

The Market at Work: Supply and Demand

CHAPTER

3

Your job here is to develop the intuition and mechanics of supply and demand. Despite student familiarity with both concepts, the task is challenging because students must learn to examine economic outcomes within the framework of the model.

Next, be extremely clear that price is the only variable that causes a movement along a demand or supply curve. All other variables cause shifts in the two curves. Drill this point home.

Also, be sure to give students many examples of shifts in demand or supply so that they understand how shifts cause adjustments in the market price and quantity.

There is one tip you must try: Tip #115, the “Market Trading Experiment.” This experiment gives your class (no matter what the size) a chance to experience market forces for themselves. We also highly recommend the demonstration “What’s Your Price?” (Tip #120). Students love to watch each other stand up and sit down in response to prices you call out. Finally, the think-pair-share on shifting the demand for movies (Tip #122) encourages a deeper understanding of economics by forcing students to work together to evaluate a familiar situation that sounds like it is inconsistent with the law of demand but is not.

Pre-Class Music

TIP #86 Costs in Billy Joel’s “No Man’s Land”

“No Man’s Land” is about the dissatisfaction of suburban life. The song argues that such amenities as discount outlets, multiplexes, and large parking lots do not prevent drug abuse, lust, and unhappy children. Use this song to explain how the forces of supply and demand, steep rent gradients, and taxes combine to drive people away from the more densely populated central city areas (where economies of scale exist) and into the surrounding communities.



costs,
benefits,
derived demand,
monopoly,
economies of scale,
economic growth,
self-interest,
scarcity

TIP #87 Markets in Weird Al Yankovic’s “eBay”

In “eBay,” the economist Weird Al presents a world where anything from knickknacks to houses can be bought and sold. It is a perfect example of how markets are supposed to function. Discussing the free market in terms of eBay—an online auction website that most people have used or at least know about—helps students understand economic concepts like “trade creates value” and positive-sum games.



markets

Big Question: What Are the Fundamentals of Markets?

markets



TIP #88 Markets and the Efficient “Maeklong Outdoor Market”

This market in Bangkok lies on train tracks. The train travels through the market four times a day. Before the train arrives, vendors have moved food and awnings away from the tracks. The train slowly comes through, barely brushing past people and piles of food. After the train leaves, vendors move everything back into place, customers walk over the tracks, and the bustling market returns to normal.

FIND IT: “Maeklong Outdoor Market, Train Goes Through,” YouTube, uploaded September 28, 2009.

Big Question: What Determines Demand?

law of demand



TIP #89 Writing to Learn: Movie Script

Write a movie script that includes a (short) dialogue between two (or more) people that illustrates your understanding of the law of demand. Set the scene for us; tell us who the characters are, where they are, and what they are doing that leads up to the dialogue.

Note to Instructors: To make this more fun and to encourage creativity, you may give certain groups of students a “genre” to work with such as: horror film, romantic comedy, or detective series. Have a group of outgoing students act out their scene!

complements,
substitutes,
economic bads

TIP #90 Complements and Substitutes in *Seinfeld*, “The Muffin Tops”

Elaine opens a new bakery that sells only the tops of muffins. The top and the stump are neither complements nor substitutes. The stumps are an economic bad that reduce the utility of eating the muffin. Even the homeless won’t eat the stumps unless they come with the tops as well!

FIND IT: Season 8, Episode 21, 04:13–04:40 / 07:03–07:32 / 08:40–08:55.

supply and demand,
complements

TIP #91 Real-World Example: How Peanut Butter Prices Affect Demand for Jelly

Goods are often related. This means that *one* economic event can affect multiple markets. Goods are not isolated in some sort of single-market vacuum. A change in the price of one good can affect it and other goods as well. However, the effects will be different!

Consider an increase in the price of peanut butter. When the price of peanut butter increases, there is a decrease in the quantity demanded for peanut butter (an upward movement along the peanut butter demand curve). This is the first law of demand.

The demand for jelly will also be affected. Remember that peanut butter and jelly are complements. Because we are consuming less peanut butter, we consume less jelly also, even though the price of jelly didn’t change. The demand for jelly decreases (the jelly demand curve shifts inward).

TIP #92 Real-World Example: How Peanut Butter Prices Affect Demand for Almond Butter



supply and demand,
substitutes

Now consider the impact of a rise in the price of peanut butter on the demand for a substitute like almond butter. The demand for almond butter will also be affected. In the previous tip, peanut butter and jelly were complements. Because we are consuming less peanut butter, we consume less jelly also, even though the price of jelly didn't change. With substitutes, the effect works in reverse. Consumers tend to buy peanut butter *or* almond butter, but not both. A rise in the price of peanut butter will lead many consumers to substitute almond butter for peanut butter, hence the demand for almond butter will rise (its demand curve shifts to the right).

TIP #93 Clicker Question: Demand



demand,
quantity demanded,
normal goods

Assume that Pepsi is a normal good. If you like Pepsi and your income increases,

- A. the demand for Pepsi increases.
- B. the demand for Pepsi decreases.
- C. the quantity demanded for Pepsi increases.
- D. the quantity demanded for Pepsi decreases.

Correct Answer: A

Because Pepsi is a normal good, when income increases, there is an outward shift in demand. Many students have difficulty understanding the difference between a shift in demand (exogenous factors like income, tastes, and preference and a change in the price of complements/substitutes) and a change in quantity demanded (a change in the price of the good in question).

Difficulty: easy

TIP #94 Clicker Question: Demand



demand,
quantity demanded,
normal goods

Assume that Pepsi is a normal good. If you like Pepsi and the price of Pepsi decreases,

- A. the demand for Pepsi increases.
- B. the demand for Pepsi decreases.
- C. the quantity demanded for Pepsi increases.
- D. the quantity demanded for Pepsi decreases.

Correct Answer: C

Price changes result in a movement along the demand curve. When the price of a normal good decreases, quantity demanded increases, which means a movement down and to the right.

Difficulty: easy

TIP #95 Clicker Question: Demand



demand,
quantity demanded,
substitutes

As the price of Coke decreases,

- A. the demand for Pepsi increases.
- B. the demand for Pepsi decreases.
- C. the quantity demanded for Pepsi increases.
- D. the quantity demanded for Pepsi decreases.

Correct Answer: B

Coke gets cheaper, so we buy more Coke. Because Coke and Pepsi are substitutes, if we buy more Coke, we buy less Pepsi.

Difficulty: easy

demand,
quantity demanded


TIP #96 Think–Pair–Share: Understanding the Difference between Demand and Quantity Demanded

Ask your students to pair up and consider this scenario: You work at a restaurant/bar. Your boss comes to you, knowing you are studying economics, and asks for your opinion on the following question: Which of the following would increase the demand for drinks the most?

- A. reduction in the price of a complementary good such as an appetizer
- B. reduction in the price of drinks
- C. both A and B

Correct Answer: A

Think about the difference between an increase in demand and an increase in quantity demanded. If you want to increase demand, you need to cause a shift in demand. This is done by reducing the price of the complement goods. Choice B is not correct because if you decrease the price of drinks, this is an increase in quantity demanded, *not* an increase in demand!


TIP #97 Change in Demand versus Shift in Demand in *The Hudsucker Proxy*

supply and demand,
change in demand,
quantity demanded,
price elasticity

This film chronicles the introduction of the hula hoop, a toy that set off one of the greatest fads in U.S. history. According to Wham-O, the manufacturer of the hoop, when the toy was first introduced in the late 1950s, more than 25 million were sold in 4 months. One scene from the movie clearly illustrates the difference between movements along the demand curve and a shift of the entire demand curve. The Hudsucker Corporation has decided to sell the hula hoop for \$1.79. We see the toy store owner leaning next to the front door, waiting for customers to enter. But business is slow. The movie cuts to the president of the company, played by Tim Robbins, sitting behind a big desk, waiting to hear about sales of the new toy. It is not doing well. The store lowers the price, first to \$1.59, then \$1.49 and so on, until finally the hula hoop is “free with any purchase.” Even this is not enough to attract consumers. The toy store owner throws the hula hoops into the alley behind the store. One of the unwanted toys rolls across the street and around the block before landing at the foot of a boy who is skipping school. He picks up the hula hoop and tries it out. He is a natural. When school lets out, a throng of students rounds the corner and see him playing with the hula hoop. Suddenly everyone wants a hula hoop and there is a run on the toy store. Preferences have changed, and the overall demand has increased. The hula hoop craze is born. In economic terms, we can say that the increased demand has shifted the entire demand curve to the right. The toy store responds by ordering new hula hoops and raising the price to \$3.99, which happens to be the new market price after the increase, or shift, in demand. The scene reminds us that changes in price cannot shift the demand curve. Shifts in demand can happen only when an outside event influences human behavior. One of the hardest concepts to get across in a principles-level economics class is changes in demand versus changes in quantity demanded. This short scene from *The*

Hudsucker Proxy solves that problem in a humorous way. We recommend that you show the clip and then ask your students to help you construct the appropriate demand and supply curves to illustrate how the price changes in the clip.

FIND IT: 01:04:34–01:07:43.

TIP #98 Clicker Question: Change in Quantity Demanded



shift in demand,
change in quantity demanded

Suppose the price of good X increases. In terms of demand, what is the result?

- A. The demand for X increases.
- B. The demand for X decreases.
- C. The quantity demanded of X increases.
- D. The quantity demanded of X decreases.

Correct Answer: D

This is a movement up and left along a demand curve. Price is on the vertical axis, and quantity demanded is on the horizontal axis.

Difficulty: easy

TIP #99 Clicker Question: Shift in Demand



shift in demand,
change in quantity demanded,
substitutes

Suppose goods X and Y are substitutes for each other. If the price of good Y increases, what is the result in the market for good X?

- A. The demand for X increases.
- B. The demand for X decreases.
- C. The quantity demanded of X increases.
- D. The quantity demanded of X decreases.

Correct Answer: A

This is a rightward shift in the demand for X. Because the price of good Y increases, the quantity demanded decreases. Because goods X and Y are substitutes, people then want to buy more X, even though the price of X didn't change.

Difficulty: easy

TIP #100 Shift in Demand in The Band Perry's "If I Die Young"



supply and demand,
shift in demand

The singer of "If I Die Young" observes that her thoughts are worth more after she dies. Ask your students if the lyrics in the song suggest a demand shift or movement along the demand curve. An increase in demand would result from a change in tastes or preferences for her thoughts.

TIP #101 Preferences in *Cloudy with a Chance of Meatballs*



supply and demand,
preferences,
derived demand

When people around the world realize that sardines are gross, they stop buying them, and a small island's sardine cannery closes because of the drop in demand. This scene illustrates a change in tastes and preferences (which causes a decrease, or leftward shift, in demand). The drop in demand leads to lower prices and fewer sales. In addition, because the demand for labor is derived from the demand for sardines, suddenly the entire town is without jobs. Show this scene when discussing the factors that shift the demand curve.

FIND IT: 00:03:54–00:04:40.

supply and demand,
change in demand,
preferences,
tastes



TIP #102 Increased Demand in *iCarly*, “iPromoteTechfoots”

Carly and Sam advertise Techfoots shoes on their webcast, and their classmates increase their purchases of them. This causes a change in preferences/tastes that shifts the demand curve outward. We suggest that you show the scene in class and ask your students whether this is a shift in demand or supply. Then, once everyone agrees that it causes a change in demand, shift the demand curve to the right to show that the increased demand will cause prices to rise and also cause an increase in the quantity demanded.

FIND IT: Season 1, Episode 18, 00:04:28–00:07:04 / 00:09:56–00:12:01.

supply and demand,
inferior goods,
normal goods,
shift in demand



TIP #103 Demand in *Family Guy*, “Death Has a Shadow”

Peter loses his job, goes on welfare, and due to an accounting glitch receives \$150,000 a week. Naturally, he decides to spend the money even though he knows it is wrong. Immediately, the family alters its lifestyle, and they start buying things they had previously only dreamed about. We see all kinds of shifts in demand (plastic surgery, expensive art, new clothes, more expensive meals out) which indicate that their sudden income has changed their demand.

FIND IT: Season 1, Episode 1, 00:11:33–00:15:29.

Big Question: What Determines Supply?

upward-sloping supply curve,
consumer surplus,
producer surplus



TIP #104 Upward-Sloping Supply Curve in *Catch Me if You Can*

A high-end prostitute snags a playboy with a unique strategy to determine the price to be paid. To determine the playboy’s maximum willingness to pay, she asks him how much he would pay for the entire night. When he suggests \$300, she tells him to “go fish” until she hears the amount she had in mind. This scene is a wonderful example of an upward-sloping supply curve, consumer surplus, and producer surplus. We use this scene to help extend students’ understanding of supply and demand.

FIND IT: 01:00:05–01:02:14.

demand,
supply



TIP #105 Real-World Example: Two Common Misconceptions about Supply

Students sometimes get confused at this point. One source of confusion occurs because they believe that demand influences supply. The logical error usually goes something like this: “If the price of salmon falls, more people will buy salmon, so the quantity supplied of salmon will increase.” Not quite! The quantity supplied is the amount of the good or service that producers are willing and able to sell at the current price. If the price declines, producers will supply less salmon to the market because there is less profit in selling salmon. If you keep the factors that influence supply and demand separate, you will find that they can be combined into a very powerful tool for exploring the world around us, but you must remember never to confuse demand with supply. Ask your students to imagine being

salmon sellers: If the price drops from \$5 to \$2, would they provide more salmon?

Another economic misconception is the complaint about the price of something followed by the comment “It can’t cost that much to make it!” We live in a supply and demand economy. While producers use rules of thumb in marking up products, those rules are just guesses about the true market-clearing price. In reality, the market, or the interaction between demand and supply, determines the price that balances these two forces. We do not live in a cost-plus-10% economy where goods sell for only a small amount more than the cost of producing them. Cost does not matter nearly as much as you think! Consider the cost of a pair of pants. The actual cost to make a pair of pants may be less than \$5, but that does not mean that the pants should be sold for \$5 plus a very small markup. The market determines the price that balances the desires of consumers who want the pants with the desires of producers who want to earn profits. The market price could be \$10, \$30, or \$100! The notion that cost is the sole element in determining price is an incomplete analysis of the forces in the market.

TIP #106 Real-World Example: Off-Season Resorts



supply,
elasticity
of demand,
elasticity
of supply

Companies supply goods and services. Customers want to obtain the goods and services that companies supply. This exchange happens through prices that are established in markets. Those prices change, depending on the level of demand for a product and how much is supplied.

For instance, hotel rates near Disney World are reduced in the fall, when demand is low, and peak in March, when demand is high. If spring break takes you to a ski resort, you will find lots of company and high prices. But if you are looking for an outdoor adventure during the summer, ski resorts have plenty of lodging available at great rates.

TIP #107 Clicker Question: Supply



supply

Assume that the price of cheese decreases. What will happen in the pizza market?

- A. The supply of pizza increases.
- B. The supply of pizza decreases.
- C. The quantity supplied of pizza increases.
- D. The quantity supplied of pizza decreases.

Correct Answer: A

Cheese is an input in making pizza. If the price of cheese decreases, then the input costs of pizza go down, and the supply of pizza increases.

Difficulty: easy

TIP #108 Clicker Question: Supply



supply

Which of the following will cause the supply curve for oranges to shift to the left?

- A. The government begins subsidizing orange growers.
- B. A study shows that oranges improve eyesight.
- C. An ice storm strikes Florida.
- D. A new orange juice commercial airs on television.

Correct Answer: C

An ice storm will decrease the number of firms supplying oranges. It may destroy most of their crop, thus shifting the supply curve to the left. Answer A will increase the supply of oranges by encouraging firms to grow more oranges. Answers B and D will increase the demand for oranges.

Difficulty: easy

Big Question: How Do Supply and Demand Interact to Create Equilibrium?

supply,
demand,
scarcity,
resources,
pricing,
inventory



TIP #109 Supply and Demand in *Frozen*

About halfway through this movie, Princess Anna comes across an isolated trading post on her way to find her sister, Elsa. A long winter has set in, and summer has been replaced by snow and ice. The trading post owner knows his business. All the winter gear that would normally be marked down is full price, and the stock is nearly depleted. In this amusing scene, we see how the forces of supply and demand work to ration scarce resources. The scene made us smile, and if you love teaching economics, we promise you will enjoy it as well.

FIND IT: “Disney’s Frozen ‘Big Summer Blowout’ Clip,” YouTube, uploaded November 27, 2013.

supply and demand,
marginal benefit,
marginal cost,
reservation price,
trade creates value



TIP #110 Supply and Demand in *The Pit*

Use up through 6:15 in this film—which describes futures markets—in the supply and demand week of your principles of economics course. In talking about how the markets work, the film covers the concepts of reservation price very well, which helps motivate discussion of supply and demand as reflecting the marginal cost and marginal benefit of market participants. The comments from Professor Sylla at 6:00 get at the equilibrium concept very well.

FIND IT: “Trailer for the 2010 Documentary ‘The Pit,’” YouTube, uploaded February 17, 2010.

curve shifters



TIP #111 Writing to Learn: Acronyms

An acronym is a word or name formed as an abbreviation from the initial components (usually individual letters) in a phrase or a word. Create an acronym to help remember the non-price determinants (curve shifters) of supply and demand.

Here is an example: Remember the phrase “tin pint” and add a silent “e” for expectations:

T – technology	P – price of related goods
I – input prices	I – income
N – number of sellers	N – number of buyers
(E) – expectations	T – tastes and preferences
	(E) – expectations

TIP #112 Equilibrium in *Pawn Stars*markets,
equilibrium

Bartering is a great way to see the forces of supply and demand at work. *Pawn Stars* is a reality television show that chronicles the daily activities at the world-famous Gold & Silver Pawn Shop. This clip alternates between two types of customers: those who know what price range to expect and quickly come to an agreement with the staff and those whose desired price is much higher than the offer.

FIND IT: “Best of Bartering,” August 27, 2010, history.com.

TIP #113 Real-World Example: Using Forces of Nature to Understand Supply and Demandequilibrium,
supply
and demand

Using biology is a great way to introduce the idea that supply and demand are forces of nature, not just in the economy.

Suspended animation is an exercise in basic economics at the biological level. Life demands oxygen, and without enough of it, the body dies. In the case of severe trauma—from massive blood loss, say—oxygen supply falls while demand remains high. When deprived of oxygen, the average person will suffer brain damage within 5 minutes, and death follows in another 15 minutes.

However, by using suspended animation, animals can be saved more than 90% of the time even with injuries that would ordinarily be fatal. The process is surprisingly straightforward. Low temperatures have long been known to depress the body’s metabolic rate. Cooling the body is a way to slow metabolic activity and thus curtail oxygen needs until the oxygen supply can return to its baseline or equilibrium.

TIP #114 Clicker Question: Shortagemarkets,
equilibrium,
shortage

Suppose there is a shortage in the market for avocados. Assuming a competitive and unrestrained market, what happens over time?

- A. The price of avocados will fall, and the shortage will worsen.
- B. The price of avocados will rise, and the market will eventually reach equilibrium.
- C. The price of avocados will rise, and a large surplus will be created.
- D. Producers will stop growing avocados.

Correct Answer: B

Without price controls, the market will “correct” itself and move toward equilibrium. A shortage is due to the price being too low. The price will rise to correct the shortage.

Difficulty: easy



DEMONSTRATION



TIP #115 Market Trading Experiment

We set up a trading floor for students to demonstrate the concept of economic equilibrium. Students are asked to engage in bartering animals with one another, with some animals having more value than others and several categories of animals needing fulfillment to do well in the exercise. With some animals hard to find (i.e., having more worth) and some very easy to get (i.e., oversupplied), students witness how the “animal economy” in their classroom achieves equilibrium.

Materials

- Animal endowments
- Accounting activity sheets provided at the end of this chapter

Class Time: 20–25 minutes

Class Size: any

Difficulty: easy

Participation dollars: \$2,000 to \$5,000

Procedure

1. Put the animal endowments and accounting activity sheets in a box.
2. Display these instructions: Pick up accounting sheet and game slip when you come in. Each game slip has a different set of animal endowments (which correspond to the 12 months of the year).
3. We recommend showing the *Pawn Stars* clip (see Tip #112) as an introduction to the experiment.
 - a. Discuss the concept of buying/selling: negotiating skills matter.
 - b. Your objective is to satisfy your needs: secure the animals you need in the right quantity. You can trade for more than what you need and then on-trade for something else.
4. Show a PowerPoint slide with the basic rules:
 - (i) Carefully record all transactions;
 - (ii) You may not use violence to force a trade;
 - (iii) Buy low, sell high;
 - (iv) Do not trade fractional units;
 - (v) You have 15 minutes;
 - (vi) Questions? Just ask;
 - (vii) Grab a slip and start trading!
5. Explain to students that if 60 seals are needed, they can trade with one student or with several students to meet this need. They can on-trade any surplus seals. It will take most students a couple minutes to work this out.
6. Use an online stopwatch (online-stopwatch.com), or use the stopwatch on your cell phone.
7. Start game!
8. Give students 5-minute and 2-minute warnings. Turn off the lights when time is up.
9. Ask the students to double-check their accounting sheet and to tally up their participation points: \$2,000 plus \$500 for each need they met, or \$5,000 total. They bring down their activity sheets at the end of the lecture.

We find that at first students talk to their neighbors. After a few minutes, they realize that they need to move around the room to find certain animals. By the end of the 15 minutes, they are scattered far and wide. This is a very powerful illustration of how markets actually work.

Reflections

When students return to their seats, ask them “How many of you met all six needs?” You will see a show of hands from 15% to 20% of students. “What about five needs? Four needs?” This is a natural lead-in to a discussion about surpluses, shortages, equilibrium, and the problems associated with a barter economy. Some animals are in surplus, some are in shortage, and some are in equilibrium.

Hard to find: lion, tiger, bear, monkey

Equilibrium: camel, wolves, seal, walrus

Easy to get: aardvark, buffalo, snake, gator

Having to *barter* makes exchange more difficult. A medium of exchange (like currency) reduces the difficulty in transacting. Hopefully, you can see the value and role of information in market operations.

Original idea by Alina Zapalska.

FIND IT: “Demonstrating Equilibrium,” Lecture Clips, dirkmateer.com.

markets,
equilibrium

TIP #116 Clicker Question: Markets

Based on economic logic, should students be able to scalp their football tickets?

- A. No way. Scalping is unethical.
- B. Maybe. I can see the university administration’s perspective and also why students would want to scalp.
- C. Yes. Scalping creates consumer and producer surplus.

Correct Answer: C

Economic logic dictates that C is the best answer: scalpers transfer tickets from people with low willingness to pay to those with high willingness to pay. Deadweight loss is minimized.

Difficulty: easy

markets,
equilibrium,
shortage

TIP #117 Shortage in Sheryl Crow’s “Gasoline”

“Gasoline” imagines what would happen in the future if gasoline suddenly started to run out: cars and trucks banned, riots in London, attacks on the Saudi royal family. However, if gasoline were running out, would it really be free? Because less gasoline causes a leftward shift in the supply curve, what do we expect to happen to the price of gasoline over the next 50 years?

supply and demand,
shortage

Appendix: Changes in Both Demand and Supply

TIP #118 Writing to Learn: Make a Prediction

Consider the market for energy drinks on campus. Predict the effect on equilibrium price and quantity in the event that two things happen

simultaneous supply
and demand shifts

simultaneously: (1) the number of vending machines on campus carrying energy drinks doubles, and (2) the price of coffee on campus doubles. Describe your reasoning. Draw a graph to support your prediction.

scarcity,
supply and demand,
substitution effects,
auctions,
willingness to pay,
elasticity



TIP #119 Supply and Demand in *Willy Wonka and the Chocolate Factory*

Roald Dahl's well-known children's classic is filled with economics. Gene Wilder stars as Willy Wonka, an eccentric candy mogul who devises a clever plan to identify his successor. He places five "golden tickets" inside his candy bars and promises anyone who finds one a lifetime supply of chocolate. The price of Wonka Bars skyrockets as people become desperate to find the last ticket. This scene encompasses many ideas from supply and demand. There is also a remake of this film with Johnny Depp starring in the title role. Both films have scenes illustrating the concept of supply and demand.

Ask your students: What sort of market effect is happening here? Why is the price of candy bars increasing? This is a great illustration of how shortages push up the price of a good.

FIND IT: 00:11:30–00:13:11 / 00:19:36–00:20:45 / 00:26:07–00:30:06.



TIP #120 What's Your Price?

DEMONSTRATION

In two scenarios, we demonstrate how shifts in supply and shifts in demand affect pricing for goods.

Materials: none

Class Time: 10 minutes

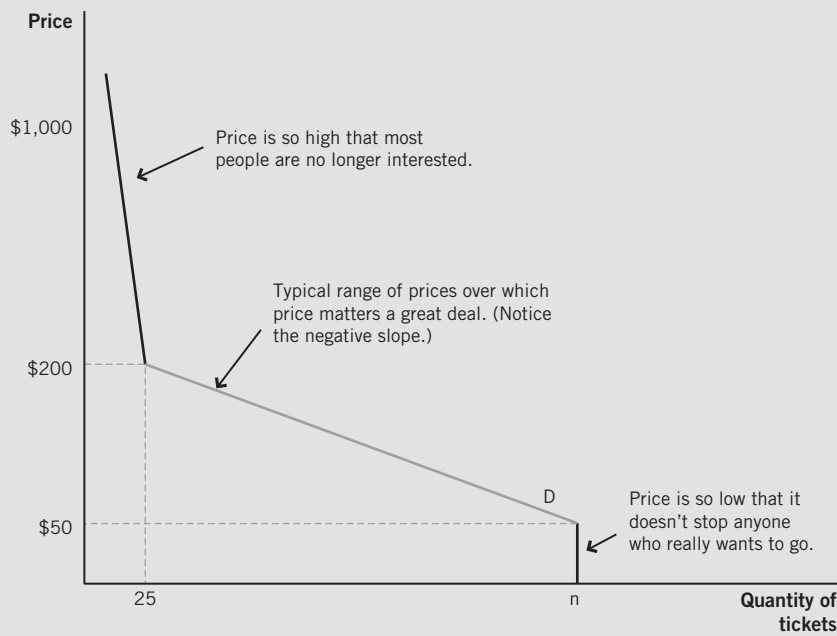
Class Size: any

Difficulty: easy

Participation Points: optional. Use a clicker system or attendance sheet.

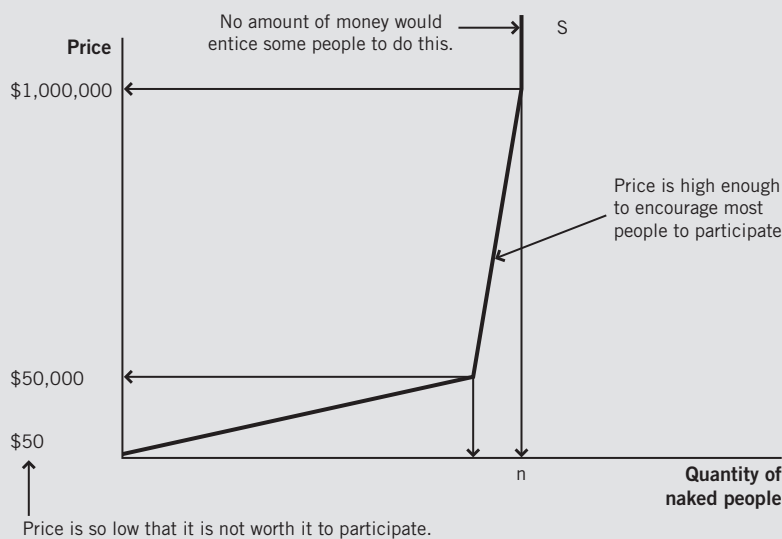
Procedure

1. We use concert ticket pricing as the first example. We ask students to name the price they would pay for premium seats at their favorite concert.
2. Ask students to stand up if they would be willing to pay \$50 (we use this as a minimum price). All students will usually stand.
3. Explain that you will raise the price by increments of \$10 to \$20. When the price goes above an amount a student is willing to pay, he or she should down.
4. When you raise the price, students will begin to sit down: slowly at first (\$50 to \$200 range) and then quickly (above \$200).
5. Stop when the last student sits down.
6. The beauty of this experiment is that you can construct a demand schedule and draw a demand curve from a real data set.
7. You can use the document camera to draw a graph or use a PowerPoint slide with a graph of how you think the students will respond. Explain how concert providers have to take into account the demand curve when pricing tickets. We find that this is a typical demand curve.



What is the most you would pay for premium seats to your favorite concert?

8. In the second example, we ask students to name the lowest amount they would accept if they had to perform “the Full Monty” in front of their classmates. Note: This is a theoretical exercise. Students won’t actually have to perform “the Full Monty”!
9. We start with a figure of \$1 million. All but a handful of students will stand. We then drop the price by increments of \$50,000 to \$100,000 until most students sit down, then by \$1,000 and eventually \$100 when fewer than 20 are still standing. You might get a student willing to supply at *zero* price; offer them a dime or quarter not to!
10. Construct the supply schedule and draw the supply curve from these data.
11. Show the graph to the students and explain the pricing considerations that producers encounter in the supply curve.



willingness to pay,
willingness to supply,
shift in demand,
shift in supply,
pricing,
elasticity,
supply,
demand

FIND IT: “What’s Your Price,” Lecture Clips, dirkmateer.com.

supply and demand,
shift in supply,
shift in demand,
equilibrium



TIP #121 Clicker Question: Supply and Demand

Consider the market for bananas. Suppose that both the supply and the demand for bananas increase simultaneously. Which of these effects is *certain*?

- A. The equilibrium price of bananas will increase.
- B. The equilibrium price of bananas will decrease.
- C. The equilibrium quantity of bananas will increase.
- D. The equilibrium quantity of bananas will decrease.

Correct Answer: C

An increase in supply will cause quantity to increase and price to decrease. An increase in demand will cause quantity to increase and price to increase. Quantity will definitely increase. However, the price effect is uncertain.

Difficulty: easy

supply and demand,
shifting supply
and demand



TIP #122 Think–Pair–Share: The Shifting Demand for Movies

Ask your students to get into pairs and answer the following question:

Question: A survey shows that on average, 50 people go to the movies when the price is \$6.50, and 250 people go when the price is \$8.75. Does this violate the laws of supply and demand? If yes, say why. If not, indicate why not.

Answer: In the evening hours, the demand for movies shifts right. Price rises. Quantity supplied responds—by increasing. Very few students can answer this question, especially if you ask for an explanation. Even worse, we think there is a perception that there is something “tricky” about this question, something unfair. In fact, it is as easy a question as you could imagine. It’s basic supply and demand. It’s merely asking students what happens when the demand for movies shifts.

supply and demand,
factors that shift demand,
factors that shift supply



TIP #123 Supply and Demand in *Holy Rollers*

Jackie Solomon is negotiating to buy some ecstasy pills from their manufacturer, Ephraim. Ephraim apparently wants to increase the price he charges by claiming that his production costs have increased because of the need to provide his compound with more security from raids (we see some armed people milling around in the background). However, he tells Jackie and Jackie’s couriers that he has a new machine that produces more pills per minute than before. One of Jackie’s couriers, a character named Sam, then chimes in that price should fall because supply has increased rather than decreased. The clip would provide a good basis for discussion of supply curve shift factors.

FIND IT: 00:40:50–00:43:10.

HANDOUT 1 FOR TIP #115

JANUARY

To Trade	Amount	Wants	Need
Lion	80	Tiger	360
Bear	36	Monkey	300
Wolf	1200	Camel	150
Walrus	15	Seal	60
Buffalo	180	Aardvark	1000
Snake	90	Alligator	1800

MARCH

To Trade	Amount	Wants	Need
Lion	60	Tiger	480
Bear	24	Monkey	300
Wolf	1200	Camel	100
Seal	100	Walrus	20
Aardvark	5000	Buffalo	200
Alligator	2250	Snake	100

MAY

To Trade	Amount	Wants	Need
Tiger	300	Lion	90
Monkey	120	Bear	36
Wolf	1600	Camel	250
Seal	100	Walrus	30
Buffalo	120	Aardvark	1500
Snake	90	Alligator	2400

JULY

To Trade	Amount	Wants	Need
Lion	80	Tiger	360
Bear	36	Monkey	300
Wolf	1200	Camel	150
Walrus	15	Seal	60
Buffalo	180	Aardvark	1000
Snake	90	Alligator	1800

SEPTEMBER

To Trade	Amount	Wants	Need
Lion	60	Tiger	480
Bear	24	Monkey	300
Wolf	1200	Camel	100
Seal	100	Walrus	20
Aardvark	5000	Buffalo	200
Alligator	2250	Snake	100

NOVEMBER

To Trade	Amount	Wants	Need
Tiger	300	Lion	90
Monkey	120	Bear	36
Wolf	1600	Camel	250
Seal	100	Walrus	30
Buffalo	120	Aardvark	1500
Snake	90	Alligator	2400

FEBRUARY

To Trade	Amount	Wants	Need
Lion	60	Tiger	360
Monkey	80	Bear	24
Camel	250	Wolf	1600
Walrus	15	Seal	60
Buffalo	180	Aardvark	1000
Alligator	3750	Snake	75

APRIL

To Trade	Amount	Wants	Need
Tiger	400	Lion	90
Monkey	80	Bear	24
Camel	150	Wolf	1200
Walrus	10	Seal	40
Aardvark	5000	Buffalo	300
Snake	120	Alligator	1800

JUNE

To Trade	Amount	Wants	Need
Tiger	300	Lion	120
Monkey	120	Bear	36
Camel	100	Wolf	1200
Walrus	10	Seal	40
Buffalo	120	Aardvark	1500
Alligator	1500	Snake	75

AUGUST

To Trade	Amount	Wants	Need
Lion	60	Tiger	360
Monkey	80	Bear	24
Camel	250	Wolf	1600
Walrus	15	Seal	60
Buffalo	180	Aardvark	1000
Alligator	3750	Snake	75

OCTOBER

To Trade	Amount	Wants	Need
Tiger	400	Lion	90
Monkey	80	Bear	24
Camel	150	Wolf	1200
Walrus	10	Seal	40
Aardvark	5000	Buffalo	300
Snake	120	Alligator	1800

DECEMBER

To Trade	Amount	Wants	Need
Tiger	300	Lion	120
Monkey	120	Bear	36
Camel	100	Wolf	1200
Walrus	10	Seal	40
Buffalo	120	Aardvark	1500
Alligator	1500	Snake	75

HANDOUT 2 FOR TIP #115

Market Trading Experiment

Your Name: _____

Month: _____ (The months are on your small trading sheet.)

Your School ID (ex. abc5678): _____

TRANSACTION HISTORY:

	Trading Partner (List their school ID.)	Items Traded	Items Received
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____

(If you need more space for transactions use the back of this sheet.)

HOW TO DETERMINE YOUR PARTICIPATION POINTS:

How many needs did you completely satisfy? _____ × \$500 + \$2,000 = _____

** Your goal is to satisfy your needs. Extra animals do not earn you additional participation points but may be used to bargain for other needs you have not satisfied.*

Chapter 3—Taking It Online

Of the key chapters in *Principles of Microeconomics*, this is the chapter that suffers the most when you teach online. There are so many great interactive experiences in the classroom that won't work when you are teaching in cyberspace. This is made more problematic by the lack of opportunity to really hammer home the difference between a shift in demand (or supply) and a change in quantity demanded (or supplied). But don't worry! There are still lots of really good tools available to help take this chapter online.

Pre-Reading Media

Market Efficiency in Weird Al Yankovic's "eBay"



"eBay" is a classic Weird Al parody song. The value for students is that this song really addresses market efficiency. eBay brings buyers and sellers together from all around the world. Ask your students to point out the way people deal with their unlimited wants through a virtual market.

Supply and Demand in The Beatles's "Can't Buy Me Love"



This song about love helps students examine why something can't be bought or sold. If there is a demand for and a supply of something, there should be a market. Ask your students what is missing. Why can't love be bought? How would you put a price on love if you "don't care too much for money, money can't buy me love"?

Instructor-Filmed Video

Using Screencast-o-Matic (<https://screencast-o-matic.com>; see Chapter 1), spend some time creating a personal voiceover for the PowerPoint slides that accompany the text. The supply and demand graph is a foundational graph in economics, and it is important that students understand how it functions. In particular, focus on the slides that illustrate the difference between changes in demand or supply and changes in quantity demanded or quantity supplied.

Post-Reading Media

Real-World Example: The Market for Tigers



A market exists any time you have a buyer and a seller. Even people who trade goods illegally use markets. This article focuses on the market for the body parts of tigers.

Question: What is the market here?

Answer: The market for tiger body parts. When we discuss the market, we are talking about what is being bought and sold—even if that good is illegal.

Question: How is price established in an illegal market?

Answer: Just as in any other market, the price is set by demand and supply.

Question: What do you think will happen to the equilibrium price and quantity if there is stricter enforcement of anti-trafficking laws?

Answer: This will likely affect the supply of tiger parts. The supply will decrease, assuming that the authorities are successful in slowing the trade. This will shift the supply curve to the left, reducing the equilibrium quantity and raising the price. The concern would be that the higher prices begin to attract more sellers to the market, thereby speeding the demise of the tiger. This is a good time to point out that despite the best intentions of the law, the end result might not be what was desired.

FIND IT: Navin Singh Khadka, “China ‘Admits’ Trading in Tiger Skins,” *BBC News*, July 12, 2014, bbc.com.

Discussion Board

In podcast #687, the folks at *Planet Money* discuss an unusual market: the market for citizenship. On the island nation of St. Kitts, citizenship, including passports and tax status, is for sale. The overwhelming success of this market is a perfect illustration of how the price set by the government was too low, leading to a larger-than-expected number of people buying citizenship. Have your students listen to the podcast and then discuss the implications of the market. Should St. Kitts continue to sell citizenship? How should the price be set? Should there be a limit on the sales? Is this an ethical problem?

FIND IT: “Episode #687: Buy This Passport,” *Planet Money*, March 2, 2016, npr.org.

Going Further



Demand in “Dirk Mateer’s Office Hours”

One of the most frustrating things for students in the early stages of a principles of economics course is understanding the difference between a change in demand and a change in quantity demanded. Dirk takes a look at this issue in his Office Hours video series.

FIND IT: “Change in Demand vs. Change in Quantity Demanded,” Media Library, dirkmateer.com.



Changing Demand and Supply in “Dirk Mateer’s Office Hours”

Another issue that can be perplexing to students is what happens to the equilibrium price and quantity when we shift the demand curve and the supply curve simultaneously. Check out Dirk’s analysis in his Office Hours.

FIND IT: “Changing Demand and Supply at the Same Time,” Media Library, dirkmateer.com.

Solutions to Chapter 3 Text Problems

Questions for Review

1. A competitive market is a market that has many small buyers and sellers and where products are reasonably similar from one supplier to the next. The condition of many buyers and sellers is crucial because one of the key features of a competitive market is that no single buyer or seller has an appreciable degree of market power (i.e., effect on market prices and output), and a lack of market power is likely to result if the individual buyers and sellers are each very small compared to the overall size of the market.
2. In an economic context, “demand” refers to being willing and able to purchase a good or service. The demand curve relates the price of an item to the quantity demanded either by one individual or by all buyers in a market. In general, as the price of an item increases, the quantity demanded decreases; this is often referred to as the law of demand, and it results in a downward-sloping demand curve.

Quantity demanded decreases when price increases partly because people are less able to buy the good than they were before. It also decreases because, even if people could still afford the item, they would have to value it more than they would have at the lower price in order for it to be worth purchasing. In addition, an individual’s demand curve likely slopes downward because each additional unit of a good isn’t quite as useful as the one before, so the individual is willing to buy additional units of an item only if the price is lowered.

Hints and Common Errors: Some students may think that a consumer actually likes an item less when it has a higher price, which isn’t true. The higher price just raises the amount that the consumer has to value the item in order to be willing to purchase it.

3. Because price is one of the axes of the demand curve, a change in price results in a movement along the demand curve. A change in a non-price demand factor would result in a shift of the entire demand curve, as a change in a non-price factor would alter the fundamental relationship between price and quantity that is represented by the demand curve. The factors that would cause the demand curve to shift are changes in income, changes in the prices of related goods, changes in tastes and preferences, changes in expectations regarding future prices, and changes in the number of buyers.

Hints and Common Errors: Demand is technically a function of a bunch of different factors, and we can think of the demand curve as quantity demanded as a function of price with all the other factors held constant. When a non-price factor changes, the constant in the demand curve changes, which is why we see a shift.

4. Normal and inferior goods differ in how the demand for them reacts to changes in income. The demand for normal goods reacts positively to changes in income: in other words, when income increases, the demand for normal goods increases, and when income decreases, the demand for normal goods decreases. The demand for inferior goods, in contrast, reacts negatively to changes in income: an increase in income results in a decrease in demand for inferior goods, and a decrease in income results in an increase in demand for inferior goods. An example of normal goods would be a pair of Air Jordan shoes, clothes from designer stores, Starbucks coffee, an Apple watch, a house, etc., or the things that consumers tend to buy more of when their income increases. Most of the goods are normal goods. But there are a few examples of inferior goods, including ramen noodles, junk food, secondhand furniture, etc., or the thing people tend to buy more when their income decreases.

- Hints and Common Errors:** Some students may think that inferior goods have inferior quality, which may or may not be true. For example, community college class enrollment is *not* an inferior good. Studies show that when income increases, demand for class enrollments in community colleges *and* 4-year colleges increases because while some students move from community college to the university, others may enroll in community college classes because they can finally afford these classes. Demand for a good represents the entire market demand for that good (not an individual demand). In addition, some students do take community college classes to complete general education requirements because of its affordability, but it does not mean community college classes have inferior quality.
5. The supply curve shows the relationship between the price of a good or service and the quantity produced and put up for sale, either by an individual firm or by a market of firms. As the price that a producer can get for its output increases, it becomes more profitable and therefore more attractive to produce that item, all else being

equal. Not surprisingly, then, firms want to shift resources toward production of the item and produce more of it when the price increases, which gives us the law of supply and results in an upward-sloping supply curve.

Put another way, firms in competitive markets find the profit when producing at a quantity such that the price of the output is equal to the marginal cost of production. For most firms in competitive markets, marginal cost increases as quantity increases, so it makes sense that there would be a positive relationship between price and quantity supplied.

- Because price is one of the axes of the supply curve, a change in price results in a movement along the supply curve. A change in a non-price supply factor would result in a shift of the entire supply curve, as a change in a non-price factor would alter the fundamental relationship between price and quantity that is represented by the supply curve. The factors that would cause the supply curve to shift are changes in the cost of inputs, changes in technology and the production process, changes in taxes and subsidies, changes in the number of firms in the industry, and changes in price expectations.

Hints and Common Errors: Supply is technically a function of a bunch of different factors, and we can think of the supply curve as quantity supplied as a function of price with all of the other factors held constant. When a non-price factor changes, the constant in the supply curve changes, which is why we see a shift.

- Markets have a tendency to move toward equilibrium. For example, say I own a Popsicle stand and price my product at \$4 per Popsicle. At the end of the day, I have a large surplus of Popsicles left in my stand. Through the interactions (or lack thereof!) between my buyers and me, the market has indicated that my price is too high. I would then lower my price in an attempt to move toward market equilibrium.
- If the market price is higher than the equilibrium price, producers will want to sell more than consumers want to buy at that price. A surplus will result, and producers will have inventory sitting around. Over time, firms will learn that it is profitable both to lower the price on their output and produce less of it, and they will do so until the surplus disappears, which occurs at the equilibrium price.

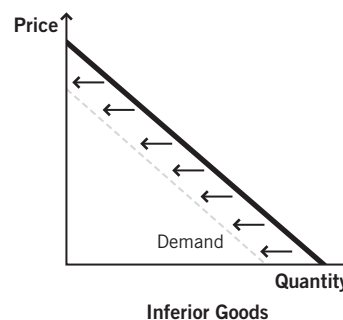
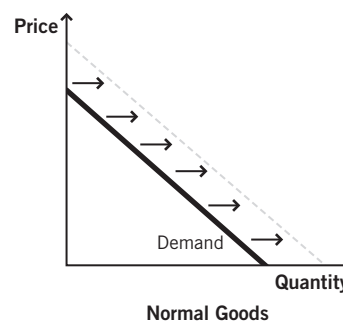
In contrast, if the market price is lower than the equilibrium price, consumers will demand more at that price than producers want to supply, and a shortage will result. Over time, firms will

find it profitable to both raise price and produce more output, and they will do so until the shortage disappears, again at the equilibrium price.

- Shortages and surpluses help balance out the market by eventually bringing prices back to equilibrium. When a shortage is present, producers realize that they can charge a higher price for their output. Increasing the price also gives producers an incentive to increase production and makes consumers not want to purchase as much. These factors combine to bring markets into equilibrium where the quantity supplied is equal to the quantity demanded. Similarly, when a surplus is present, producers respond by cutting prices and, as a result, reducing production quantity. The lower prices also make consumers want to purchase more. Again, these factors combine to bring markets into equilibrium.

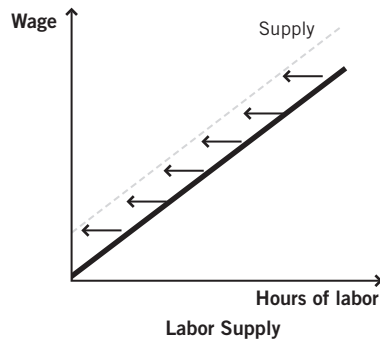
Study Problems

- Presumably, marrying a wealthy man results in an increase in one's income. Income is a factor of demand, so the increase in income should change Anni-Frid's demand for various goods. Specifically, Anni-Frid will demand more of goods that are classified as normal goods and fewer of goods that are classified as inferior goods. Some goods could be unresponsive to changes in income, meaning that they are neither normal nor inferior, and Anni-Frid's demand for those goods would not change.



As a result of her increase in income because of her wealthy husband, Anni-Frid is likely to supply less labor

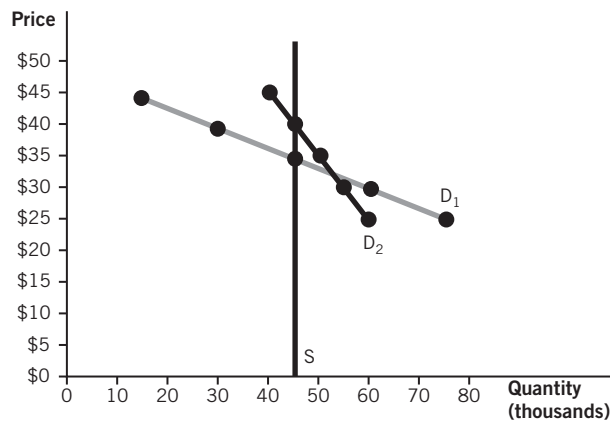
in the labor market at any given wage, and this is represented by a leftward shift of the labor supply curve.



Hints and Common Errors: When drawing a labor supply curve, we still use price and quantity as our axes, but the “price” of labor is called the wage, and we represent the quantity of labor by “hours of labor” or something similar. For most reasonable wages, the labor supply curve has the same shape as a supply curve for a regular goods and services market.

2.
 - a. If the price of oranges increases, there is a decrease in the quantity demanded of oranges. There is not a decrease in demand.
 - b. If the cost of producing tires increases, the demand for tires is unchanged. This is because the cost of production is a factor affecting supply rather than demand.
 - c. If Samantha gets fired from her job, her income decreases. To determine the effect of this income change on her demand for air travel, we need to know whether air travel is a normal good or an inferior good. If air travel is a normal good for Samantha (which it probably is for most people, especially those who are crazy about air travel), then Samantha’s decrease in income will decrease her demand for air travel. If, however, air travel is an inferior good for Samantha, then Samantha’s decrease in income will increase her demand for air travel.
 - d. The increased presence of mosquitos increases consumers’ tastes and preferences for citronella, resulting in an increase in the demand for citronella.
 - e. Despite the law, motorcycles and helmets are still items that are consumed together to some degree rather than items that are consumed instead of one another. Therefore, motorcycles and helmets are complements in economic terms, and an increase in the price of new motorcycles will decrease the demand for helmets.
3.
 - a. When the price of silver increases, the quantity supplied of silver increases.
Hints and Common Errors: It’s important to note that while the quantity supplied of silver increases, the *supply* of silver remains unchanged because the supply curve for silver doesn’t shift.
 - b. An unusually good growing season can, for economic purposes, be thought of as an increase in technology, as it means that farmers got more output for a given amount of input than they could before. (Alternatively, one could think of this as a reduction in the effective input costs of producing tomatoes, which would lead to the same conclusion.) An increase in technology will increase the supply of tomatoes.
 - c. The new medical evidence will not have an effect on the supply of organic products, as the medical evidence is a factor that affects demand rather than supply.
 - d. If the wages of low-skilled workers increase, then the clothing that these workers make gets more expensive to produce. (Specifically, there is an increase in an input cost.) This cost increase will reduce the supply of clothing.
 - e. The increase in price of movie tickets will not have an effect on the supply of Netflix video rentals, as the price of substitute products is a factor that affects demand rather than supply.
4. Complements are goods that tend to be consumed or used together, whereas substitutes are goods that tend to be consumed or used instead of one another. Alternatively, complementary goods (i.e., complements) make each other more useful to the consumer, and substitute goods make each other less useful to the consumer. It’s quite likely that, for most people, having a laser pointer makes a cat more entertaining (just look for videos online), and having a cat makes a laser pointer more entertaining. If this is the case, then cats and laser pointers tend to be consumed together and are in fact complements.
6. If two goods are complements (i.e., complementary goods), a decrease in the price of one of the goods will increase the demand for the other good. Starbucks must think that Dave Matthews appeals to its customers, and Dave Mathews must believe that having his music placed in Starbucks will drive sales. If, in fact, the two are complements as the arrangement suggests, then demand for Starbucks coffee and demand for the Dave Mathews CD will each increase.

7. Draw the supply curve and each of the demand curves for years 1 and 2.



Appendix Questions for Review

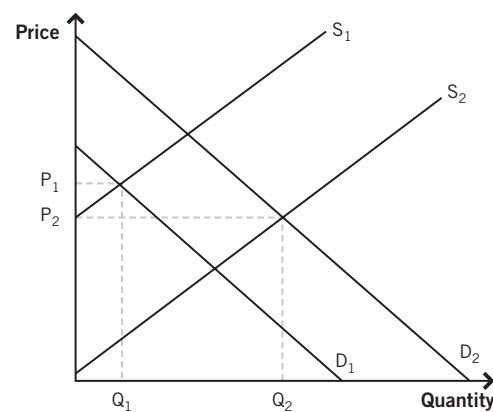
1. When supply and demand change at the same time, we can look at the changes individually and then put them together in order to determine the overall effect. For example, consider a case where both supply and demand increase. The increase in supply will decrease equilibrium price and increase equilibrium quantity, and the increase in demand will increase equilibrium price and increase equilibrium quantity. Clearly, two increases combine to make a bigger increase, so the increase in supply and the increase in demand create an increase in equilibrium quantity. The effect on price, however, is ambiguous because it's unclear whether a combination of a price decrease and a price increase results in an overall increase or decrease. The overall result on price will be determined by which shift is dominant, or larger in magnitude.

Conversely, consider a case where both supply and demand decrease. The decrease in supply will increase equilibrium price and decrease equilibrium quantity, and the decrease in demand will decrease equilibrium price and decrease equilibrium quantity. Clearly, two decreases in quantity combine to make a bigger decrease, so the decrease in supply and the decrease in demand create a decrease in equilibrium quantity. The effect on price, however, is ambiguous because it's unclear whether a combination of a price increase and a price decrease results in an overall increase or decrease. The overall result on price will be determined by which shift is dominant, or larger in magnitude.

We can also consider cases where supply and demand move in opposite directions. Consider a case where supply decreases and demand increases. The decrease in supply will increase equilibrium price and decrease equilibrium quantity, and the increase in demand will increase equilibrium price and increase equilibrium quantity. Clearly, two increases combine to make a bigger increase, so the decrease in supply and the increase in demand create an increase in equilibrium price. The effect on quantity, however, is ambiguous because it's unclear whether a combination of a quantity decrease and a quantity increase results in an overall increase or decrease. The overall result on quantity will be determined by which shift is dominant, or larger in magnitude.

Finally, consider a case where supply increases and demand decreases. The increase in supply will decrease equilibrium price and increase equilibrium quantity, and the decrease in demand will decrease equilibrium price and decrease equilibrium quantity. Clearly, two decreases combine to make a bigger decrease, so the increase in supply and the decrease in demand create a decrease in equilibrium price. The effect on quantity, however, is ambiguous because it's unclear whether a combination of a quantity increase and a quantity decrease results in an overall increase or decrease. The overall result on quantity will be determined by which shift is dominant, or larger in magnitude.

The first case—the combination of a supply and demand increase—can be illustrated by the following set of graphs:



In the first case, the increase in supply is larger than the increase in demand, and it results in an overall price decrease. In the second case, the

increase in demand is larger than the increase in supply, and it results in an overall price increase.

Hints and Common Errors: It's common for students to draw simultaneous changes in supply and demand of the same magnitude and then conclude that either price or quantity stays the same as the result of the two changes. It's important to remember, however, that we don't know the relative magnitudes of the changes in supply and demand, and we get different answers, depending on which shift we draw as bigger. That said, it is possible for the two effects to perfectly cancel each other out and result in no change in either price or quantity.

2. Yes. If only supply or demand were changing, the result would be a single equilibrium point. However, when both supply and demand are changing at the same time, the set of possible intersections, or equilibrium points, is bounded by the original supply and demand curves. This means that it is no longer possible to predict a single new price and quantity in the market.

Appendix Study Problem

2. As shown in the graph below, an original equilibrium price and quantity of roses are marked by P_1 and Q_1 on January 31. As Valentine's Day approaches, the demand for roses increases, and

the demand curve shifts to the right. Stores and businesses that sell these beautiful roses also increase their supply of roses because they expect their sales will be higher during this time of the year. But since we know the price of roses spikes on Valentine's Day, the demand increased more than the supply of roses. This would result a higher new equilibrium price and quantity on February 14, as marked by P_2 and Q_2 , accordingly.

Note: If the supply of roses increases more than the demand, then the price will be lower than the original price.

