Made by ---Chang LI

2015

Chapter 3
demand and supply

CONTENT

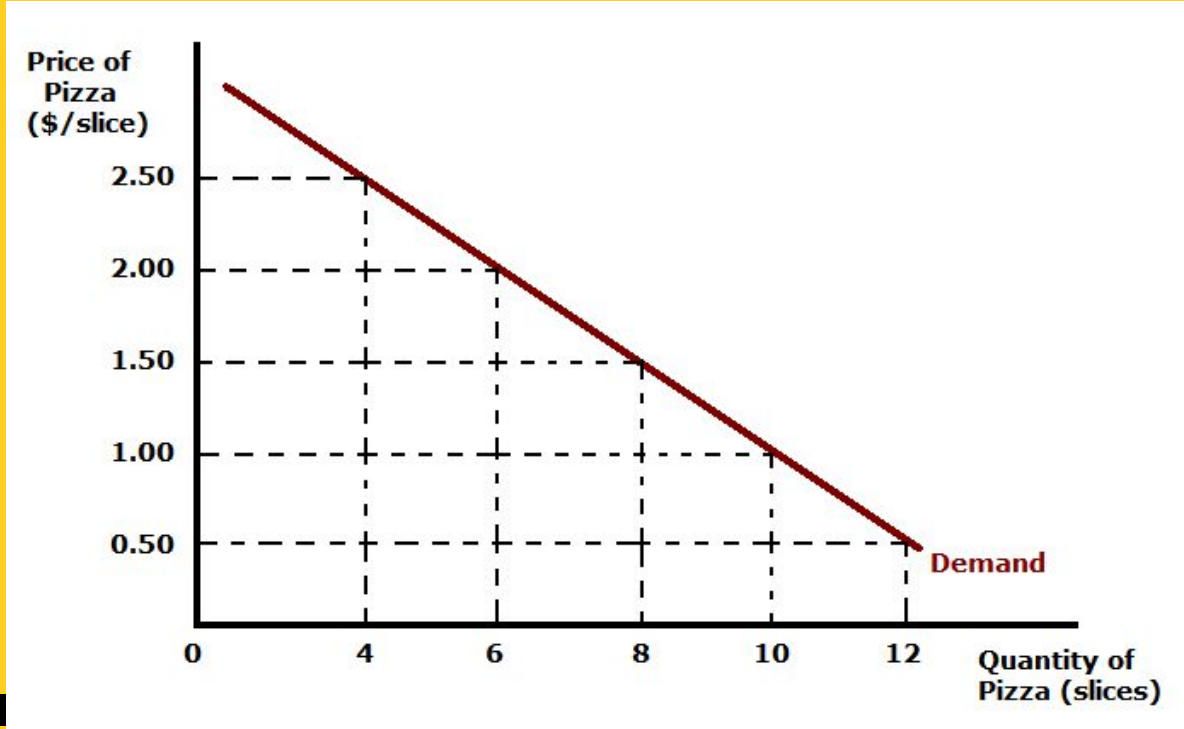
- 1. The role of the marketplace – trading
- 2. The market’ s building blocks
- 3. Demand curves and supply curves
- 4. Demand curves shifts
- 5. Supply curve shifts
- 6. Simultaneous demand and supply movements
- 7. Free and managed markets – interventions
- 8. From individuals to markets

CONTENT

- 1. The role of the marketplace – trading
- 2. The market’ s building blocks
- 3. Demand curves and supply curves
- **4. Demand curves shifts**
- **5. Supply curve shifts**
- 6. Simultaneous demand and supply movements
- **7. Free and managed markets – interventions**
- 8. From individuals to markets

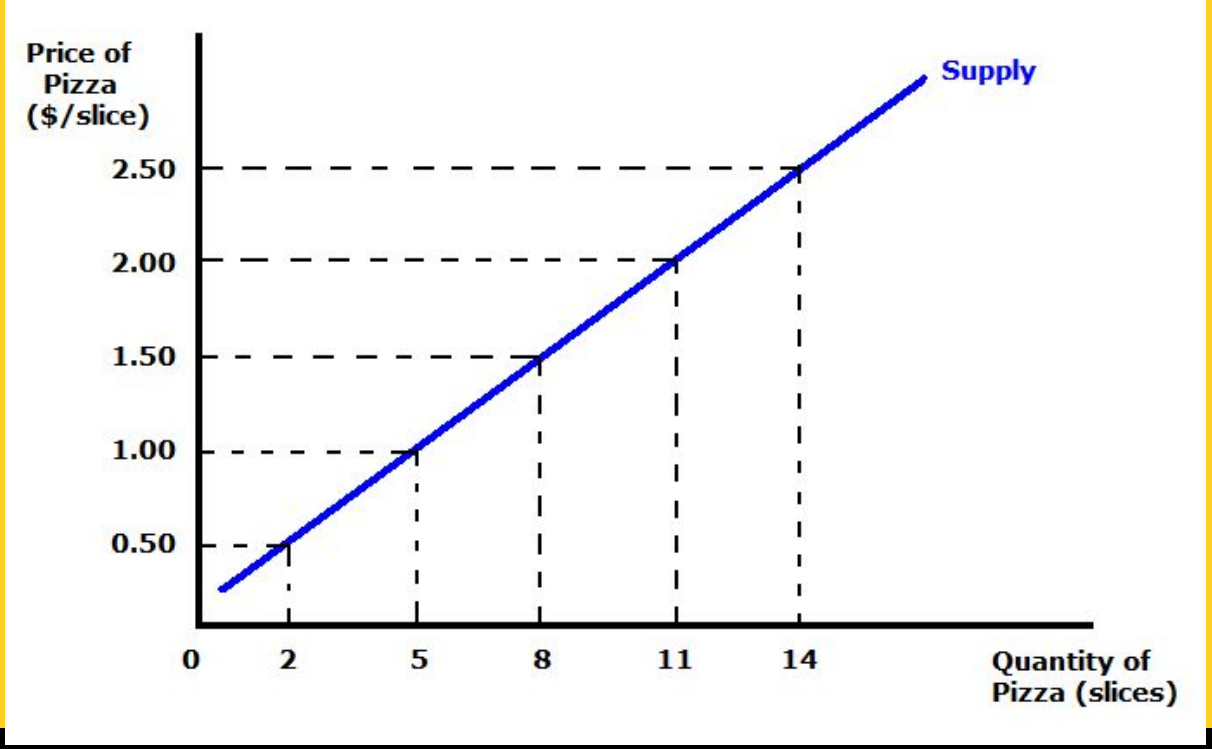
Demand & Quantity Demand

- **Demand** is the quantity of a good or service that buyers wish to purchase ***at each possible price,*** with all other influences on demand remaining unchanged.
- **Quantity demanded** defines the amount purchased ***at a particular price***.



Supply & Quantity Supply

- **Supply** is the quantity of a good or service that sellers are willing to sell at each possible price, with all other influences on supply remaining unchanged.
- **Quantity supplied** refers to the amount supplied at a particular price



PRACTICE!

- 7. An increase in the price of chicken feed shifts the supply curve for eggs to the left and moves buyers along the demand curve. So we have had a change in:
- A. supply and a change in quantity demanded.
- B. supply and a change in demand.
- C. quantity supplied and a change in quantity demanded.
- D. quantity supplied and a change in demand.

PRACTICE!

- 7. An increase in the price of chicken feed shifts the supply curve for eggs to the left and moves buyers along the demand curve. So we have had a change in:
- A. supply and a change in quantity demanded.
- B. supply and a change in demand.
- C. quantity supplied and a change in quantity demanded.
- D. quantity supplied and a change in demand.

PRACTICE

- The quantity demanded of Good Z depends upon the price of Z (Pz), monthly income (Y), and the price of a related Good W (Pw). Demand for Good Z (Qz) is given by equation 1 below: $Qz = 150 - 8Pz + 2Y - 15Pw$

- Find the demand equation for Good Z in terms of the price for Z (Pz), when Y is \$50 and Pw = \$6.

PRACTICE

- Substitute those two values into our demand equation:
- Qz = 150 - 8Pz + 2Y - 15Pw
- Qz = 150 - 8Pz + 2*50 - 15*6
- Qz = 150 - 8Pz + 100 - 90
- Simplifying gives us:
- Qz = 160 - 8Pz
- which is our final answer.

DEMAND & SUPPLY CRUVE

- The demand curve is a graphical expression of the relationship between price and quantity demanded, with other influences remaining unchanged.

- The supply curve is a graphical expression of the relationship between price and quantity supplied,with other influences remaining unchanged.

PRACTICE

- Demand curves have a negative slope because
- a. firms tend to produce less of a good that is more costly to produce.
- b. the substitution effect always leads consumers to substitute higher quality goods for lower quality goods.
- c. the substitution effect always causes consumers try to substitute away from the consumption of a commodity when the commodity's price rises.
- d. an increase in price reduces real income and the income effect always causes consumers to reduce consumption of a commodity when income falls.

PRACTICE

- Demand curves have a negative slope because
- a. firms tend to produce less of a good that is more costly to produce.
- b. the substitution effect always leads consumers to substitute higher quality goods for lower quality goods.
- c. the substitution effect always causes consumers try to substitute away from the consumption of a commodity when the commodity's price rises.
- d. an increase in price reduces real income and the income effect always causes consumers to reduce consumption of a commodity when income falls.

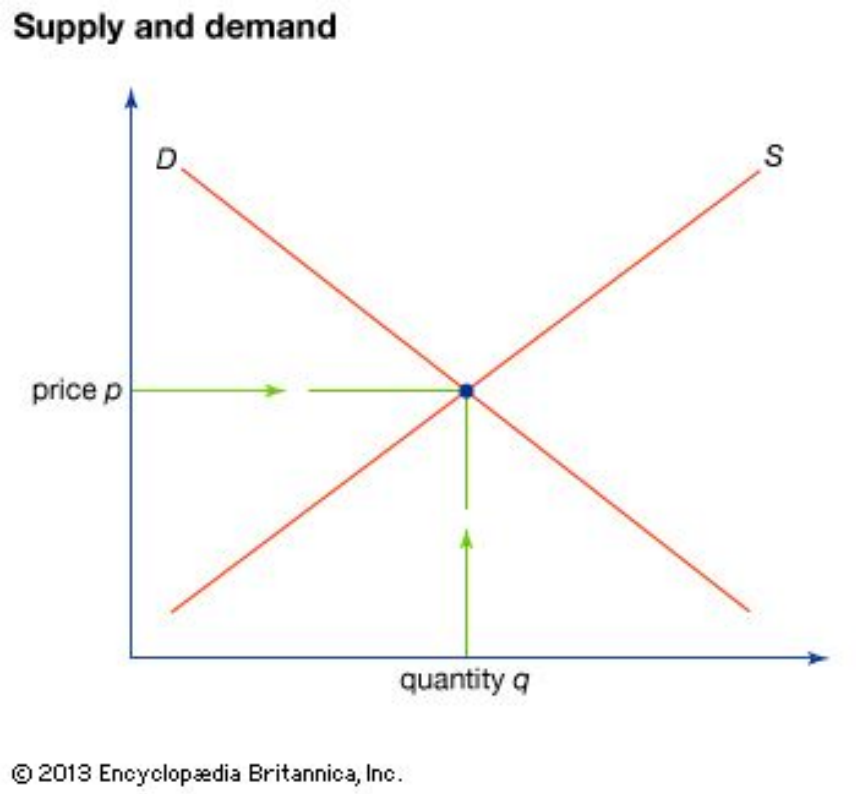
PRACTICE

- Find the slope of an assumed linear demand curve for theater tickets, when persons purchase 1,000 at $5.00 per ticket and 200 at $15.00 per ticket.

The slope of a linear demand curve is simply:
Change in Price / Change in Quantity
So when the price changes from $5.00 to $15.00, the quantity changes from 1,000 to 200. This gives us:
(15 - 5) / (200 - 1000)
10 / -800
-1/80
Thus the slope of the demand curve is given by -1/80.

Market equilibrium

- The equilibrium price equilibrates the market. It is the price at which ***quantity demanded equals the quantity supplied.***



PRACTICE!

- If the demand and supply curve for computers are:
- D = 100 - 6P, S = 28 + 3P
- where P is the price of computers, what is the quantity of computers bought and sold at equilibrium?

We know that the equilibrium quantity will be where supply meets, or equals, demand.
So first we'll set supply equal to demand:
100 - 6P = 28 + 3P
which simplifies to P = 8.
Now we know the equilibrium price, we can solve for the equilibrium quantity by simplying substituting P = 8 into the supply or the demand equation. I'll substitute it into the supply equation:
S = 28 + 3*8 = 28 + 24 = 52.
Thus the equilibrium price is 8, and the equilibrium quantity is 52.

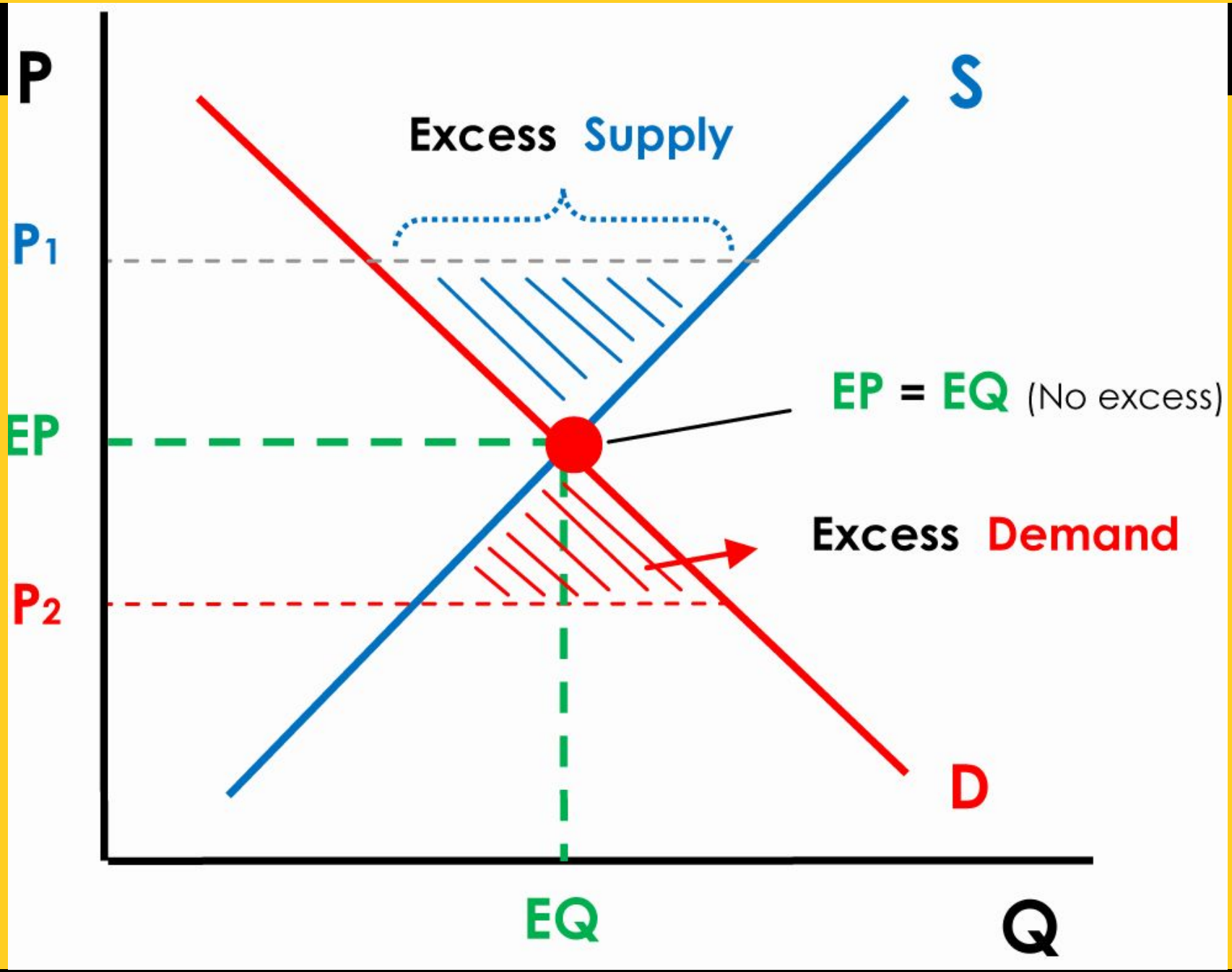
PRACTICE

- P = 80 - Q (Demand)
- P = 20 + 2Q (Supply)
- Given the above demand and supply equations for widgets, find the equilibrium price and quantity.

To find the equilibrium quantity, simply set both of these equations equal to each other.
80 - Q = 20 + 2Q
Q = 20
Thus our equilibrium quantity is 20. To find the equilibrium price, simply substitute Q = 20 into one of the equations.
We will substitute it into the demand equation:
P = 80 - Q
P = 80 - 20
P = 60
Thus our equilibrium quantity is 20 and our equilibrium price is 60.

Excess supply & demand

- Excess supply exists when the *quantity supplied exceeds the quantity demanded* at the going price.
- Excess demand exists when the *quantity demanded exceeds the quantity supplied* at the going price.
- The short side of the market determines outcomes at prices other than the equilibrium.


P
S
Excess Supply
P1
EP = EQ (No excess)
EP
Excess Demand
P2
D
EQ
Q

PRACTICE

- The price at which there is neither surplus nor shortage is called:
- A. the adjustment price.
- B. the equal price.
- C, the fair price.
- D. the market-clearing price.

PRACTICE

- The price at which there is neither surplus nor shortage is called:
- A. the adjustment price.
- B. the equal price.
- C, the fair price.
- D. the market-clearing price.

influences on demand

- **1. The prices of related goods**
- Substitute goods: when a price reduction (rise) for a related product reduces (increases) the demand for a primary product, it is a substitute for the primary product.
- eg: beef-pork, pen-pencil, juice-coke
- Complementary goods: when a price reduction (rise) for a related product increases (reduces) the demand for a primary product, it is a complement for the primary product.
- eg: pizza-coke, badminton-battledore

PRACTICE

- 5. Which of the following provides an example of complementary goods?

- Pepsi and Coca-Cola

- French fries and catsup

- Milk and orange juice

- Beef and pork

PRACTICE

- 5. Which of the following provides an example of complementary goods?
- Pepsi and Coca-Cola
- French fries and catsup
- Milk and orange juice
- Beef and pork

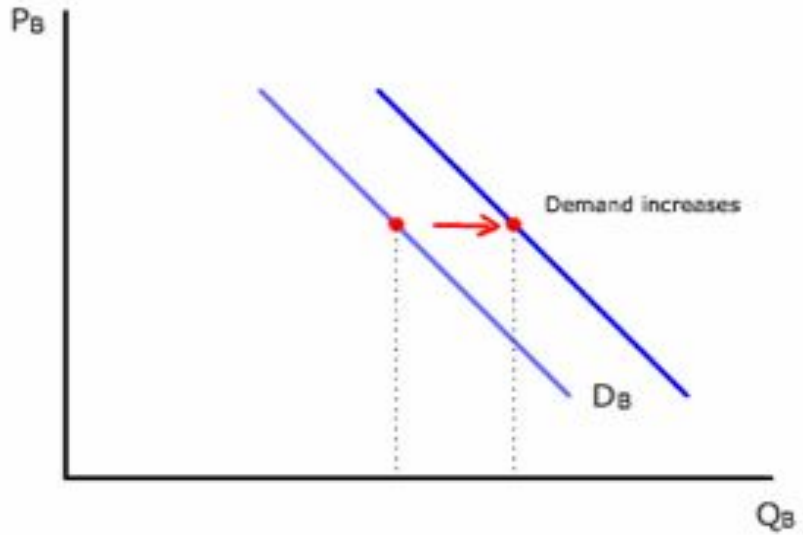
PRACTICE

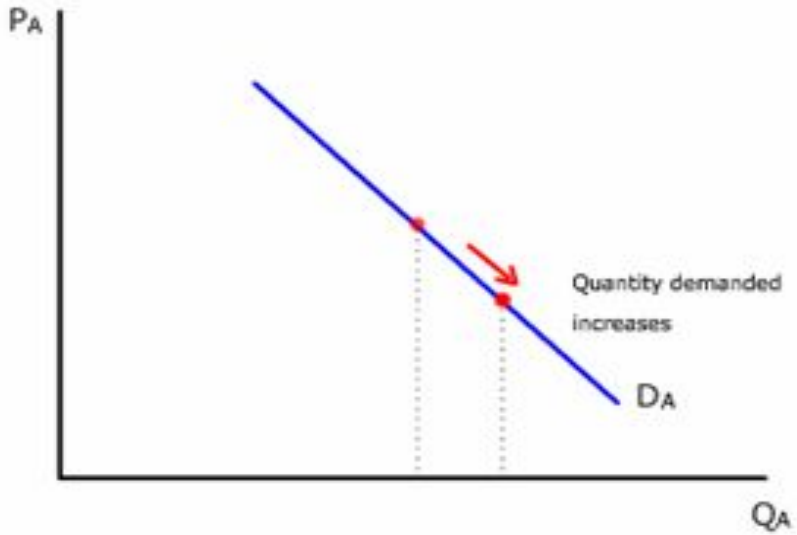
- If the price of a good increases, then
- a. the demand for complementary goods will increase.
- b. the demand for the good will increase.
- c. the demand for substitute goods will increase.
- d. the demand for the good will decrease.

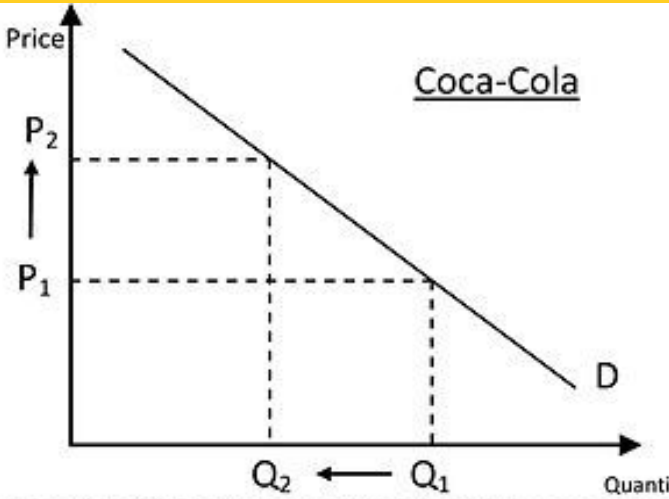
PRACTICE

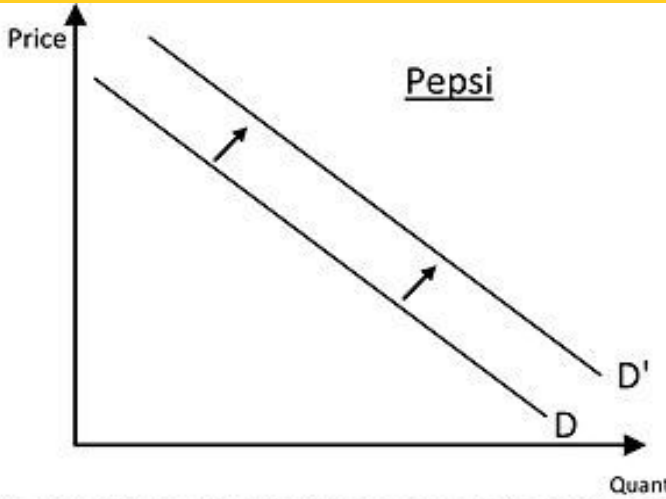
- If the price of a good increases, then
- a. the demand for complementary goods will increase.
- b. the demand for the good will increase.
- c. the demand for substitute goods will increase.
- d. the quantity demand for the good will decrease.

Complementary Goods







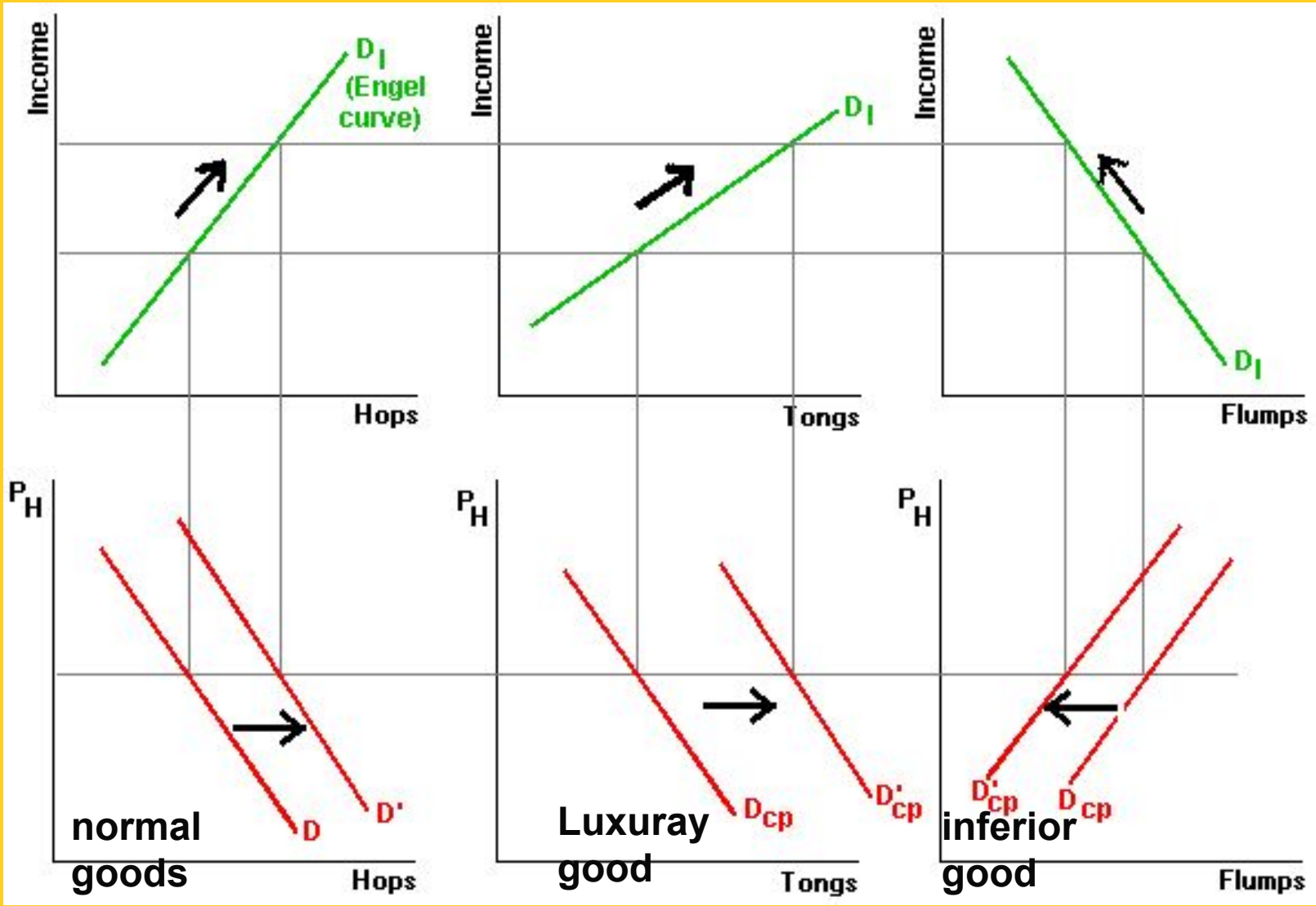


Suppose the price of Coca-Cola rises from P_1 to P_2 because one of the inputs rises in price. This would cause people to consume less coke, quantity decreases from Q_1 to Q_2. For the substitute good Pepsi the demand curve shifts out for all price levels, from D to D', leading to more of the substitute good consumed.

influences on demand

- **2. Buyer incomes**
- An inferior good is one whose demand falls in response to higher incomes.

- A normal good is one whose demand increases in response to higher incomes


Income
D_I
(Engel curve)
Hops
Income
D_I
Tongs
Income
D_I
Flumps
P_H
D
D'
Hops
normal goods
P_H
D_{cp}
D'_{cp}
Tongs
Luxuray good
P_H
D'_{cp}
D_{cp}
Flumps
inferior good

PRACTICE

- If consumer income declines, then the demand for

- a. normal goods will increase.
- b. inferior goods will increase.
- c. substitute goods will increase.
- d. complementary goods will increase.

PRACTICE

- If consumer income declines, then the demand for
  - a. normal goods will increase.
  - b. inferior goods will increase.
  - c. substitute goods will increase.
  - d. complementary goods will increase.

influences on demand

3. Tastes and networks

- Taste:
- We are all subject to peer pressure, the fashion industry, marketing, and a desire to maintain our image.
- eg: the fashion industry

- Network:
- Businesses frequently decide that all of their employees will have the same type of computer and software on account of network economies

influences on demand

- **4. expectation**
- if consumer expect price in future will decrease, they will stop buying the production now and wait for future. so the demand of today will decrease, shif left
- eg: boxing day

- **5. number of consumer**
- imigration or baby boom will boost good consuming. demand increase, shift right

PRACTICE

- Which of the following will cause a decrease in quantity demanded while leaving demand unchanged?

- a. An increase in the price of a complementary good.

- b. An increase in income when the good is inferior.

- c. A decrease in the price of a substitute good.

- d. An increase in the price of the good.

PRACTICE

- Which of the following will cause a decrease in quantity demanded while leaving demand unchanged?

- a. An increase in the price of a complementary good.

- b. An increase in income when the good is inferior.

- c. A decrease in the price of a substitute good.

- d. An increase in the price of the good.

influences on demand

- 4. Expectations

PRACTICE

- The law of demand refers to the
- a. inverse relationship between the price of a commodity and the quantity demanded of the commodity per time period.
- b. direct relationship between the desire a consumer has for a commodity and the amount of the commodity that the consumer demands.
- c. inverse relationship between a consumer's income and the amount of a commodity that the consumer demands.
- d. direct relationship between population and the market demand for a commodity.

PRACTICE

- The law of demand refers to the
- a. inverse relationship between the price of a commodity and the quantity demanded of the commodity per time period.
- b. direct relationship between the desire a consumer has for a commodity and the amount of the commodity that the consumer demands.
- c. inverse relationship between a consumer's income and the amount of a commodity that the consumer demands.
- d. direct relationship between population and the market demand for a commodity.

PRACTICE

- Which of the following will not decrease the demand for a commodity?

- a. The price of a substitute decreases
- b. Income falls and the good is normal
- c. The price of a complement increases
- d. The commodity's price increases

PRACTICE

- Which of the following will not decrease the demand for a commodity?

- a. The price of a substitute decreases
- b. Income falls and the good is normal
- c. The price of a complement increases
- d. The commodity's price increases

Influnces on supply

- 1. **Technology**
- Technology increae the efficiency and effectiveness of producing. The supplier is willing to supply the same quantity at a lower price because they could produce more holding the resources unchanged.

- 2. **Competing products**
- If competing products improve in quality or fall in price, a supplier may be forced to follow suit.

Influnces on supply

- 3. **Input costs**
- if one input factor has incresed its price, then the cost of each production will increase, which means, under the same amout of supply, the money cost would increase, so the supply curve shifts leftward, or upward.
- --> Any quantity is now priced higher; alternatively, suppliers are willing to supply less at the going price

influnces on supply

- **4. number of suppliers**
- # of suppliers increases, supply increase, curve shift right

- **5. expectation**
- the price of future increase, hold production for future. Supply of today decrease, cruve shifts left

PRACTICE

- Beef supplies are sharply reduced because of drought in the beef-raising states, and consumers turn to pork as a substitute for beef. How would you illustrate this change in the beef-market in supply-and-demand terms?

The supply curve for beef --> shift leftward (or upward) -->reflect the drought. This causes the price of beef to rise, and the quantity consumed to decrease.

We would NOT move the demand curve here. The decrease in quantity demanded is due to the price of beef rising, due to the shift of the supply curve.

PRACTICE

- In December, the price of Christmas trees rises and the quantity of trees sold rises. Is this a violation of the law of demand?

Answer: No. This is not simply a move along the demand curve here. In December demand for Christmas trees rises, causing the curve to shift to the right. This allows both the price of Christmas trees and the quantity sold of Christmas trees to rise.

PRACTICE

- 4. If both the demand curve and supply curve move to the left, we can predict:

- price will fall, but we cannot predict quantity.

- price will rise, but we cannot predict quantity.

- quantity will rise, but we cannot predict price.

- quantity will fall, but we cannot predict price.

PRACTICE

- 4. If both the demand curve and supply curve move to the left, we can predict:

- price will fall, but we cannot predict quantity.

- price will rise, but we cannot predict quantity.

- quantity will rise, but we cannot predict price.

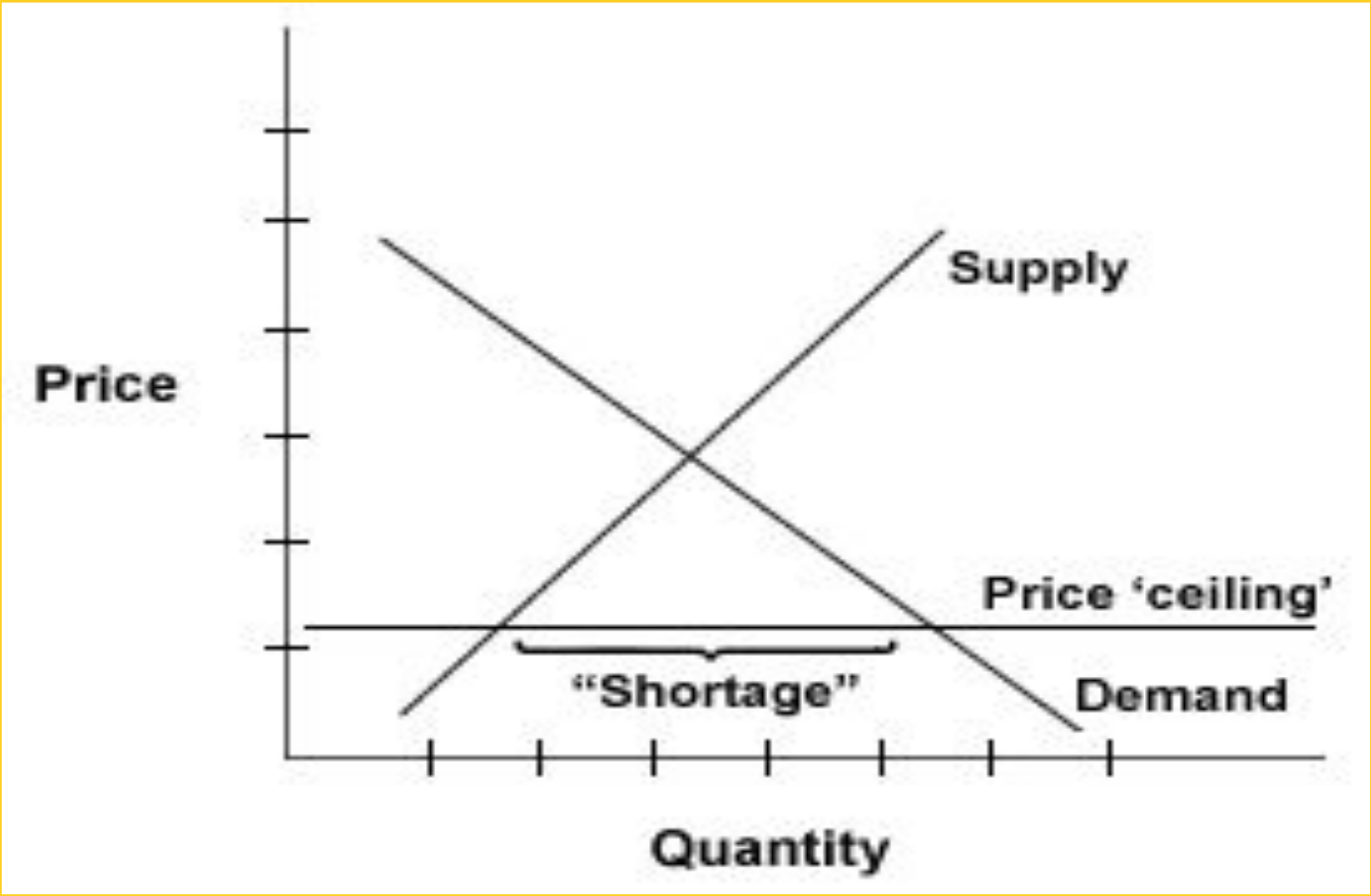
- quantity will fall, but we cannot predict price.

Market Intervention

1. Price Ceiling

- Definition: The maximum price a seller is allowed to charge for a product or service.
- (Ceilings mean that suppliers cannot legally charge more than a specific price)
- Effective price ceiling: price lower the market equilibrium price.
- -->cause excess demand and a quantity shortage (blank market, ask when all finished)
- Examples: In times of famine, price controls on foodstuffs, apartment rent in Montreal

Price Ceiling



PRACTICE

- 4) Which of the following is a result of an effective rent ceiling?
- I. equity in the housing market
- II. efficient allocation of resources
- III. a shortage of housing units.

- A) I and II
- B) III only
- C) I and III
- D) II only

PRACTICE

- 4) Which of the following is a result of an effective rent ceiling?
- I. equity in the housing market
- II. efficient allocation of resources
- III. a shortage of housing units.

- A) I and II
- **B) III only**
- C) I and III
- D) II only

PRACTICE

-) In the absence of a rent ceiling, the long run adjustment to an initial decrease in the supply of housing is

- A) an increase in the supply of housing due to profits.

- B) an increase in the supply of housing due to the initial surplus.

- C) a decrease in demand for housing due to higher rent.

- D) a decrease in demand for housing due to the initial shortage.

PRACTICE

-) In the absence of a rent ceiling, the long run adjustment to an initial decrease in the supply of housing is

- **A) an increase in the supply of housing due to profits.**

- B) an increase in the supply of housing due to the initial surplus.

- C) a decrease in demand for housing due to higher rent.

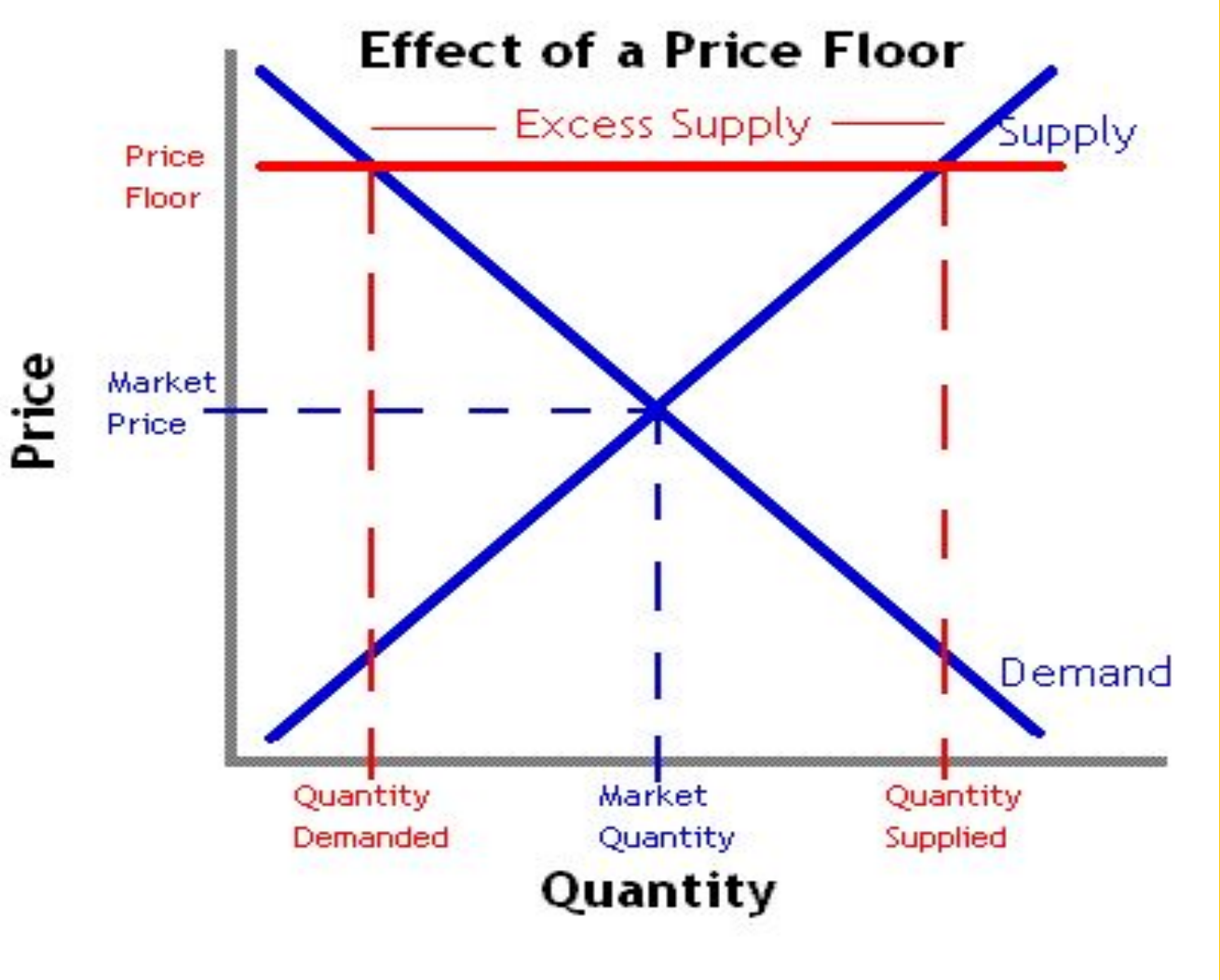
- D) a decrease in demand for housing due to the initial shortage.

Market Intervention

- **1. Price Floor**
- Definition: The lowest acceptable limit as restricted by controlling parties.

- Effective price floor: Sets the price above the market equilibrium price.
- -->cause excess supply and quantity surplus
- Examples: minimum wages

Price Floor


Effect of a Price Floor
Excess Supply
Supply
Price Floor
Market Price
Price
Demand
Quantity Demanded
Market Quantity
Quantity Supplied
Quantity

PRACTICE

- A price floor is

- A) a price that creates a surplus of the good if it is set above the equilibrium price.

- B) a price above which a seller cannot legally sell.

- C) a price below which a seller cannot legally sell.

- D) Both answers A and C are correct.

PRACTICE

- A price floor is
- A) a price that creates a surplus of the good if it is set above the equilibrium price.
- B) a price above which a seller cannot legally sell.
- C) a price below which a seller cannot legally sell.
- **D) Both answers A and C are correct.**

PRACTICE

- 8) Suppose that the equilibrium wage in the low-skilled labor market is $6.25. Further, suppose the federal government raises the minimum wage to $6.00 an hour from its present level of $5.15. The government's action of increasing the minimum wage will result in

- A) a decrease in unemployment.

- B) an increase in unemployment.

- C) neither a shortage nor a surplus of labor in the low-skilled labor market.

- D) a shortage of low-skilled labor.

PRACTICE

- 8) Suppose that the equilibrium wage in the low-skilled labor market is $6.25. Further, suppose the federal government raises the minimum wage to $6.00 an hour from its present level of $5.15. The government's action of increasing the minimum wage will result in

- A) a decrease in unemployment.

- B) an increase in unemployment.

- **C) neither a shortage nor a surplus of labor in the low-skilled labor market.**

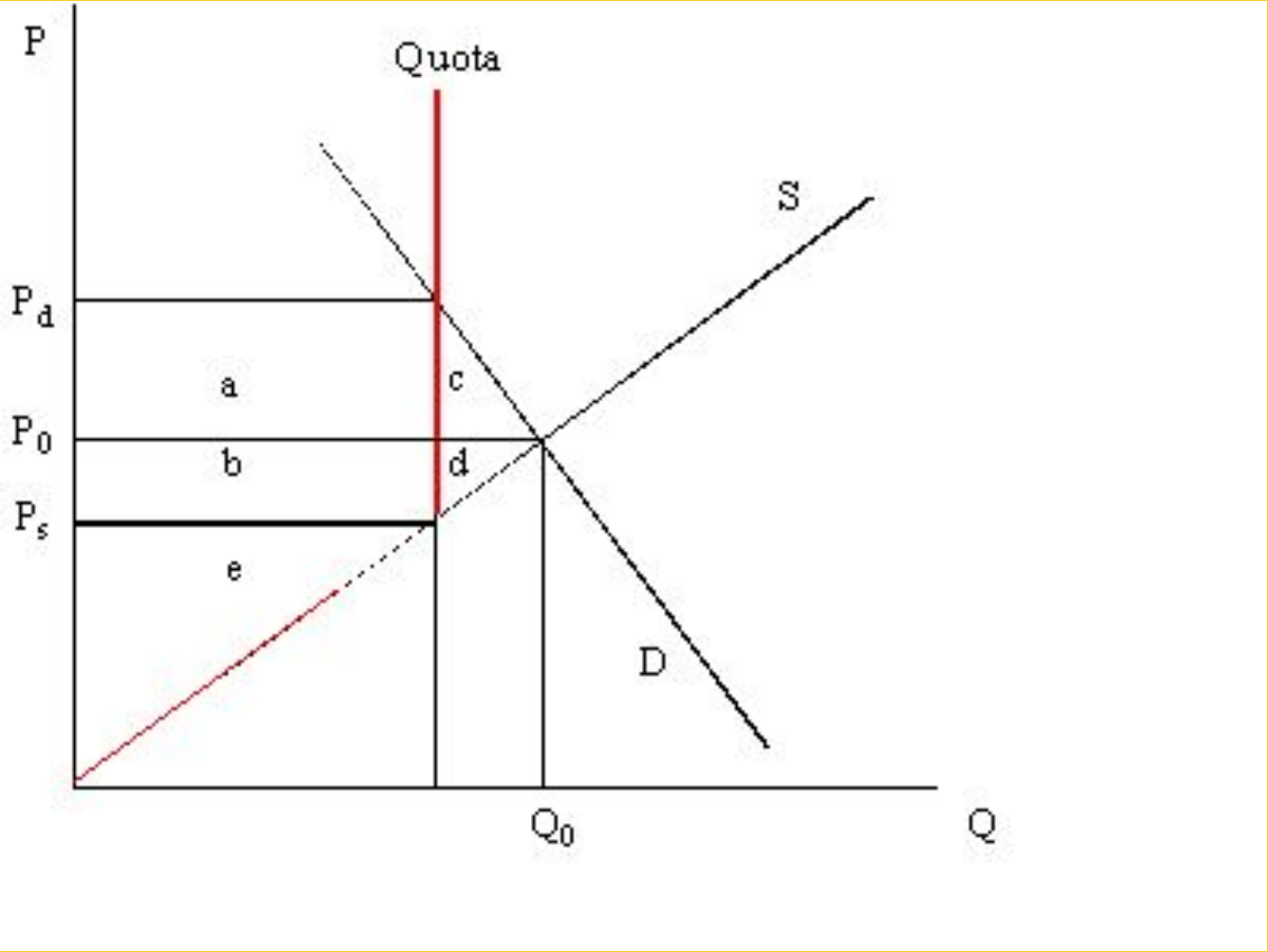
- D) a shortage of low-skilled labor.

Market Intervention

3. Quotas:

- Definition: physical restriction in output.
- Effective Quota: Replace the supply curve
- --> excess demand
- Fuction: It is a means of keeping prices higher than the free-market equilibrium price. As an alternative to imposing a price floor, the government can generate a high price by restricting supply

Quota



PAST MIDTERM

- 1. Which of the following statements best differentiates price ceilings and price floors?
- a. Price ceilings represent minimum prices, while price floors represent maximum prices
- b. Price ceilings are always set below the equilibrium price and price floors are always set above the equilibrium price.
- c. Price ceilings are maximum allowable prices, whereas price floors are minimum allowable prices.
- d. Price floors cause shortages to appear, whereas price ceilings have the opposite effect
- e. None of the above.

PAST MIDTERM

- 1. Which of the following statements best differentiates price ceilings and price floors?
- a. Price ceilings represent minimum prices, while price floors represent maximum prices
- b. Price ceilings are always set below the equilibrium price and price floors are always set above the equilibrium price.
- **c. Price ceilings are maximum allowable prices, whereas price floors are minimum allowable prices.**
- d. Price floors cause shortages to appear, whereas price ceilings have the opposite effect
- e. None of the above.

PRACTICE

- Read the scenarios below. Answer the questions and draw the graphs. You will have to use the other side of the paper to write your answer.
- 1) People can store instant coffee at home. People are expecting the price of instant coffee to increase soon. What will happen to the price and quantity of coffee beans? Draw the graph
- 2) There was a hurricane in Florida, which ruined all of the oranges in the area. How will this affect the price of orange juice? Draw the graph
- 3) People's incomes have risen and Sony found a new technology making it easier to produce their HD televisions. What will happen to the price and quantity of Sony HD televisions? Draw a graph

PRACTICE

- 4) Mike just graduated from university and just got a better paying full time job. All of his friends started to buy Blackberries so he wants one too. Graph the effects on Blackberries.

- 5) The government just put a tax on all imported coffee beans and people are starting to prefer coffee to tea. What happens to the price of a cup of coffee? What happens to the quantity? Graph the effects

- 6) The unions at STM just won a battle for increased wages. On average incomes around the city have been decreasing. The STM also just built a new computer system which helps run the metros more efficiently.

PAST MIDTERM

- (20 marks)Use the following equations to answer the questions below.
- Demand: $Q = 1100 - 5P$; Domestic Supply: $Q = -100 + P$
- (i) Find the equilibrium price and quantity if there is no import. (3 marks)
- (ii) How much is the consumer surplus? (2 marks)
- (iii) How much is the producer surplus? (2 marks)
- (iv) Suppose the world price is 120. If the government imposes an import quota of 600 units in order to protect the domestic producers, under the quota how much is the price in the domestic market? (2 marks)
- (v) How much is the total quantity traded (including the quota and the quantity produced by the domestic producers)? (2 marks)
- (vi) Suppose the world price is still 120. Assume that the government now imposes an import quota of 300 units. Under the new quota, how much is the price in the domestic market? (3 marks)
- (vii) How much is the total quantity traded (including the quota and the quantity produced by the domestic producers)? (2 marks)
- (viii) How much is the consumer surplus now? (2 marks)
- (ix) How much is the "domestic" producers' producer surplus now? (2 marks)

PAST MIDTERM

- (i) Find the equilibrium price and quantity if there is no import. (3 marks)
- **1100-5P = -100+P -->P = 200 and Q = 100**

- (iv) Suppose the world price is 120. If the government imposes an import quota of 600 units in order to protect the domestic producers, under the quota how much is the price in the domestic market? (2 marks)
- **At P = 120**
- **Quantity supplied by domestic suppliers = 20**
- **Quantity demanded by domestic consumers = 500**
- **Shortage = 480 (=500-20)**
- **Given that the shortage is 480 and the quota is 600, the quota is not effective (does not bind).**
- **The price in the market thus is still 120**

PAST MIDTERM

- (v) How much is the total quantity traded (including the quota and the quantity produced by the domestic producers)? (2 marks)
- **At P = 120**
- **Quantity supplied by domestic suppliers = 20**
- **Quantity demanded by domestic consumers = 500**
- **The quantity traded in the market is 500.**

PAST MIDTERM

- (vi) Suppose the world price is still 120. Assume that the government now imposes an import quota of 300 units. Under the new quota, how much is the price in the domestic market? (3 marks)
- **S and S' have the same slope, and S' passes through P = 120 and Q = 320.**
- **--> S' : P = Q – 200**
- **Solving S' (P = Q – 200) and the original demand curve (P = - 0.2 Q + 220) together yields**
- **P = 150 and Q = 350**

- (vii) How much is the total quantity traded (including the quota and the quantity produced by the domestic producers)? (2 marks)
- **Q = 350**

PRACTICE

- 23) In general, a fine on buying a product leads to the
- A) supply curve shifting leftward.
- B) demand curve shifting rightward.
- C) demand curve shifting leftward.
- D) supply curve shifting rightward.

- 24) When a government imposes penalties on both sellers and buyers of an illegal good,
- A) the price of the good falls, but the quantity purchased might increase or decrease.
- B) the price of the good rises, but the quantity purchased might increase or decrease.
- C) the price of the good falls as does the quantity purchased.
- D) the quantity purchased of the good decreases, but the price might rise or fall.

PRACTICE

- 23) In general, a fine on buying a product leads to the
- A) supply curve shifting leftward.
- B) demand curve shifting rightward.
- **C) demand curve shifting leftward.**
- D) supply curve shifting rightward.

- 24) When a government imposes penalties on both sellers and buyers of an illegal good,
- A) the price of the good falls, but the quantity purchased might increase or decrease.
- B) the price of the good rises, but the quantity purchased might increase or decrease.
- C) the price of the good falls as does the quantity purchased.
- **D) the quantity purchased of the good decreases, but the price might rise or fall.**

Positive & Normative statement

- Question in last week:
- "The increase of xxx machine should increase the production" is a positive statement. although it contains "should"

- WHY?

EXPLAINATION

- .....Look at these two sentences:
- The increase of xxx machine should increase the production.
- The government should increase tax rates to decrease poverty.
- Both sentences have the word 'should'. But the meaning is totally different grammatically.
- The first sentence says that we expect that if we increase the number of xxx machine, the production quantity increases. This sentence is just trying to explain a fact that more input means more production. This is not a policy suggestion. This is just trying to explain how the economy or how the production process works.
- However, the second sentence suggests that if you want to decrease poverty, you should increase tax rates. It is not a fact. It is just a policy suggestion and not explaining the current situation of an economy.

suggestion

- ...what you told the student is correct that it usually works but not all the time. They should still understand the meaning of the sentence and not just looking for the word 'should'...
- (Sept. 2015)

- SO...
- Normative statement in general have the word "should" "ought to", but it is not a rule, you could use it, but the most important thing is to understant the meaning of sentences