how much consumers respond to **changes** in variables
  - Official definition: *A measure of the responsiveness of Qd or Qs to one of its determinants.*

Price Elasticity of Demand (n)

- **The price elasticity of demand -** The measure of responsiveness of quantity of a product demanded, to a change in that product's price.
  - How much the quantity demanded of a good changes in response to a change in the price of that good

$$\frac{\text{end value} - \text{start value}}{\text{midpoint}} \times 100\%$$

Price elasticity of demand (η)

$$\eta = \frac{\%\ Change\ in\ Q_D}{\%\ Change\ in\ P} = \frac{\Delta Q_D / \overline{Q}_D}{\Delta P / \overline{P}}$$

Ignore negative sign, treat n as a positive number

Elasticity of Demand

- **Inelastic Demand:** a situation in which, for a given percentage change in price, there is a smaller percentage change in quantity demanded
  - elasticity is less than one!
  - Ex: Insullin… If the changes 5 dollars, odds are that you will still purchase 'roughly' the same amount despite the price change.
  - In general, the steeper a demand curve is, the more inelastic it is (consumers are less responsive to price changes).

- **Elastic Demand**: the situation in which for a given percentage change in price there is a greater percentage change in quantity demanded
  - Elasticity is greater than one!
  - Ex: blue ink pen… If the price of blue ink pens increases threefold than consumers respond heavily and often will substitute (ex. Switch to black ink pens)
  - In general, the flatter a demand curve is, the more elastic it is (consumers are more responsive to price changes).

  ** **The same concepts apply to supply curves**

Determinants of Elasticity

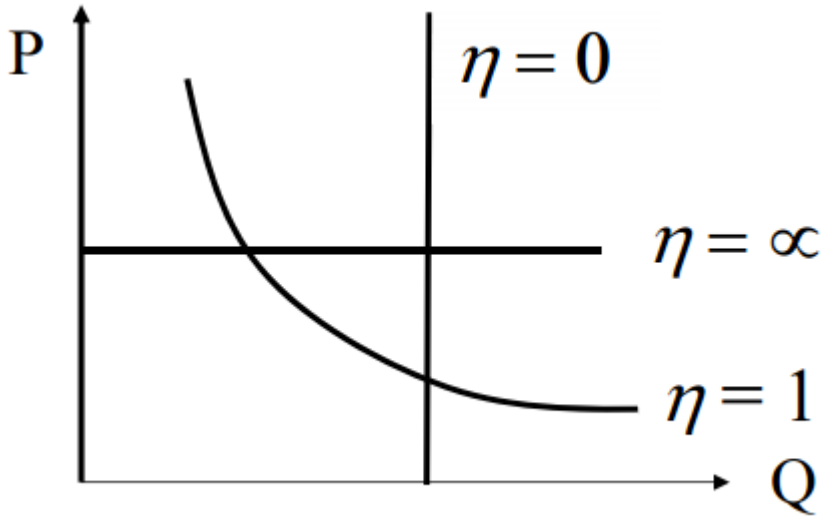
- ***Elasticity of demand depends on the ability and willingness*** *of* buyers to substitute between products**.**

Elasticity of demand is higher…

- **The more close substitutes are available**
  - Smaller categories have more substitutes & so higher elasticity.
  - I.e. Kit Kat has lots of close substitutes (coffee crisp, mars, etc.)
- **In long-run than in the short-run**
  - If you give buyers more time, individuals will substitute away – hence higher elasticity. (Think gas prices. People switch to more fuel efficient cars, take public transportation, etc.)
- If good's price is a **lower part of buyers income – (less luxurious)**
  - Cars.
    - n=3.5 (BMW 735i)
    - n=6.4 (Mazda 323)

Classification of Elasticities

Value of n	Term	Visual
n=0	Completely inelastic	Vertical
0 < n <1	Inelastic	
n=1	Unit elastic	
n>1	Elastic	
n = ∞	Infinitely elastic	Horizontal



Elasticity and Consumer Spending

Consumer Spending = P x QD

- **If demand is *elastic then…***
  - ➢ P and consumer spending are inversely related.
    - ➢ ↑ prices ↓ spending, ↓ prices ↑ spending
- **If demand is *inelastic then…***
  - ➢ P and consumer spending are directly related
    - ➢ ↑ prices ↑ spending, ↓ prices ↓ spending
- **If demand is *unit elastic then…***
  - ➢ Spending is unaffected by price changes

Elasticity Problems

What is the elasticity in the following cases:

1. As the price of CDs fell, product revenue rose.

➢*Price decreased, Revenue(spending) increased –> when P and total consumer spending are inversely related, we know that the demand is price ELASTIC*

2. I have to have coffee no matter the price.

➢*Gotta have it –> INELASTIC because prices go up but people don't stop buying -> price and total spending move up together.*

- **3. I spend $50/day on gas regardless of the price**

➢*Spending stays constant – hence UNIT ELASTIC*

Cross Price Elasticity of Demand (nxy)

- **The Cross Price Elasticity of Demand** measures how the quantity demanded of one good changes as the price of another good changes.

$$\frac{\text{end value} - \text{start value}}{\text{midpoint}} \times 100\%$$

$$\eta_{xy} = \frac{\%\ Change\ in\ Q_D\ of\ Good\ x}{\%\ Change\ in\ P\ of\ Good\ y} = \frac{\Delta Q_x / \overline{Q}_x}{\Delta P_y / \overline{P}_y}$$

- ***Compliment goods*** *(Burgers and Buns)*
  - *Cross-price elasticity < 0*
- ***Substitute goods*** *(Coke and Pepsi)*
  - *Cross price elasticity > 0*

Income Elasticity of Demand

- **Income Elasticity of Demand** measures how much the Quantity Demanded responds to a change in the consumers income
    - **Inferior Good -** a good whose demand decreases when consumer income rises
        - Example: Dollarama

$$\frac{\text{end value} - \text{start value}}{\text{midpoint}} \times 100\%$$

Income elasticity of demand

$$\eta_Y = \frac{\%\ Change\ in\ Q_D}{\%\ Change\ in\ Income} = \frac{\Delta Q_D / \overline{Q}_D}{\Delta I / \overline{I}}$$

Value of ny	Term
Ny>1	Normal Good, income elastic (luxury)
0 < Ny <1	Normal Good, income inelastic (necessity)
Ny < 0	Inferior good

Price Elasticity of Supply (ns)

- **Price Elasticity of Supply-** measures how much the quantity supplied of a good changes in response to the change of price in that good

$$\frac{\text{end value} - \text{start value}}{\text{midpoint}} \times 100\%$$

Price elasticity of supply (η_s)

$$\eta = \frac{\%\ Change\ in\ Q_S}{\%\ Change\ in\ P} = \frac{\Delta Q_S / \overline{Q}_S}{\Delta P / \overline{P}}$$

Elasticity of supply is higher…

- **In the long-run than in the short run** (just like elasticity of demand)
  - Firms can buy new factories, and new firms can enter the market
- **If outputs can be easily re-allocated**
  - The greater the variation in production quantities, the more elastic
  - I.e. the easier a farmer can switch between growing wheat and corn, the more responsive they will be to changes in wheat or corn prices. So if wheat prices drop, they switch to corn and reduce wheat supply.
- **If costs per unit rise slowly with output**

Elasticity Example 1

Beef is a normal good. You observe that both the equilibrium price and quantity of beef have risen over time. Which of the following would unambiguously cause this change?

a. Consumers have experienced an increase in income and beef-production technology has improved.
b. The price of chicken has risen and the price of steak sauce has fallen.
c. Consumer tastes have changed so as to prefer beef less than before.
d. The demand curve for beef must be positively sloped.

Example 1 Elasticity Answer

- **The answer is B!**
- The definition of a normal good is that with income increases, the demand for that good also increases. The same pattern is applied when income decreases.
- Observe that by process of elimination we can remove A, C, and D
- B is the only option which will generate our desired result

Example 1 Elasticity Answer (Graph)

Beef is a normal good. You observe that both the equilibrium price and quantity of beef have risen over time. Which of the following would unambiguously cause this change?

a. Consumers have experienced an increase in income and beef-production technology has improved.
b. The price of chicken has risen and the price of steak sauce has fallen.
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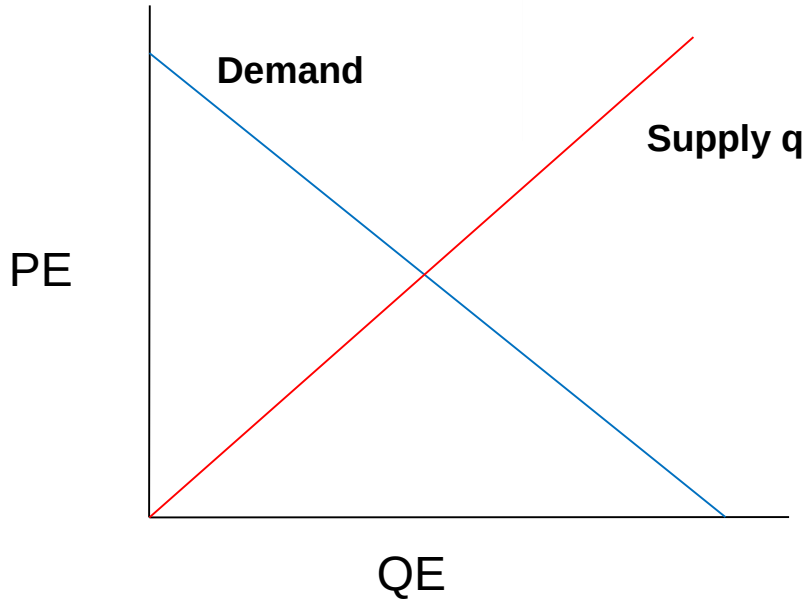


Elasticity Example 2

If turnips are an inferior good, then ceteris paribus, an increase in the price of turnips will cause

a) A decrease in the demand for turnips
b) An increase in the demand for turnips
c) A decrease in the supply of turnips
d) An increase in the supply of turnips
e) None of the above

Example 2 Elasticity Answer

- **The answer is E!**

This question attempts to trick students. Any change in the price of a good is already taken into account by your graph (Price is on the y axis). The demand and supply curves formed represent all the quantities demanded and supplied at each price (so a change in one is just a movement along the already existing curves).

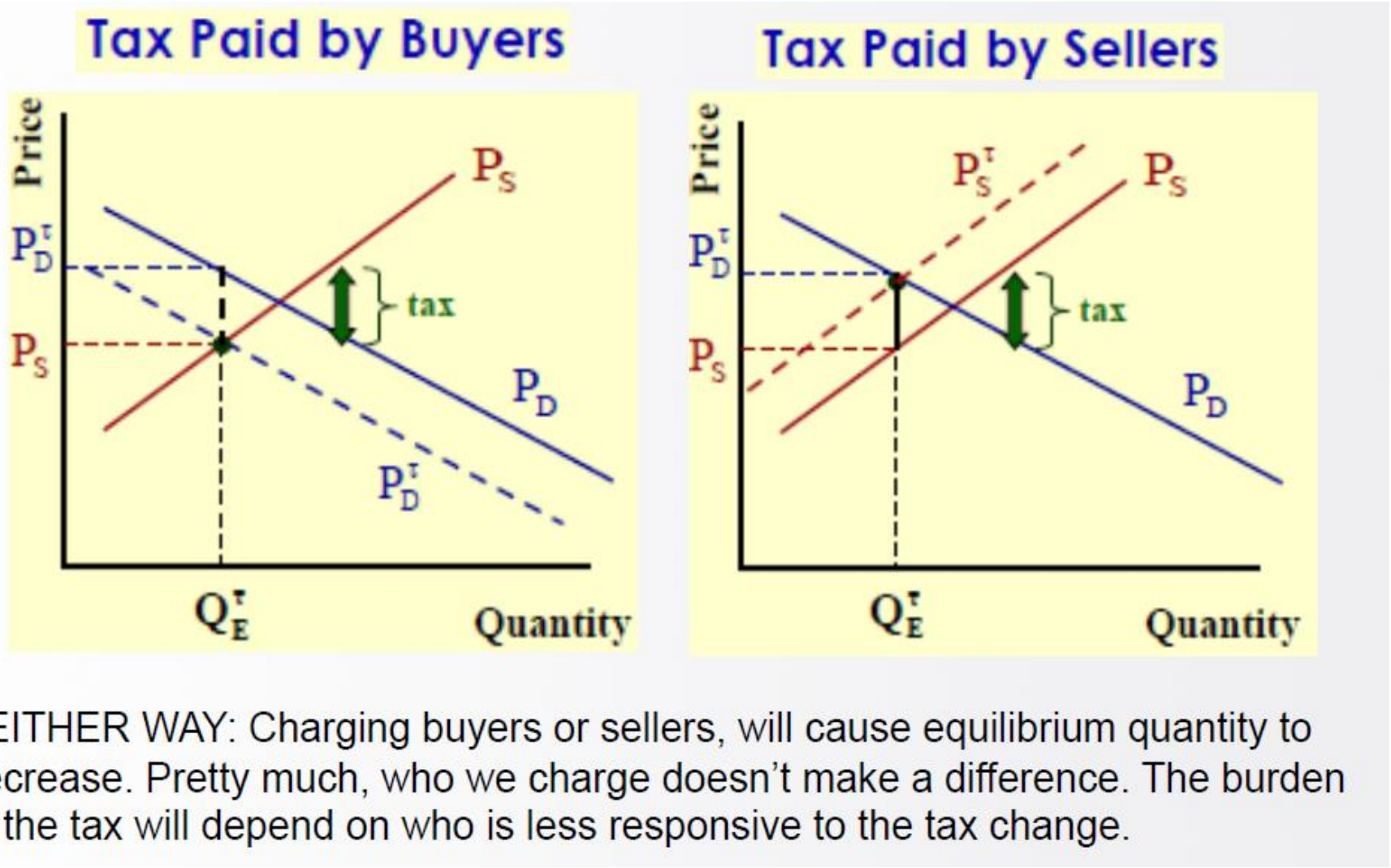
Tax Incidence Analysis

- **A tax of *t* per unit on *either* buyer or seller causes….**
  - Price paid by buyers (Pb) to equal price received by sellers (Ps) plus the tax
    - Pb = PS+T
  - A **movement along** both supply and demand curves
    - New equilibrium where t (tax) = vertical gap between supply and demand curves.

Tax Burden

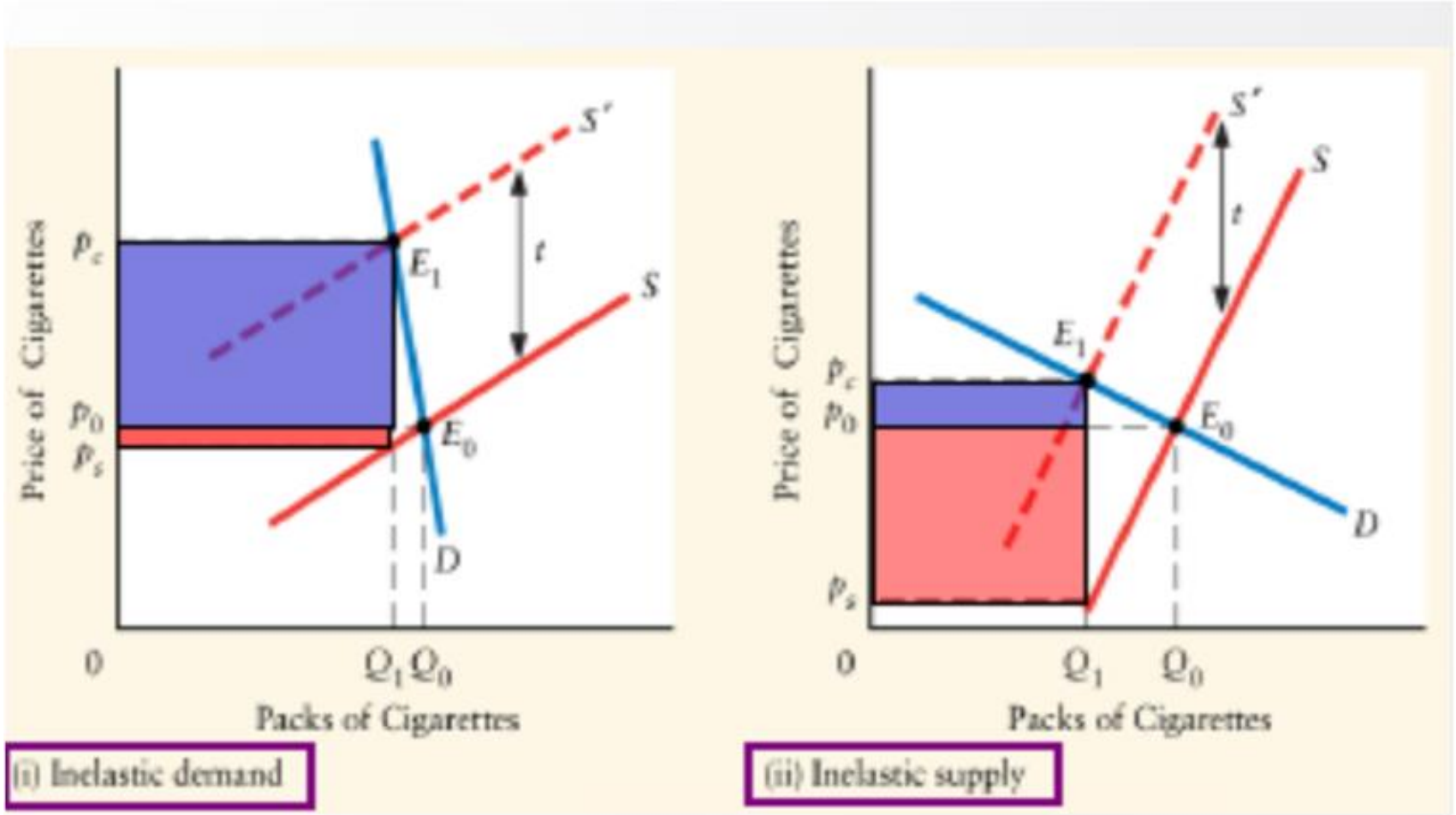
- **Does not depend on who collects the tax**
- Whichever side (Demand or Supply/Buyers or Sellers) is **more inelastic** (more steep slope), bares the **greater burden of the tax** as they are the least responsive to the price change.
- **The more elastic** (less steep, flatter slope) slope between the buyers and the sellers are the ones who will bare the **least incidence of the burden**.
    - More elastic = less burden
    - More inelastic = more burden

Tax Paid by Buyers or Sellers



• EITHER WAY: Charging buyers or sellers, will cause equilibrium quantity to decrease. Pretty much, who we charge doesn't make a difference. The burden of the tax will depend on who is less responsive to the tax change.

Proof of Tax Burden



Example 1 Government Policy

What effect will a tax on the buyers of tea have on the prices paid and received?

a. The price the buyer pays and the price the seller receives will rise.
b. The price the buyer pays and the price the seller receives will fall.
c. The price the buyer pays will rise and the price the seller receives will fall.
d. The price the buyer pays will fall and the price the seller receives will rise.

Example 1 Government Policy Answer

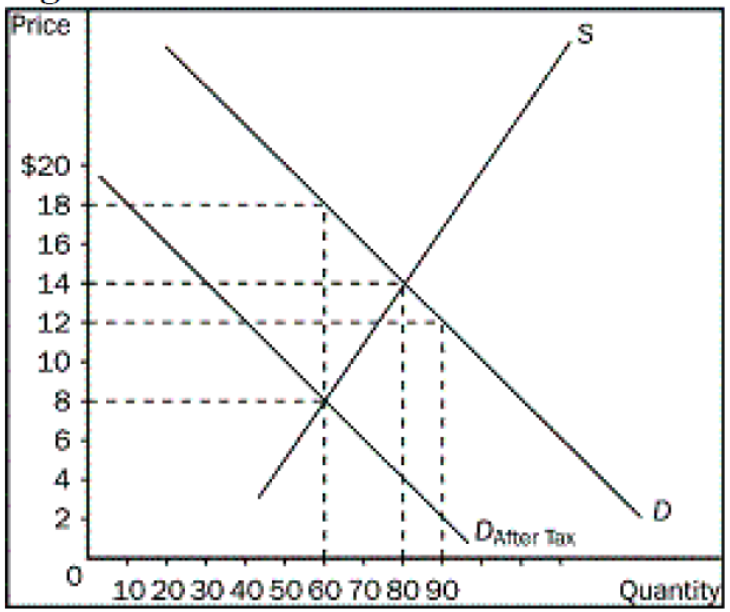
- **The answer is C!**

- The other options do not make sense

- Taxes will never reduce end prices
- Taxes will not suddenly have suppliers receiving more

Example 2 Government Policy Answer

Figure 6-9



Refer to Figure 6-9. What is the price buyers will pay after the tax is imposed?

a. $8.00
b. $12.00
c. $14.00
d. $18.00

Example 2 Government Policy Answer

- **The answer is D!**

- We look at our new demand line to find equilibrium, then move vertically up!

Questions and Break

Any Questions?

That was easy…

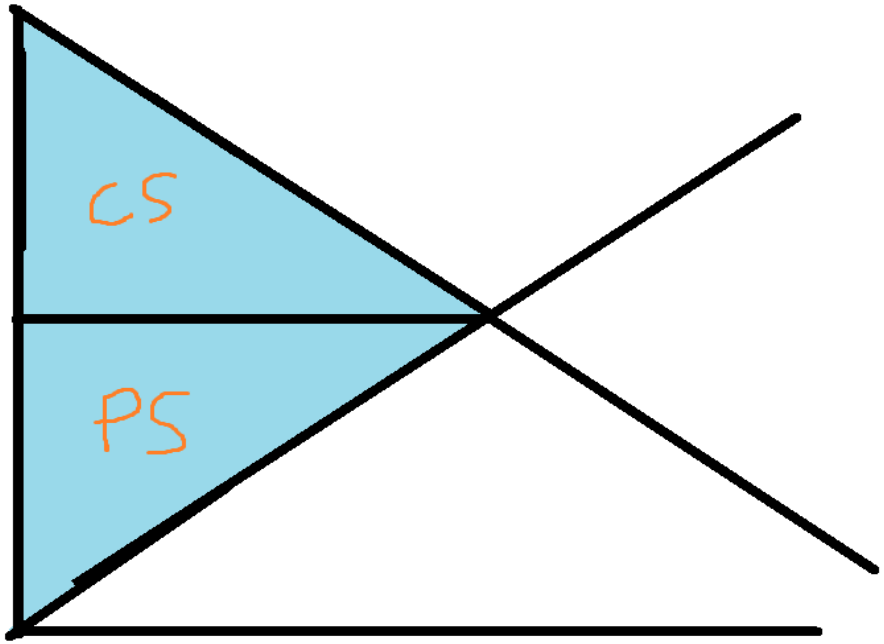
Fill out our feedback survey!
https://goo.gl/forms/8EM1WR0aJ8hJ7jhf2

Consumers, Producers, and the Efficiency of Markets

Why no one pays $10,000 for a t-shirt

Economic Surplus Intro

- Consumer Surplus (CS) & Producer Surplus (PS)
- Market is efficient if economic surplus is maximized



ECONOMIC SURPLUS
= CS + PS
= (WTP – P) + (P – WTS)
= WTP – P + P – Cost
= WTP - Cost

Consumer Surplus (1)

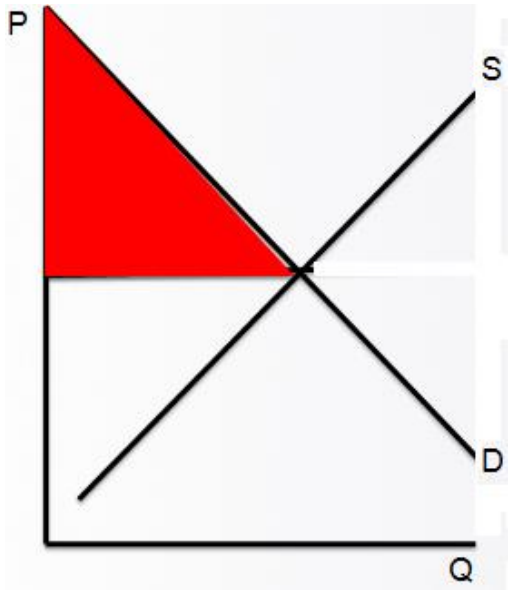
- **Willingness to pay (WTP)** is the **maximum amount** a buyer is willing to pay for a good (**marginal value** is amount buyer is willing to pay for an additional unit).
- **Consumer surplus** is the **difference** between what buyer's are **WTP and what they actually pay.**
  - ➢A measure of how happy you are because you would have been willing to pay more for the same beer.

  CS = WTP – Price

  - ➢*Total CS* is the sum of every buyer's CS

Consumer Surplus (2)

RED AREA = consumer surplus (happiness or "welfare")

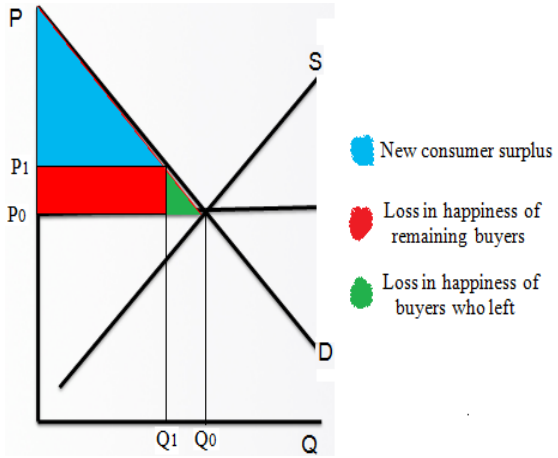


CS is the difference between the price the consumer is WTP and the price they actually have to pay.

*If you can't remember that just remember, it is **the area above the price line and below the demand curve.**

Consumer Surplus (3)

- **<u>As price increases, CS decreases</u>**
  - Due to the fall in happiness from people no longer buying, and the fall in happiness from those who continue to buy.
- **<u>As price decreases, CS increases</u>**



So from P0-P1 and Q0-Q1 there is a loss in total CS.

The farther down on the demand curve the <u>LOWER</u> WTP and vice versa.

Producer Surplus (1)

- **Willingness to sell (WTS)** represents the price at which producers are willing to sell a particular good **(marginal cost** is price a producer/seller is willing to accept for an additional unit).
  - ➢*Since a producer will rationally never sell below cost, we use cost to measure WTS (opportunity cost, that is); minimum permissible price*

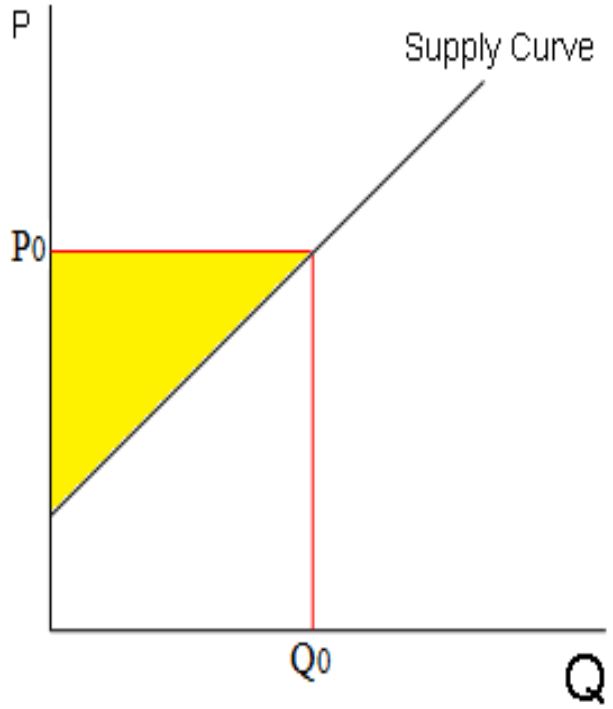
- **Producer surplus is the difference between what seller's receive (price) and their WTS (Cost).**
  - ➢A measure of how happy you are because you were willing to sell your old Western sweater for $10 and your buddy bought them off you for $30.

$$PS = Price - Cost$$

  - *Total PS* is the sum of every seller's PS

Producer Surplus (2)

YELLOW AREA = Producer surplus (Happiness)

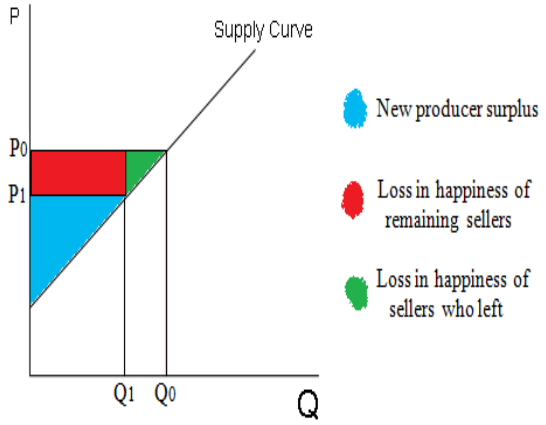


PS is the difference between the price the seller receives and the costs they incur.

If you can't remember that just remember, it is the **area below the price line and above the supply curve.**

Producer Surplus (3)

- **As <u>Price decreases, PS decreases</u>.**
  - Due to the decrease in happiness to the suppliers who leave the market and the decrease in happiness to the remaining suppliers who now receive a lower price per unit.
- **As <u>Price Increases, PS Increases</u>.**

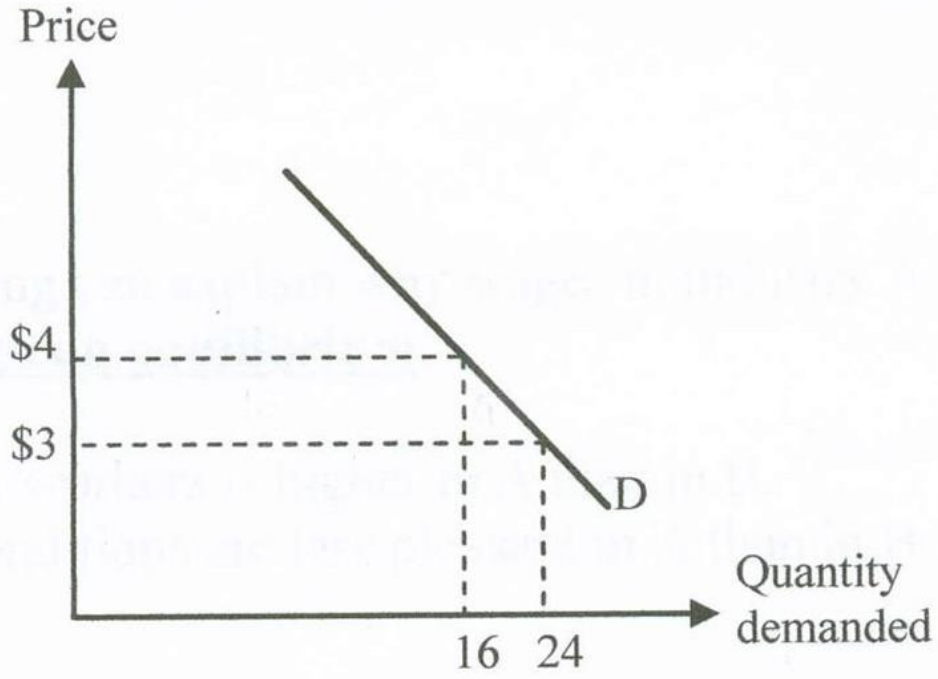


So from P0-P1 and Q0-Q1 there is a loss in total CS.

The farther down on the supply curve the <u>LOWER</u> WTS and vice versa.

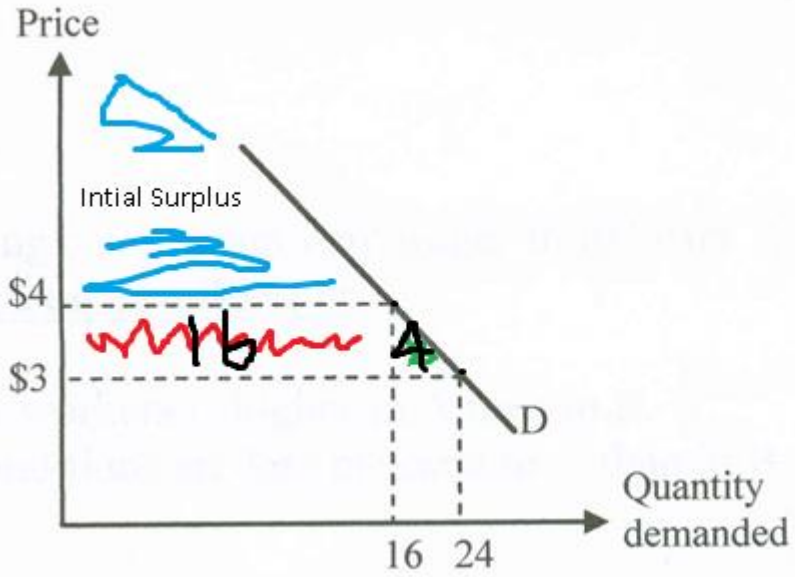
Consumer Surplus Example 1

Ann's demand curve for bread is illustrated below. If the price of bread falls from $4 per loaf to $3 per loaf then the *increase in* Ann's consumer surplus is



a) $1
b) $4
c) $16
d) $20
e) $24

Example 1 Answer



a) $1
b) $4
c) $16
d) $20
e) $24

Remember that CS= WTP-Actually Paid. (What they are willing to pay- amount actually paid)

Red: Quantity still bought but recieved additional surplus for (16) x change in price (1).

16x1=16

Green: Additional quantity consumed (8) x change in price of good (1)

*remember that a triangle is 1/2 Base x Height

So 1/2 (8) x (1) = 4

So...additional surplus is equal to Red+Green

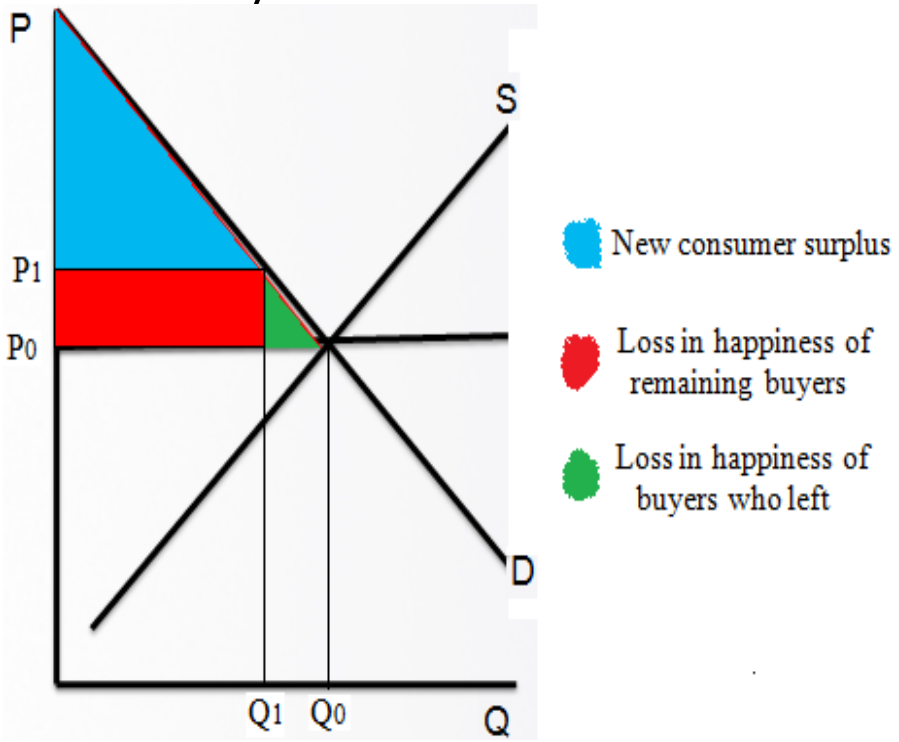
16+4=20, so the answer is D!

The Answer is D!

Before the fall, Ann's consumer surplus was the area between the $4 price line and the demand curve. Now that the price has fallen to 3, and the question is asking us the *increase* in CS, its basically the area of the rectangle and the triangle shown in the diagram.

Deadweight Loss (DWL)

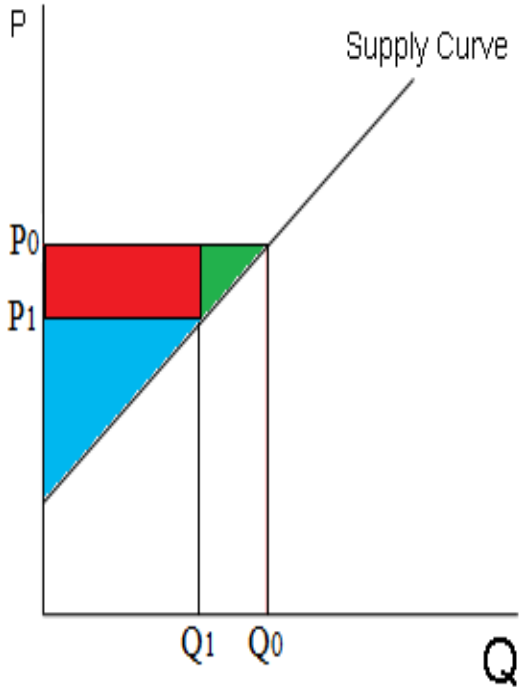
- Loss of economic surplus from its highest level and measures inefficiency



New consumer surplus

Loss in happiness of remaining buyers

Loss in happiness of buyers who left



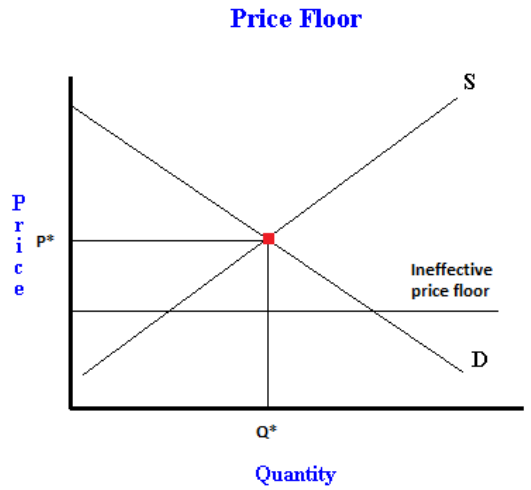
New producer surplus

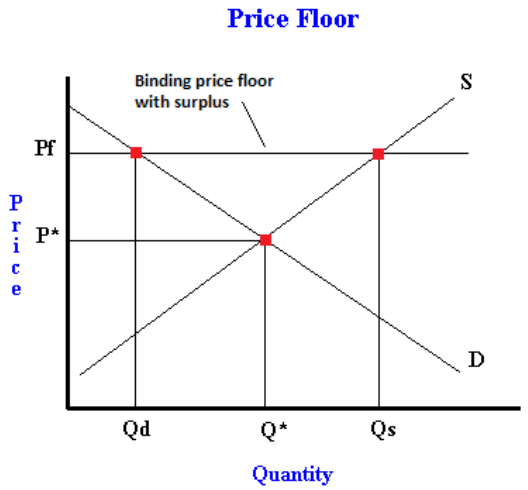
Loss in happiness of remaining sellers

Loss in happiness of sellers who left

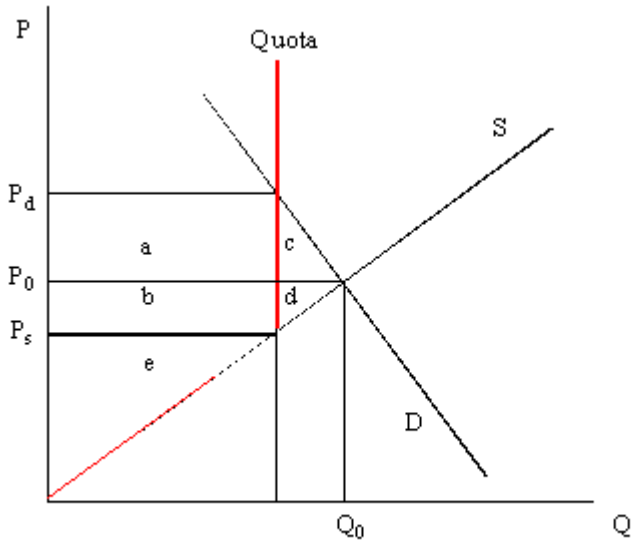
Binding Price Floor

- Set **above** equilibrium price
- Results in **fewer** units sold (DWL)
- Makes buyers worse off, some sellers better off & other sellers worse off
- Causes **excess supply** (unemployment)



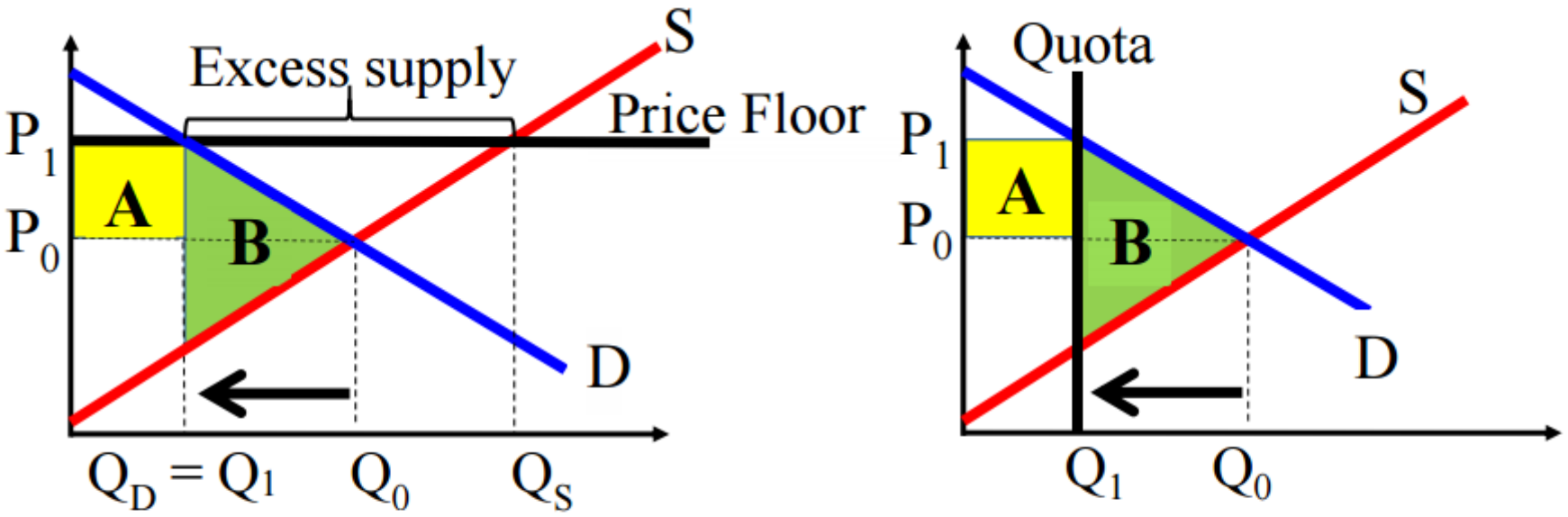


Quota



- Output restrictions
- **Binding output quota**
  - **below** equilibrium (DWL)
  - **higher prices**
  - buyers **worse off**; initial sellers **better off if demand is inelastic;** subsequent sellers are **less well off** (high cost of acquiring license/permit)

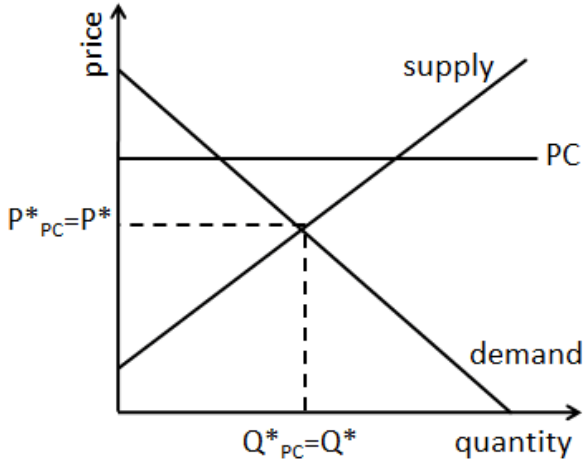
BPF vs Quota

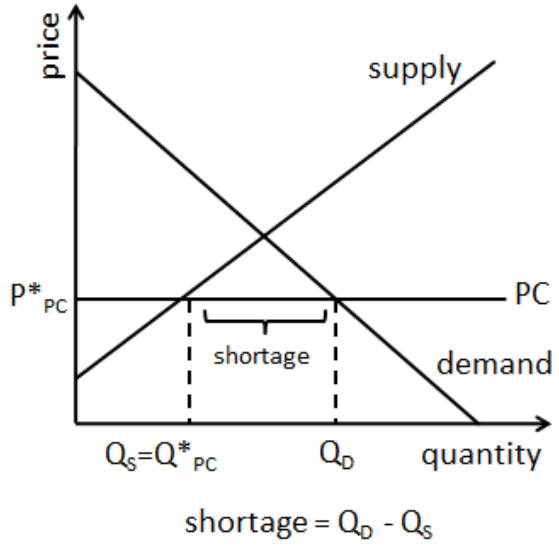


Redistribution of economic surplus = A
Deadweight Loss = B

Binding Price Ceiling

- Set **below** the equilibrium price
- Result in **fewer** units being sold (DWL)
- Makes sellers **worse off**, some buyers **better off** & other buyers **worse off** (lack of products)
- Causes **excess demand** (bribery, etc)

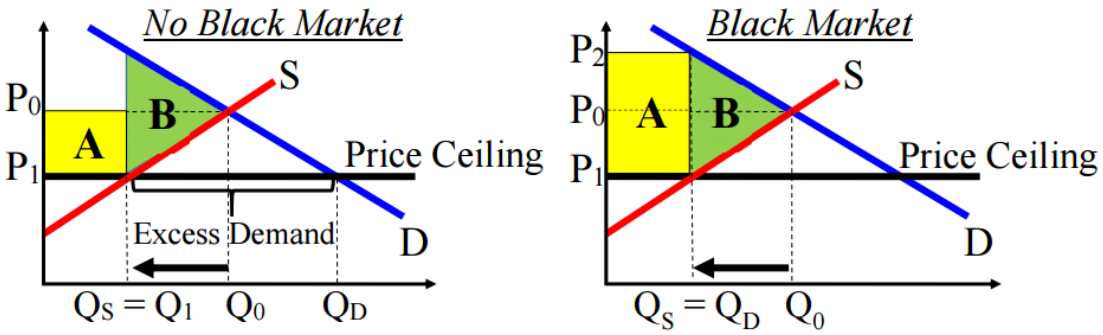




shortage = $Q_D - Q_S$

Black Markets

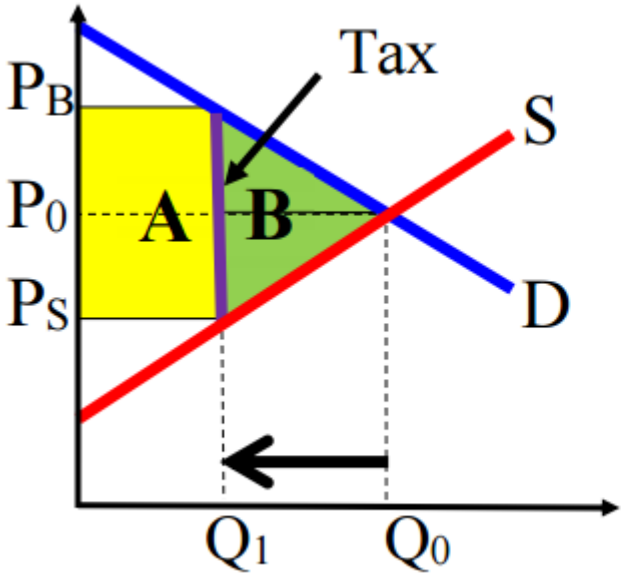
- Goods re-sold at higher prices
- **<u>Alternatives</u>:** Subsidies, government provision, welfare



Redistribution of economic surplus = A
Deadweight Loss = B

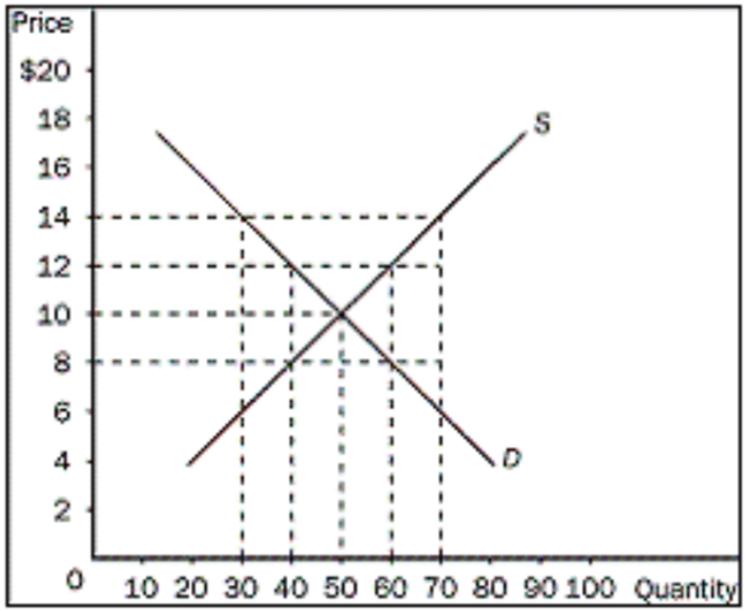
Taxation

- **<u>Fewer</u>** units sold (DWL)
- Tax revenue re-allocates economic surplus from buyers and sellers to the government



Tax Revenue = A
Deadweight loss = B

Market Eq. Example 2



). Refer to Figure 6-2. If the government imposes a binding price floor of $14.00 in this market, what is the result?

a. a surplus of 30 units
b. a shortage of 30 units
c. a surplus of 40 units
d. a shortage of 40 units

Example 2 Answer

- **C**
- A binding price floor is the minimum that the price must be at 14$
  - **Demand:** 30 units
  - **Supply:** 70 units
- Therefore, surplus of 40 units (**Supply – Demand)**

Market Efficiency *

- **Efficiency-** The property of resource allocation of maximizing the TS received by all members
- **Equity-** The fairness of the distribution of well-being (happiness) among all members

- **The free market equilibrium…**
  1. Allocates the demand of goods to buyers who value the good the most, as measured by their WTP
  2. Allocates the supply of goods to the sellers with the lowest costs of producing the good
  3. **Produces the quantity of goods that maximizes TOTAL SURPLUS**

Laissez-Faire – Oui ou non? *

- **A "laissez faire"** approach to economics: *any sort of* government distortion *of the market is seen to have a negative effect on Total surplus*
- The free market equilibrium efficiently allocates resources (due to the "*invisible hand*") – Adam Smith

- However, this is all assuming that…
- Markets are indeed perfectly competitive
    - no market power exists- prices are determined by the market
- The outcome of the market only effects buyers and sellers
    - no externalities exits- bystanders not affected by market prices

Consumer Behaviour

Total and Marginal Utility

- **Utility -** referring to the total satisfaction received from consuming a good or service
- **Total Utility** – measures the *satisfaction* from consuming a given level of a good.
- **Marginal Utility** – the **additional** utility from an additional unit of X
  - Falls as more of good is consumed – **Law of diminishing marginal utility**
    - Example: All you can eat sushi. By the 10th round your likely miserable and puking!

Example

Units of X	**Total** Utility	**Marginal** utility
0	0	-
1	40	40
2	60	20
3	70	10

Utility Maximization

- A consumer **maximizes utility** by equating….
  1. Marginal utility per dollar across all goods
     - MU = marginal utility
     - P = Price

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$$

  2. Relative benefits and relative costs

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

Application

- If marginal utility per dollar is greater for product X then product Y…
  - Increase X and Decrease Y to increase total utility.

- Example:
  - MU per dollar for the Leafs Game = 1.5
  - MU per dollar for the Montreal Canadians game = .1
    - How would you increase utility?

Income and Substitution

- A **fall** in the price of good X causes
  - Relative price of X to fall (decreased opportunity cost of X)
  - Purchasing power to rise (can buy more of X & Y)

1. **Substitution effect:** change in consumption due to the relative price change – **purchasing power constant**
   - One good is less expensive → Other good is relatively more expensive → You switch to buying more of the cheaper good
2. **Income effect:** change in consumption due to the purchasing power change (relative price held constant)
   - Lower price → Your income has more purchasing power → You are richer than you think! → Buy more of both goods

Fall in the Price of X

- Increased demand for X due to the **substitution effect**
- Increased demand for X due to the **income effect** if X is a **normal good**
- Decreased demand for X due to the **income effect** if X is an **inferior good**

Income and Substitution Effect and Law of Demand

- Demand curve slopes **downward** if
  - Good is **normal**
  - Good is inferior and substitution effect > income effect
- Demand curve slopes **upward (Giffen good)**if
    - Giffen Good - a product that people consume more of as the price rises and vice versa—violating the basic law of demand in microeconomic
  - Good is **inferior** and substitution effect < income effect
    - Occurs if good makes up a large portion of the consumer budget
      - Example: Food staple in a poor country.

Important Terminology

- **Marginal Value** of good X is…
  - Willingness to pay for an additional unit of X
    - Law of diminishing returns…. Falls as more X is consumed
    - Measured by the height of demand curve
- **Total Value** of good X is…
  - Willingness to pay for an total units of X
    - Measured by the area under the demand curve
- **Consumer surplus** of good X is…
  - Total value minus total spending for x0 units
    - Area between the demand curve and the price line

Walk through example

If P = $10 then how many pizzas are consumed. Calculate the associated total value & consumer surplus. Illustrate answers on the graph.

Pizzas per month	1st	2nd	3rd	4th	5th	6th
Marginal value	$18	$16	$13	$9	$4	$0

Example

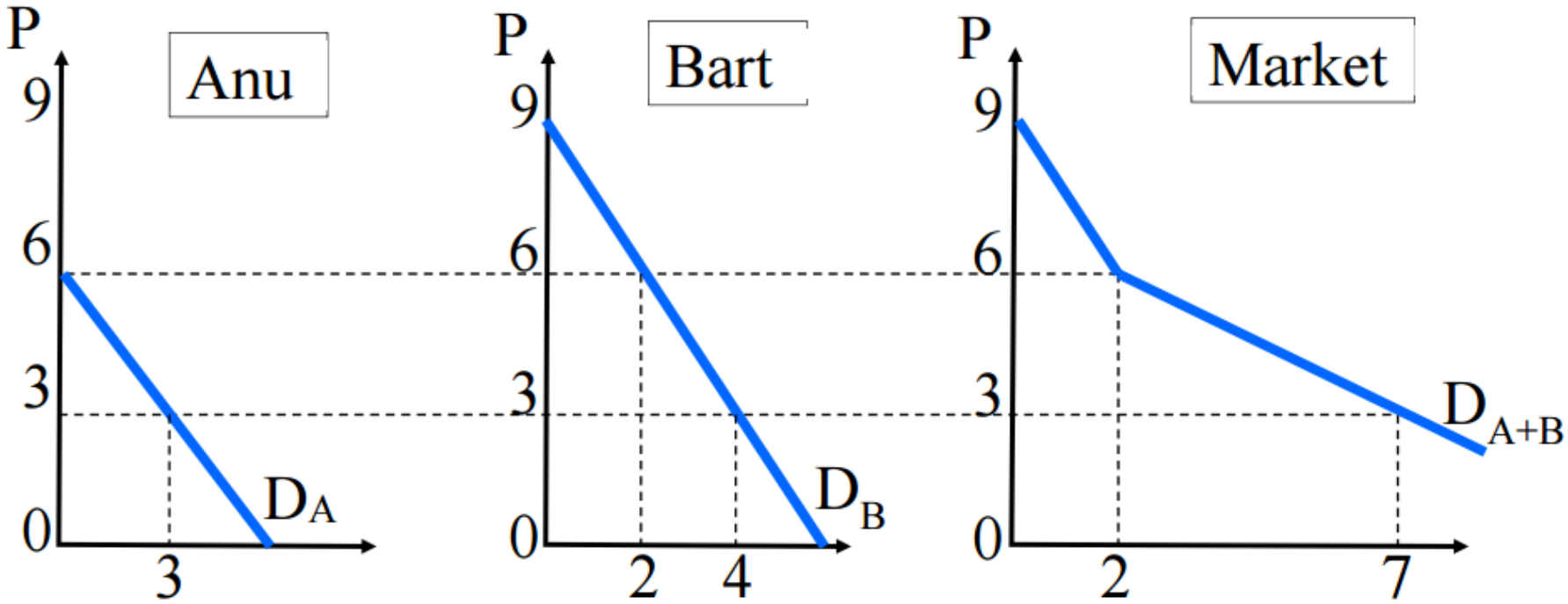
Pizzas per month	Total Value	Total Spending	Consumer Surplus
1	18	10	8
2	34	20	14
3	47	30	17
4	56	40	16
5	60	50	10
6	60	60	0

If P = $10 then how many pizzas are consumed. Calculate the associated total value & consumer surplus. Illustrate answers on the graph.

Pizzas per month	1st	2nd	3rd	4th	5th	6th
Marginal value	$18	$16	$13	$9	$4	$0

Market Demand

- **Market demand** is obtained by *horizontally* adding up the **individual** demands of each buyer.



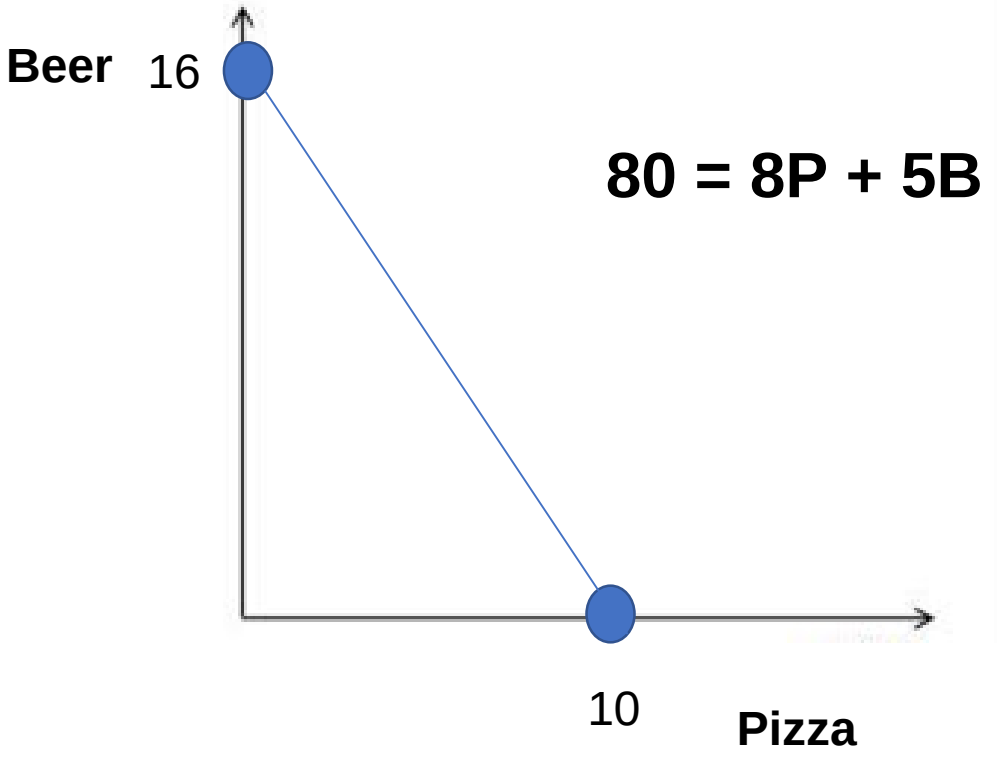
Budget Constraint

What we can afford

Budget Line/ Constraint

- Graphical representation of all combinations of goods and services that a consumer may purchase given current prices and the consumer's income ("set of bundles that can be bought")
- **Income = $P_1Q_1 + P_2Q_2$**
- **Slope: $-P_1 / P_2$**
  - **The rate at which the consumer can trade one good for the other**

Budget Constraint (1)



80 = 8P + 5B

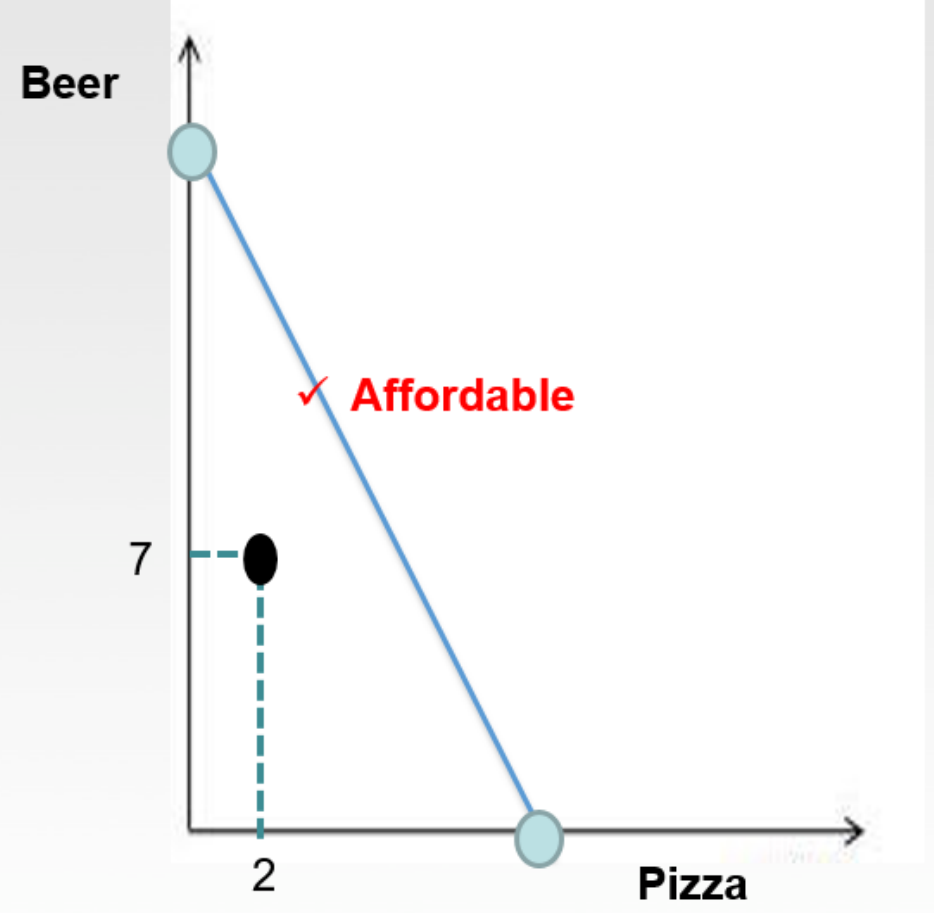
Price of Beer: $5

Price of Medium Pizza: $8

Income: $80

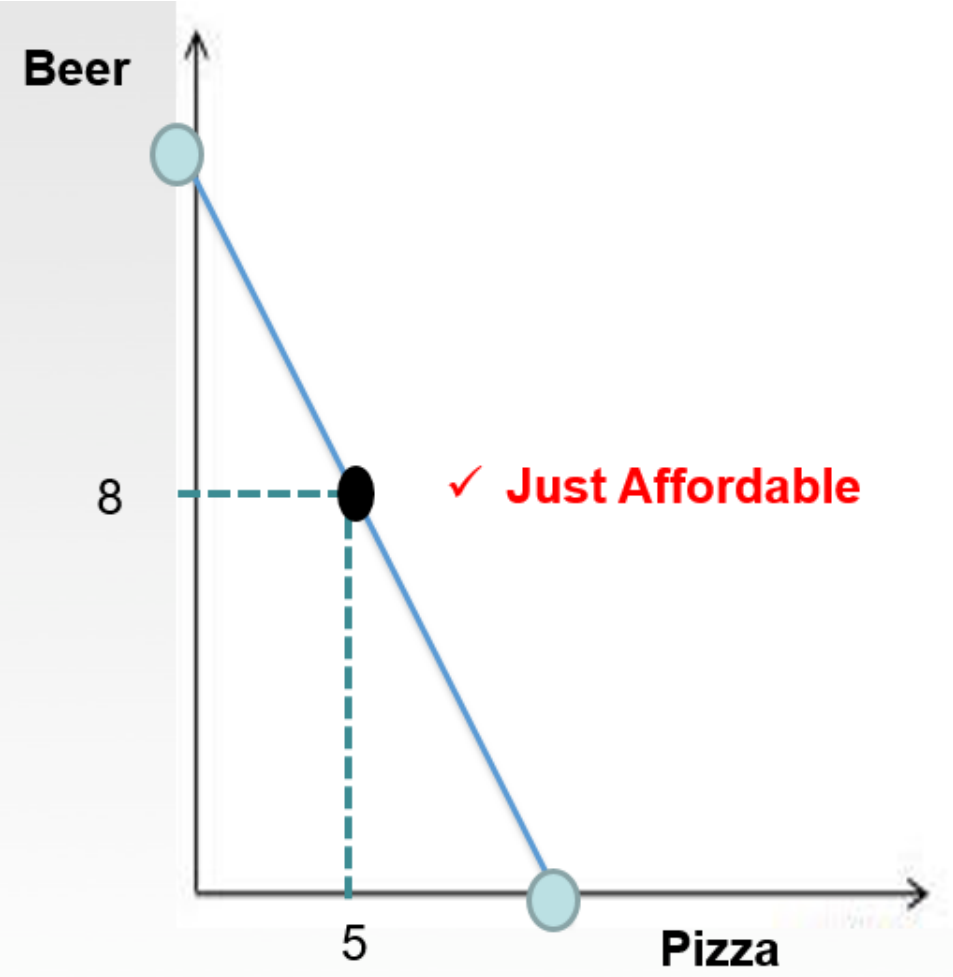
Slope: -$8/$5

Budget Constraint (2)



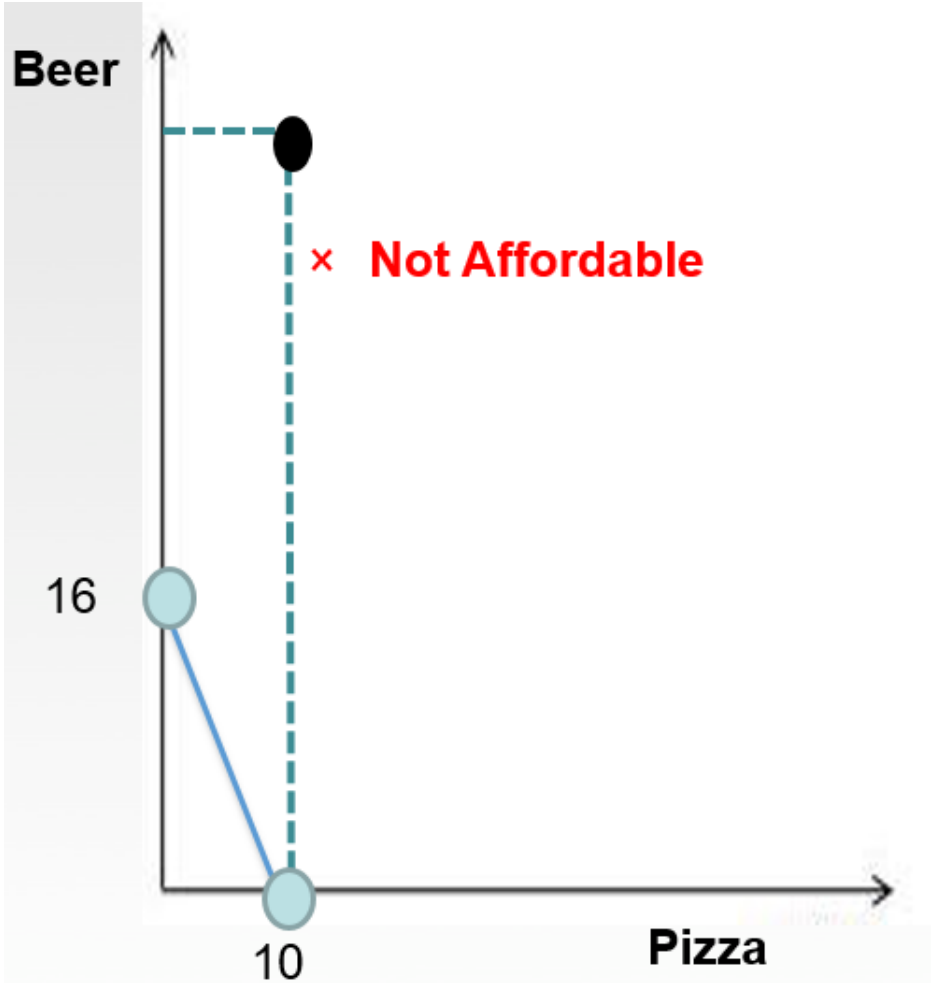
Your friend from home is coming up and basically forcing you to take him out in Waterloo (what a terrible friend..) Based on your drinking/eating capacities, you know you're going to have to buy **7 beers** and **2 pizzas** for the two of you. Can you afford this?

Budget Constraint (3)



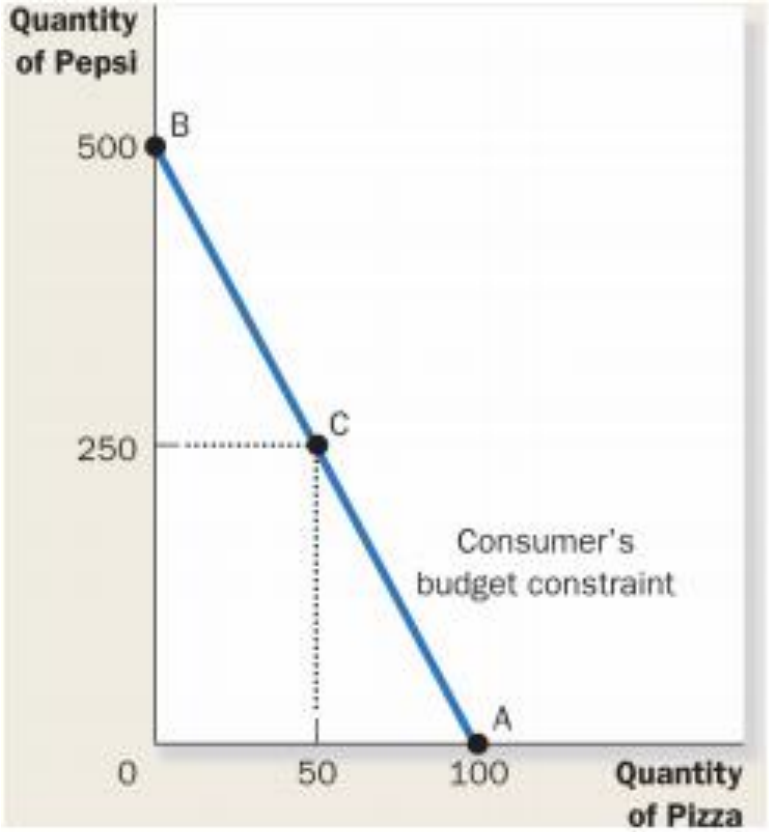
At the last minute, another friend told you they're coming up too! This friend is kind of a light weight though, so you're only going to buy them one more beer (total **8 beers**) and **5 pizzas** for all of you. Can you afford this?

Budget Constraints (4)



So… apparently everyone on campus heard about your plans, and now there's a rumor that you're hosting the most fire party of 2k19 in your res?? (Don't tell your dons about this example please) You're going to need to provide **50 beers** (the rest is BYOB) and **10 pizzas**. Can you afford this?

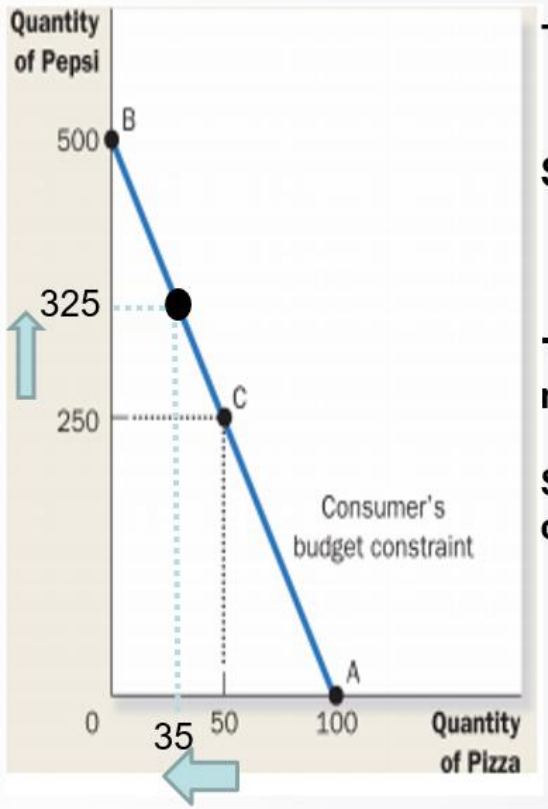
Budget Constraint Example 1



Assume this consumer is at point C → She‘s buying 250 cans of Pepsi and 50 pizzas, and her income is $500, Pepsi costs $1 and pizza costs $5. If she wants to reduce her pizza consumption by 15 pizzas per month. How much Pepsi can she drink now?

a)260
b)325
c)275
d)200

Example 1 Answer



The answer is **b) 325** !

Slope = - P_{pizza} / P_{pepsi}
= - 5/1
= -5

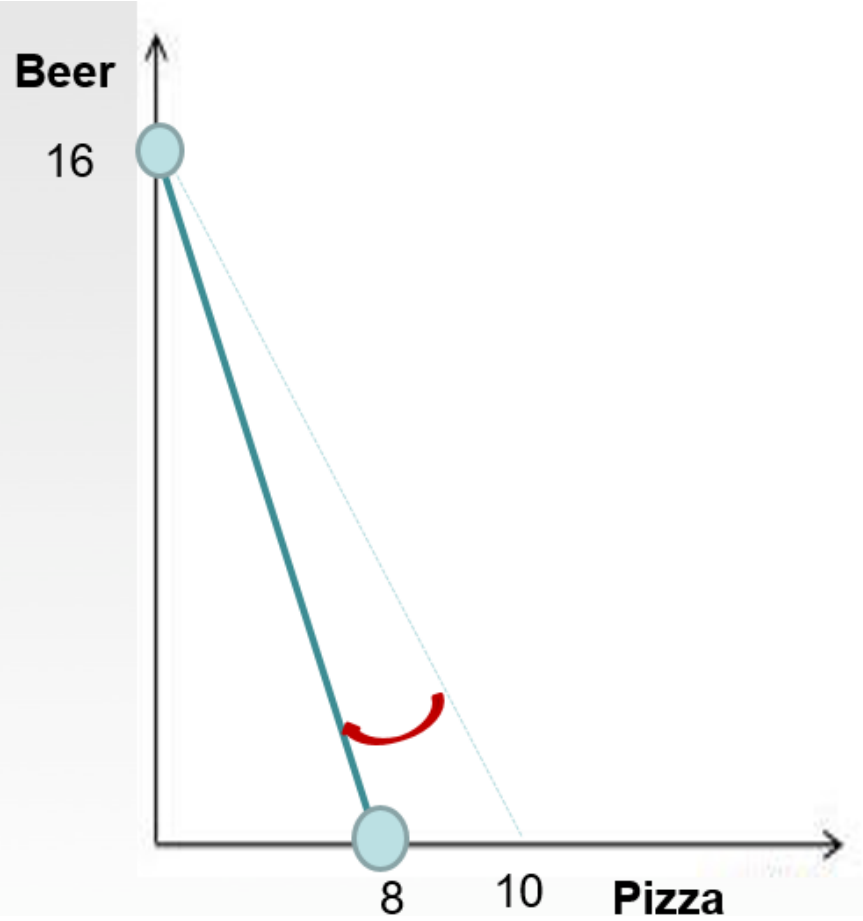
This means giving up 1 pizza means she can buy 5 more Pepsis

So, if she gives up 15 pizzas, she can get 75 more Pepsis!

Changes in Income or Prices

- A change in Income shifts the budget constraint line:
  - Increase Income → Shift Out
    - Can afford more beer and more pizza (for a more fire party)
  - Decrease Income → Shift In
    - Can afford less beer and less pizza
- A change in Prices causes a rotation by changing the slope
  - Slope = -Ppizza/Pbeer

Budget Constraint (5)



Increase P_{pizza} to $10

(Recall: Income = $80)

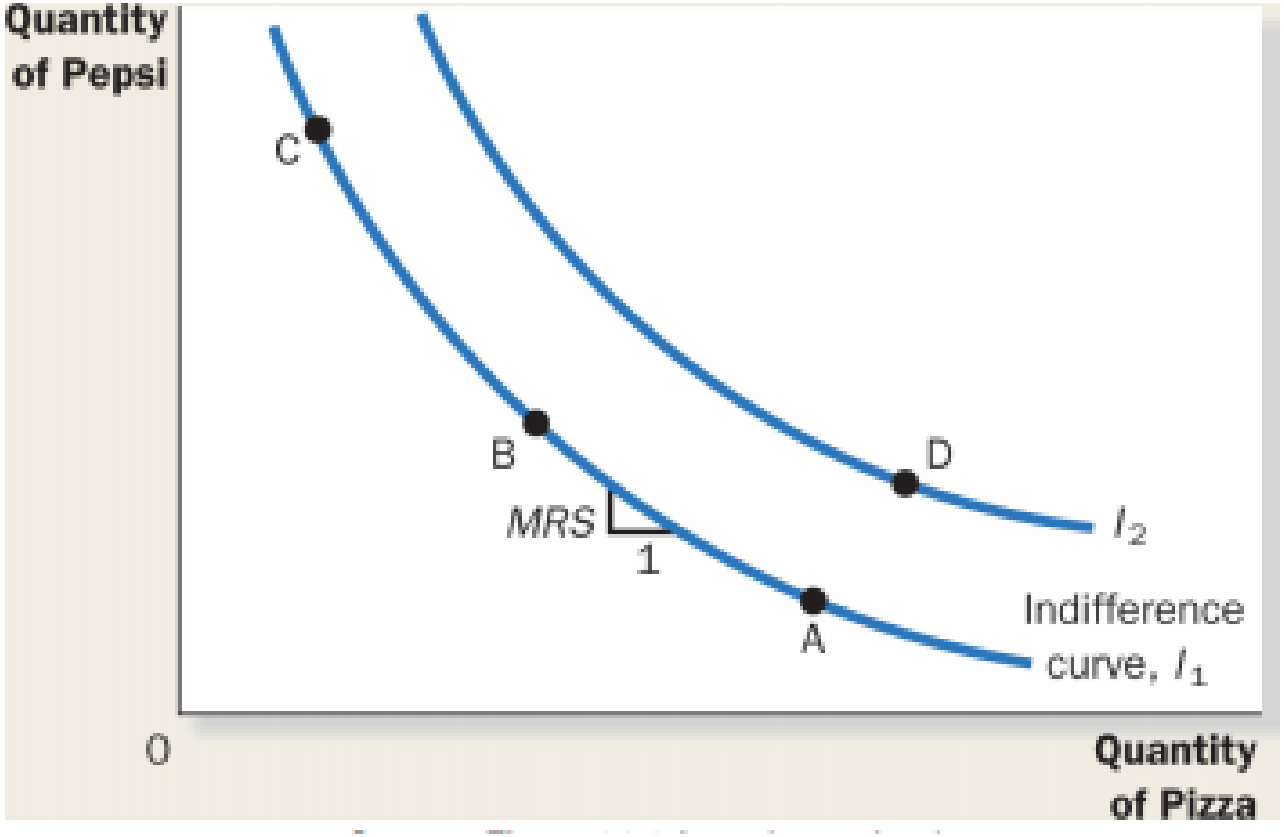
Now, we can afford less pizza.

Our budget constraint rotates inwards

Indifference Curves (1)

- All points along an indifference curve show **consumption bundles** that give consumers the **same level of satisfaction**
  - These bundles are all equally preferred
- **Marginal Rate of Substitution**: rate at which consumers are **willing to trade one good for another**
  - How much of one good they are willing to give up for the other good ***while maintaining the same level of satisfaction***
  - MRS is the slope of the Indifference Curve

Indifference Curves (2)

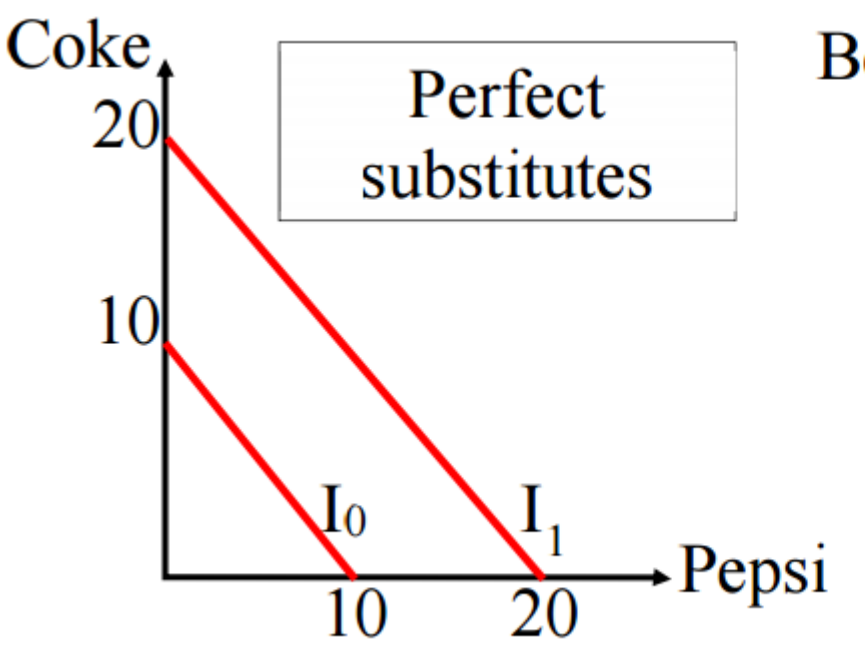


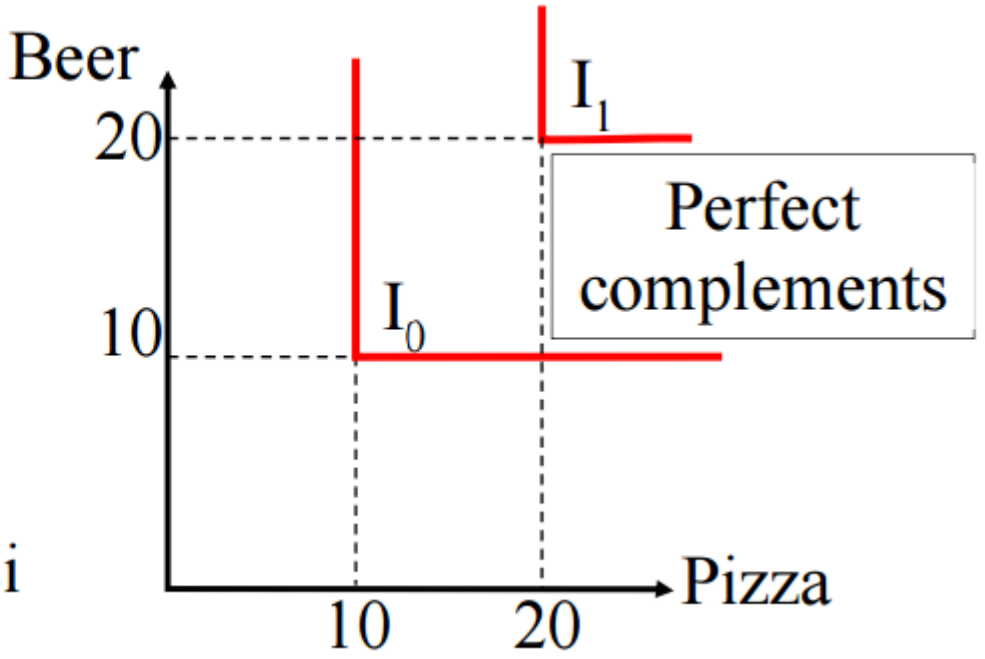
Four Properties

1. Higher indifference curves are always preferred more than lower indifference curves (further from origin the better)
2. Indifference curves are downward sloping (trade-off of Y for X)
3. Indifference curves can never, ever, ever cross (cannot have two values of MRS at the same value)
4. Indifference curves are bowed inward (more you have of something, the less you want it)

Two Unique Indifference Curves

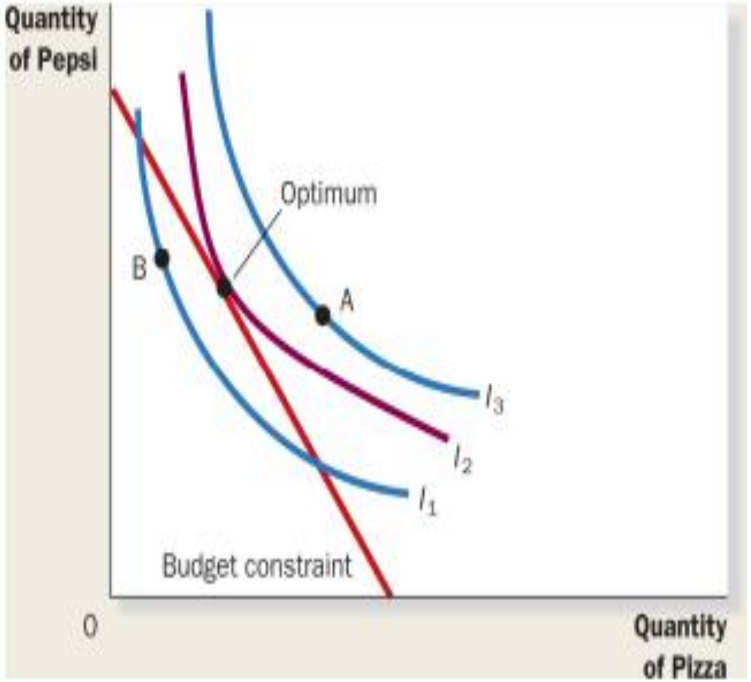
- **Perfect complements are goods which consumers prefer to consume in fixed proportions (right angles)**
- **Perfect substitutes are goods with a constant MRS**



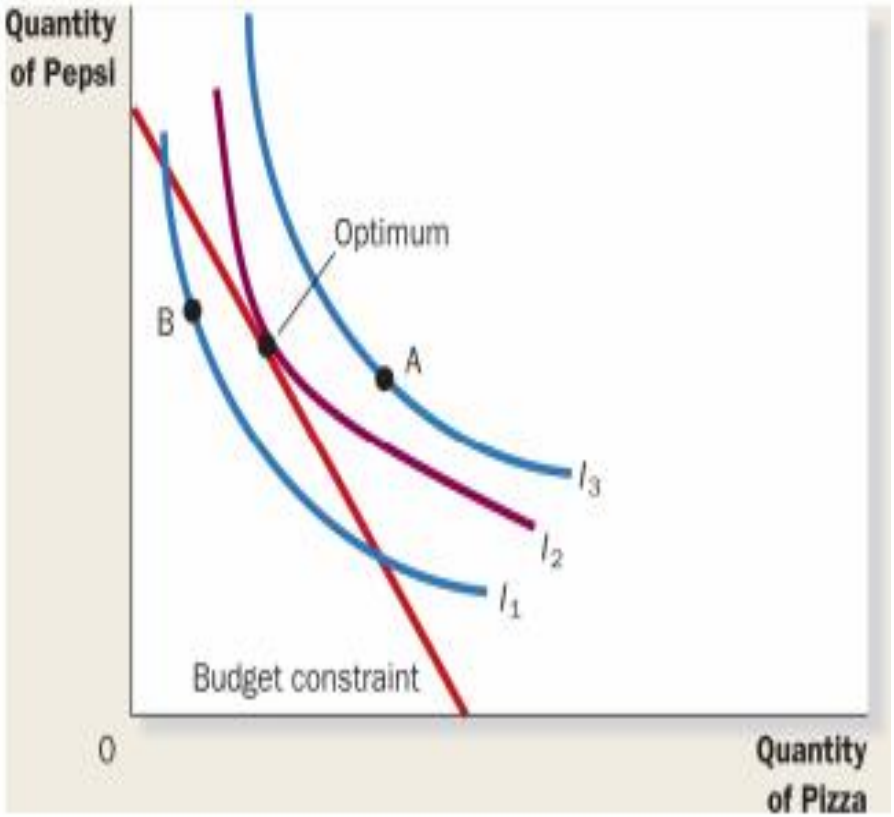


Optimal Choice (1)

- The optimum: the point on the **budget constraint** that touches **the highest possible indifference curve**
  - The bundle that brings them the most satisfaction that they can actually afford



Optimal Choice (2)

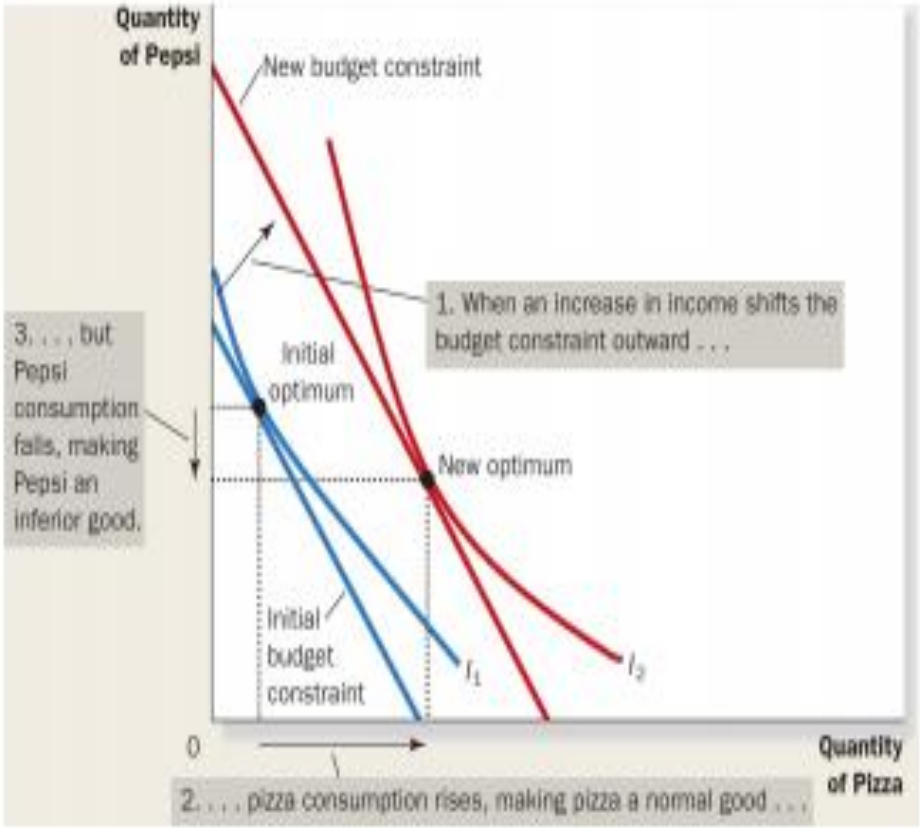


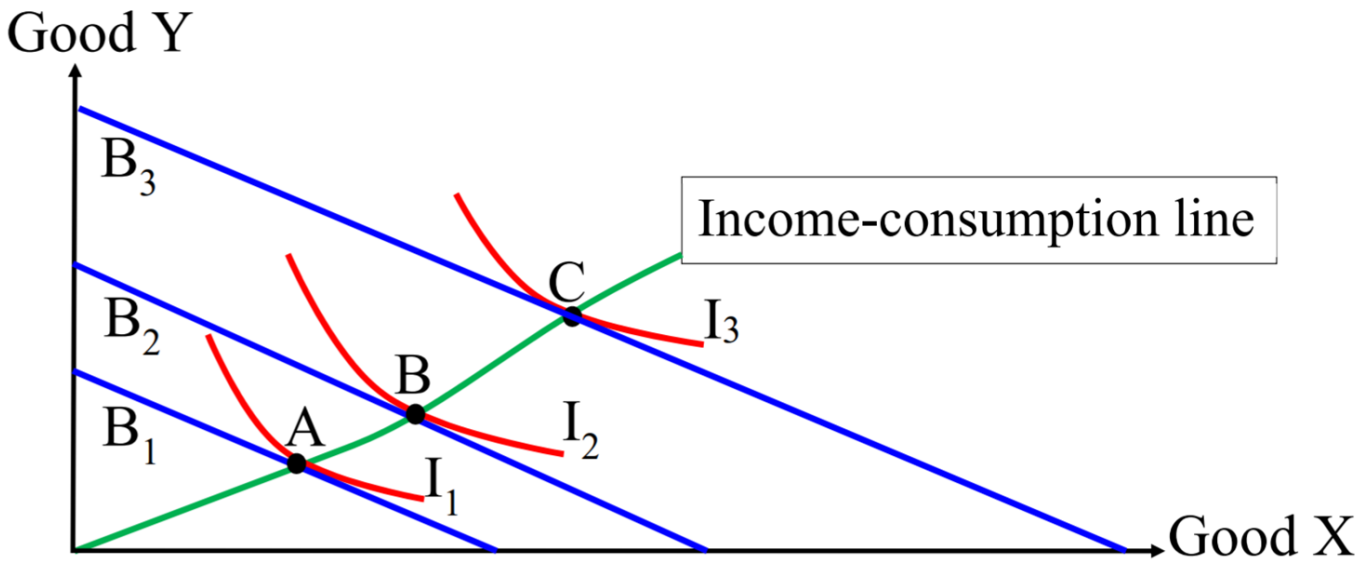
- Bundle B is affordable, but not the ideal
- Bundle A gives the highest satisfaction, but is not affordable
- The Optimum point lies on I2, which is the highest indifference curve the consumer can reach, and touches the budget line

Changes in Income

- Changes in Income: If Income ↑, budget constraint shifts outward
  - Both Normal Goods: new optimal bundles will have more quantity demanded of both goods with more income
  - What if one is an Inferior Good?
    - The increase in income will result in less demand for the inferior good

Visualize This!





Changes in Price

- There are 2 effects that take place as a result of a change in price:
  1. **Income effect:** when a consumer moves to a higher/lower IC due to price change
     - Lower price → Your income has more purchasing power → You are richer than you think! → Buy more of both goods
  2. **Substitution effect:** when a consumer moves along the IC to a new point with a new MRS due to price change
     - One good is less expensive → Other good is relatively more expensive → You switch to buying more of the cheaper good

Visualise This!

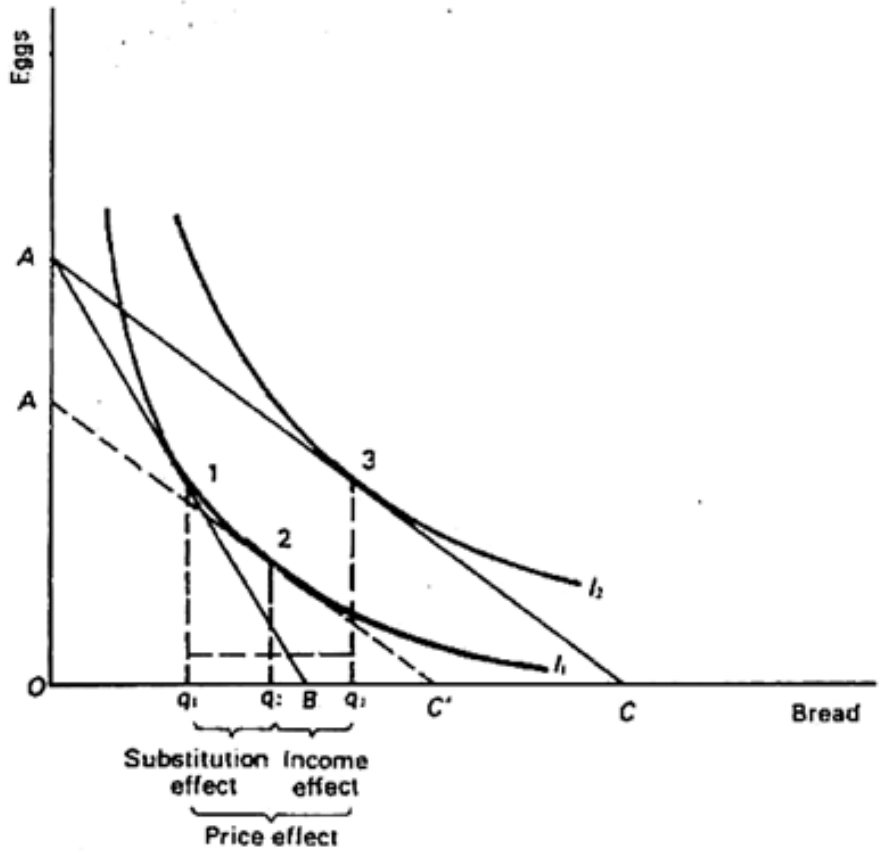


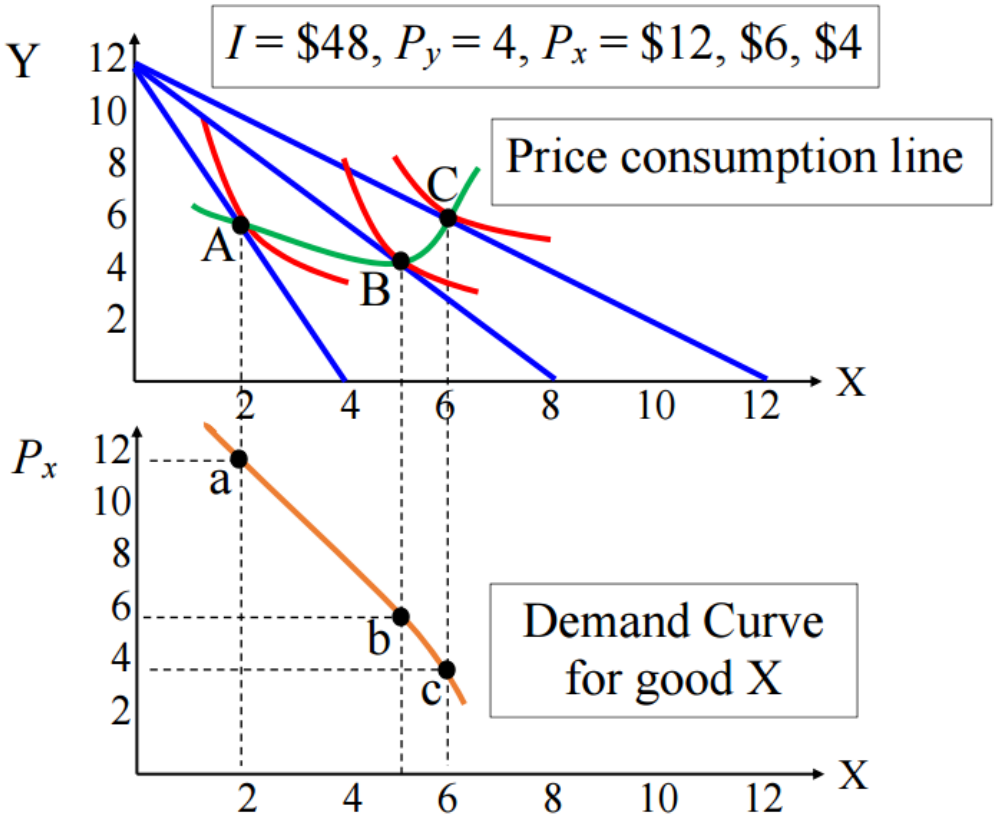
Fig. 11 : The price effect

Consumer Demand Curve

- The consumer's demand is simply a summary of the optimal solutions arising from their budget constraint and indifference curves
  - Reflects quantity demanded of a good given different price changes
    - As price changes cause the budget constraint to rotate, we analyze how the quantity demanded of each good changes, and plot these points on a cohesive demand curve for the consumer

Price-Consumption Line

- Shows how consumer purchases react to changes in one price, holding income and other prices constant
- Provides information needed to derive the demand curve for the good whose price has changed
- Shows if goods are complements or substitutes



Takeaways

1. Consumers will choose always choose what they value to be the **best** bundle of goods that they **can afford**
    - Represented by the point where the Budget Constraint (affordable) touches the highest possible indifference curve (highest satisfaction)
2. The MRS is the rate at which consumers are **willing to trade one good for the other, without changing satisfaction**
3. Changes in Income and Prices change the optimal solution by affecting what the consumer can buy/at what rate they can trade

Exam Tips

- Don't cram!
- Econ is less about knowledge and more about APPLICATION so… ***Focus on practice questions***
- Read the textbook for parts that are unclear
- Prioritize!
- Try to imagine what questions you would ask for a topic while you're studying it

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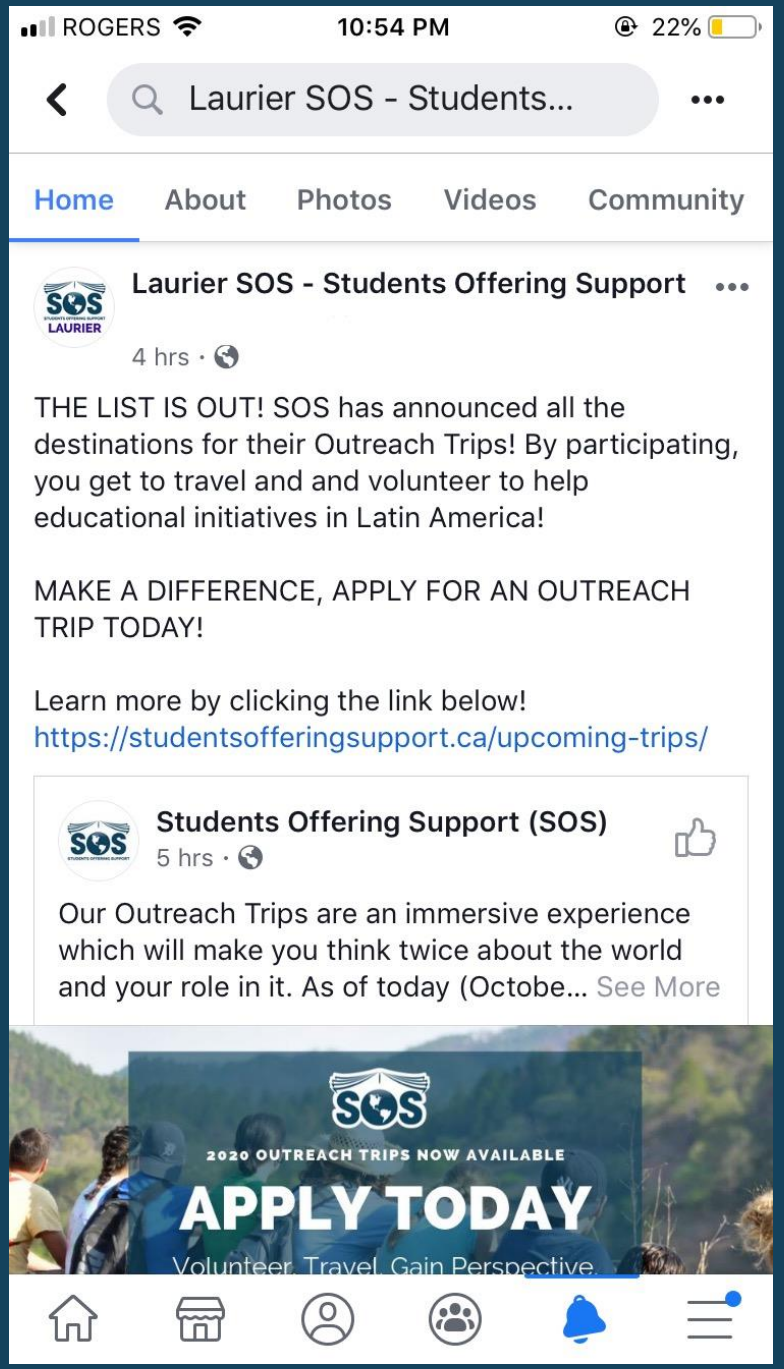
FINAL REVIEW & HELP SESSION

SATURDAY 10 AM - 3PM IN P118



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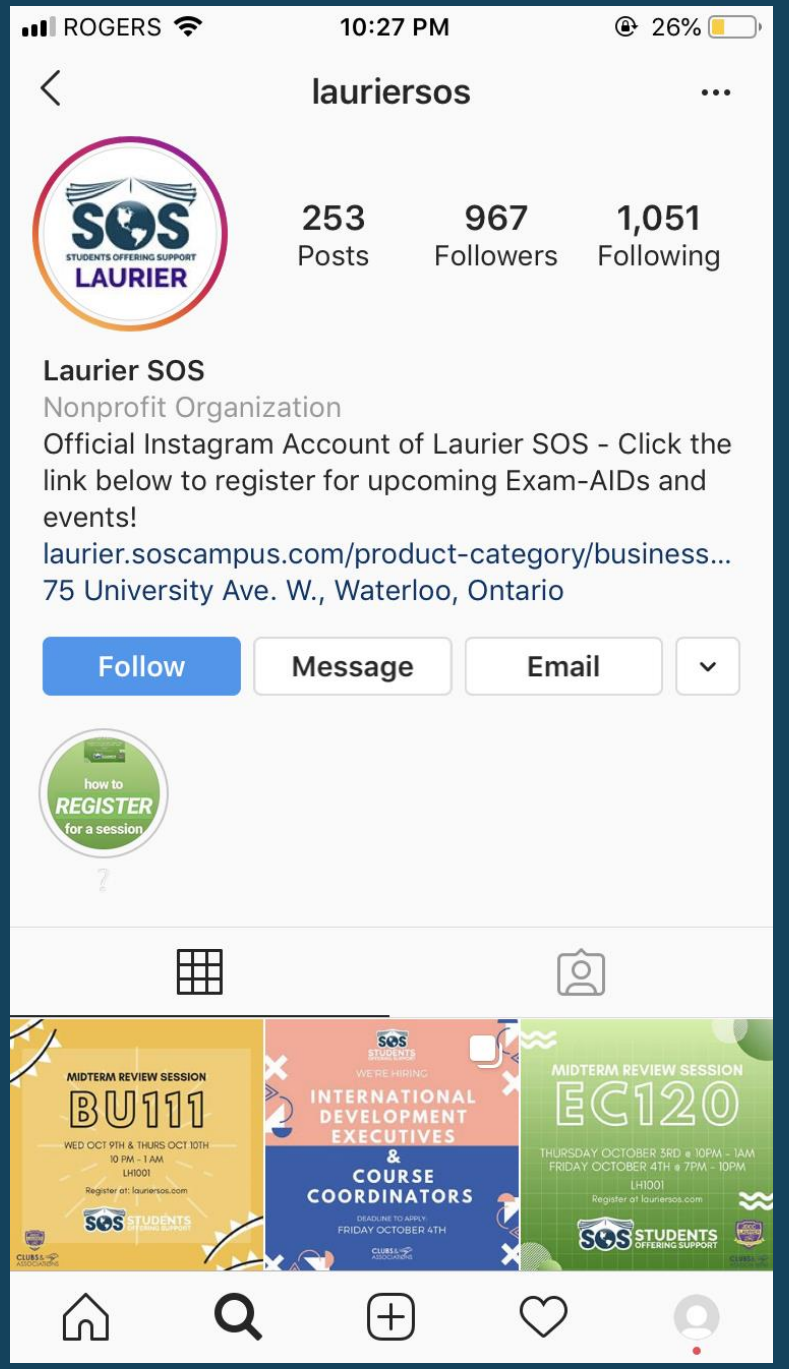

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