

EE 211 HW1 Answers

Mankiw, N.G., (2023) **Principles of Microeconomics**, 10th ed., Cengage, (ISBN-13: 978-981-5119-30-5)

Chapter 3

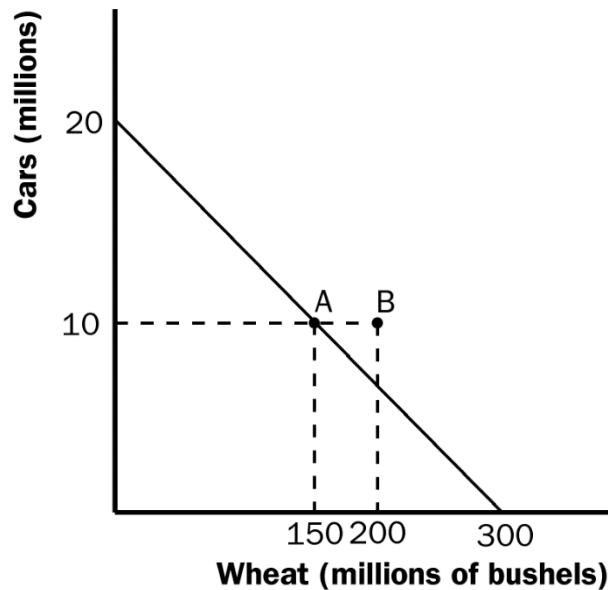
Full explanations are required for all questions.

Hints for Answers (Problems and Applications # 4,5, and 6)

4.

a. Because a Canadian worker can make either 2 cars a year or 30 bushels of wheat, the opportunity cost of a car is 15 bushels of wheat. Similarly, the opportunity cost of a bushel of wheat is 1/15 of a car.

b. Canadian's production possibilities frontier



If all 10 million workers produce 2 cars each, they produce a total of 20 million cars, which is the vertical intercept of the production possibilities frontier. If all 10 million workers produce 30 bushels of wheat each, they produce a total of 300 million bushels, which is the horizontal intercept of the production possibilities frontier. Because the trade-off between cars and wheat is always the same, the production possibilities frontier is a straight line.

If Canada chooses to consume 10 million cars, it will need 5 million workers devoted to car production. That leaves 5 million workers to produce wheat, who will produce a total of 150 million bushels (5 million workers times 30 bushels per worker). This is shown as point A.

c.

If the United States buys 10 million cars from Canada and Canada continues to consume 10 million cars, then Canada will need to produce a total of 20 million cars. So Canada will be producing at the vertical intercept of the production possibilities frontier. However, if Canada

gets 20 bushels of wheat per car, it will be able to consume 200 million bushels of wheat, along with the 10 million cars. This is shown as point B. Canada should accept the deal because it gets the same number of cars and 50 million more bushels of wheat.

5.

- a. English workers have an absolute advantage over Scottish workers in producing scones, because English workers produce more scones per hour (50 vs. 40).
Scottish workers have an absolute advantage over English workers in producing sweaters, because Scottish workers produce more sweaters per hour (2 vs. 1).
Comparative advantage runs the same way. English workers, who have an opportunity cost of $1/50$ sweater per scone (1 sweater per hour divided by 50 scones per hour), have a comparative advantage in scone production over Scottish workers, who have an opportunity cost of $1/20$ sweater per scone (2 sweaters per hour divided by 40 scones per hour).
Scottish workers, who have an opportunity cost of 20 scones per sweater (40 scones per hour divided by 2 sweaters per hour), have a comparative advantage in sweater production over English workers, who have an opportunity cost of 50 scones per sweater (50 scones per hour divided by 1 sweater per hour).
- b. If England and Scotland decide to trade, Scotland will produce sweaters and export them to England in exchange for scones.
A trade with a price between 20 and 50 scones per sweater will benefit both countries, as they will be getting the traded good at a lower price than their opportunity cost of producing the good in their own countries.
- c. Even if a Scottish worker produced just one sweater per hour, the countries would still gain from trade, because Scotland would still have a comparative advantage in producing sweaters. Its opportunity cost for sweaters would be higher than before (40 scones per sweater, instead of 20 scones per sweater before). But there are still gains from trade because England has a higher opportunity cost (50 scones per sweater).

6. The following table describes the production possibilities of two cities in the country of Baseballia:

	Pairs of Red Socks per Worker per Hour	Pairs of White Socks per Worker per Hour
Boston	3	3
Chicago	2	1

- a.
With no trade, 1 pair of white socks trades for 1 pair of red socks in Boston, because productivity is the same for the two types of socks. The price in Chicago is 2 pairs of red socks per 1 pair of white socks.
- b.
Boston has an absolute advantage in the production of both types of socks, because a worker in Boston produces more (3 pairs of socks per hour) than a worker in Chicago (2 pairs of red socks per hour or 1 pair of white socks per hour).

Chicago has a comparative advantage in producing red socks, because the opportunity cost of producing a pair of red socks in Chicago is 1/2 pair of white socks, while the opportunity cost of producing a pair of red socks in Boston is 1 pair of white socks.

Boston has a comparative advantage in producing white socks, because the opportunity cost of producing a pair of white socks in Boston is 1 pair of red socks, while the opportunity cost of producing a pair of white socks in Chicago is 2 pairs of red socks.

c.

If they trade socks, Boston will produce white socks for export, because it has the comparative advantage in white socks, while Chicago produces red socks for export, which is Chicago's comparative advantage.

d.

Trade can occur at any price between 1 and 2 pairs of red socks per pair of white socks.

At a price lower than 1 pair of red socks per pair of white socks, Boston will choose to produce its own red socks (at a cost of 1 pair of red socks per pair of white socks) instead of buying them from Chicago.

At a price higher than 2 pairs of red socks per pair of white socks, Chicago will choose to produce its own white socks (at a cost of 2 pairs of red socks per pair of white socks) instead of buying them from Boston.

Chapter 4

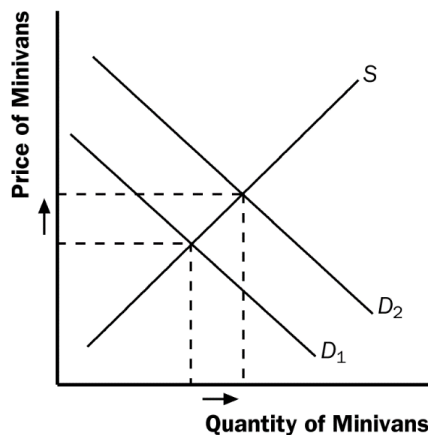
Students must label price and quantity of product correctly.

Full explanations are required for all questions. All graphs must be drawn clearly.

Hints for Answers (Problems and Applications # 3,4, 6, 8, 9, and 10)

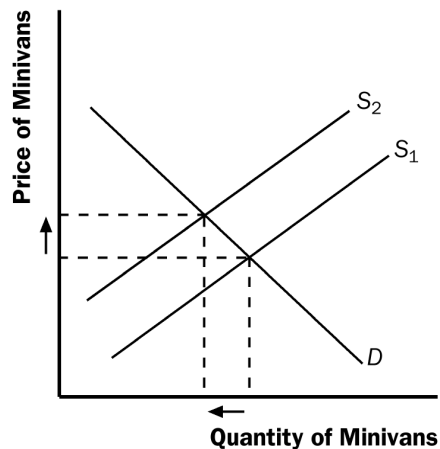
3.

a.



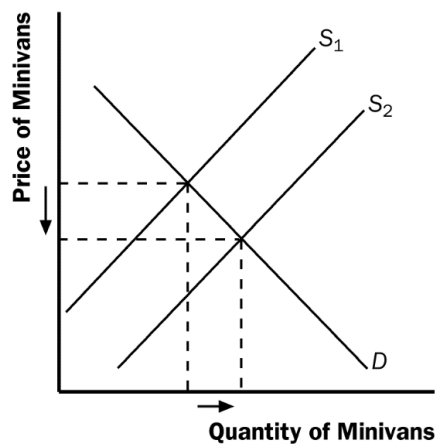
If people decide to have more children, they will want larger vehicles for hauling their kids around, so the demand for minivans will increase. Supply will not be affected. The result is a rise in both the price and the quantity sold.

b.



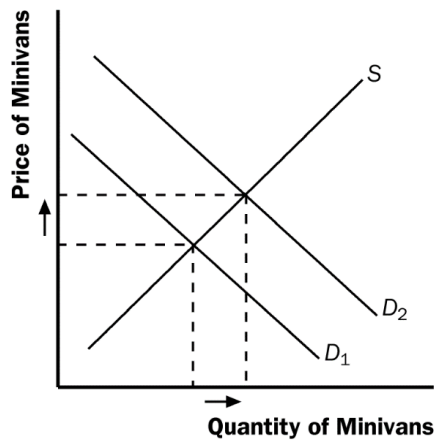
The cost of producing a minivan rises and the supply of minivans decreases. Demand will not be affected. The result is a rise in the price of minivans and a decline in the quantity sold.

c.



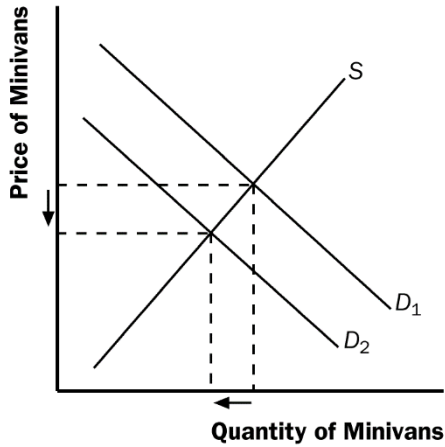
This reduction in firms' costs will result in an increase in supply. Demand is not affected. The result is a decline in the price of minivans and an increase in the quantity sold.

d.



The rise in the price of sport utility vehicles affects minivan demand because sport utility vehicles are substitutes for minivans. The result is an increase in demand for minivans. Supply is not affected. The equilibrium price and quantity of minivans both rise.

e.



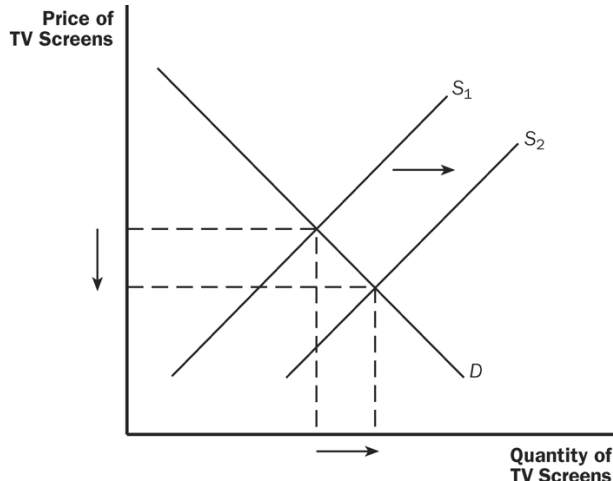
The reduction in peoples' wealth caused by a stock-market crash reduces their income, leading to a reduction in the demand for minivans, because minivans are likely a normal good. Supply is not affected. As a result, both the equilibrium price and the equilibrium quantity decline.

4.

a.

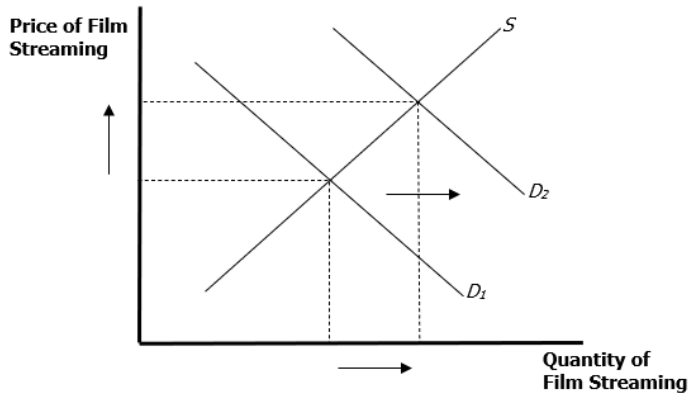
Video streaming services and TV screens are likely to be complements because you cannot watch a video without a television. Video streaming services and movie tickets are likely to be substitutes because a movie can be watched at a theater or at home. TV screens and movie tickets are likely to be substitutes for the same reason.

b.

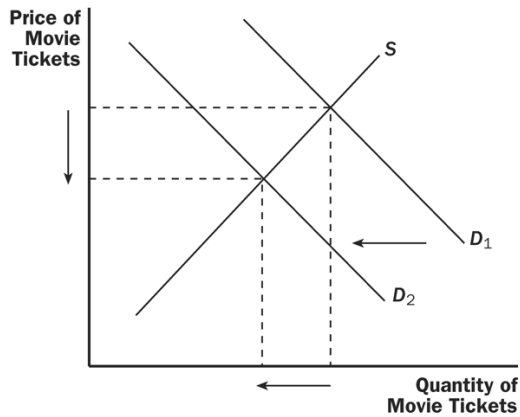


The technological improvement would reduce the cost of producing a TV screen, shifting the supply curve to the right. The demand curve would not be affected. The result is that the equilibrium price will fall, while the equilibrium quantity will rise.

c.



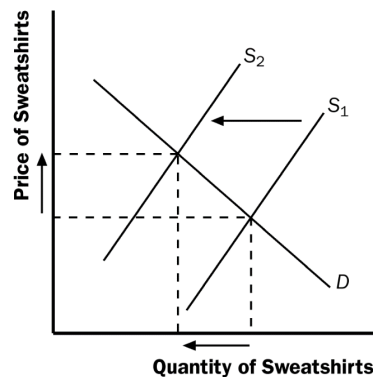
The reduction in the price of TV screens would lead to an increase in the demand for video streaming services because TV screens and video streaming are complements. The effect of this increase in the demand for video streaming is an increase in both the equilibrium price and quantity.



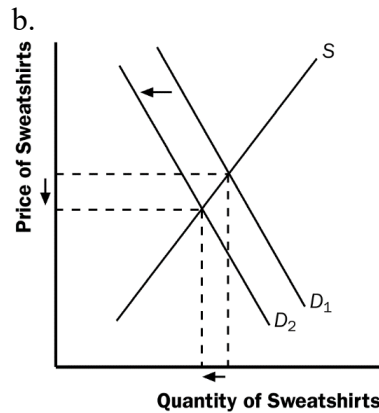
The reduction in the price of TV screens would cause a decline in the demand for movie tickets because TV screens and movie tickets are substitute goods. The decline in the demand for movie tickets would lead to a decline in the equilibrium price and quantity sold.

6

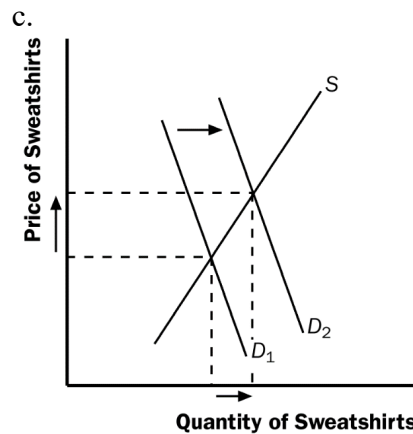
a.



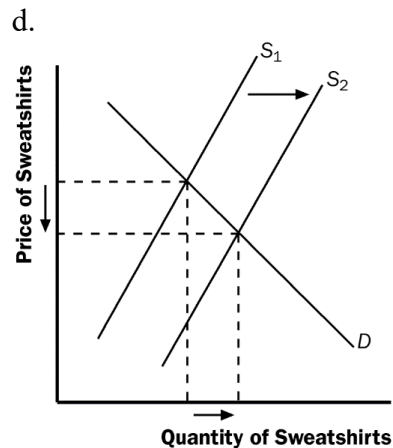
When a hurricane in South Carolina damages the cotton crop, it raises input prices for producing sweatshirts. As a result, the supply of sweatshirts shifts to the left. The new equilibrium price is higher and the new equilibrium quantity of sweatshirts is lower.



A decline in the price of leather jackets leads more people to buy leather jackets, reducing the demand for sweatshirts. A decline in both the equilibrium price and quantity of sweatshirts.



The effects of colleges requiring students to engage in morning exercise in appropriate attire raises the demand for sweatshirts. The result is an increase in both the equilibrium price and quantity of sweatshirts.



The invention of new knitting machines increases the supply of sweatshirts. The result is a reduction in the equilibrium price and an increase in the equilibrium quantity of sweatshirts.

8. The market for pizza has the following demand and supply schedules (Refer from e-book) .

a. Quantity supplied equals quantity demanded at a price of \$6 and quantity of 81 pizzas



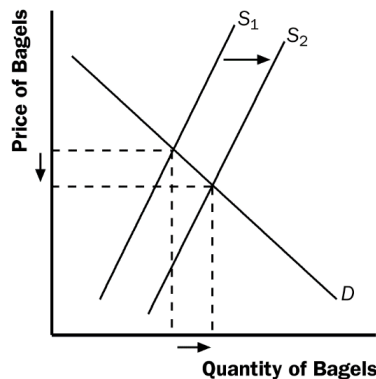
b. If the price were above \$6, quantity supplied would exceed quantity demanded, so suppliers would reduce the price to gain sales.

c. If the price were below \$6, quantity demanded would exceed quantity supplied, so suppliers could raise the price without losing sales. In both cases, the price would continue to adjust until it reached \$6, the only price at which there is neither a surplus nor a shortage.

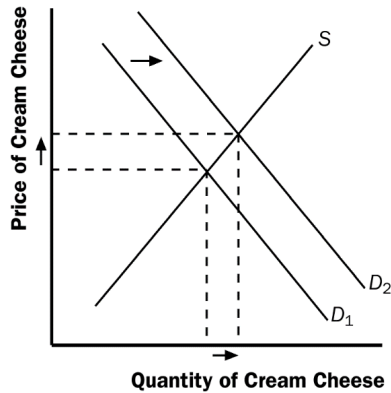
9. (Draw your own graphs!) The news of the increased health benefits from consuming oranges will increase the demand for oranges, increasing both the equilibrium price and quantity. If farmers use a new fertilizer that makes orange trees more productive, the supply of oranges will increase, leading to a fall in the equilibrium price but a rise in the equilibrium quantity. If both occur at the same time, the equilibrium quantity will definitely rise, but the effect on equilibrium price will be ambiguous.

10.

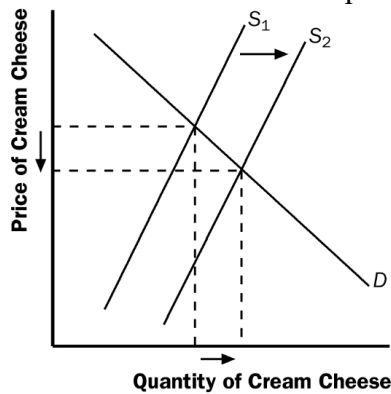
a.



Because flour is an ingredient in bagels, a decline in the price of flour would shift the supply curve for bagels to the right. The result would be a fall in the price of bagels and a rise in the equilibrium quantity of bagels.



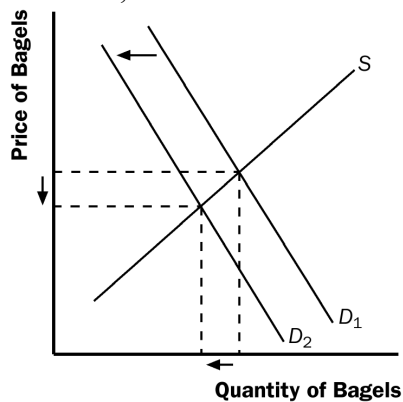
Because cream cheese is a complement to bagels, the fall in the equilibrium price of bagels increases the demand for cream cheese. The result is a rise in both the equilibrium price and quantity of cream cheese. So, a fall in the price of flour indeed raises both the equilibrium price of cream cheese and the equilibrium quantity of bagels.



Because milk is an ingredient in cream cheese, the fall in the price of milk leads to an increase in the supply of cream cheese. This leads to a decrease in the price of cream cheese, rather than a rise in the price of cream cheese.

b.

If the price of flour rose, it would lead to a fall in the price of cream cheese and a fall in the equilibrium quantity of bagels. Because the question says the equilibrium price of cream cheese has risen, it could not have been caused by a rise in the price of flour.



A rise in the price of milk would cause a rise in the price of cream cheese. Because bagels and cream cheese are complements, the rise in the price of cream cheese would reduce the demand for bagels. The result is a decline in the equilibrium quantity of bagels. So a rise in the price of milk does cause both a rise in the price of cream cheese and a decline in the equilibrium quantity of bagels.

Chapter 5

Full explanations and calculation are required for all questions. clearly.

Hints for Answers (Problems and Applications # 2,3, 5, and 10)

2.

a.

For business travelers, the price elasticity of demand when the price of tickets rises from \$200 to \$250 is $[(2,000 - 1,900)/1,950]/[(250 - 200)/225] = 0.05/0.22 = 0.23$.

For vacationers, the price elasticity of demand when the price of tickets rises from \$200 to \$250 is $[(800 - 600)/700] / [(250 - 200)/225] = 0.29/0.22 = 1.32$.

b.

The price elasticity of demand for vacationers is higher than the elasticity for business travelers because vacationers can choose a substitute more easily than business travelers.

3. (Use the midpoint method in your calculations)

a.

The percentage change in price is equal to $(2.20 - 1.80)/2.00 \times 100 = 20\%$.

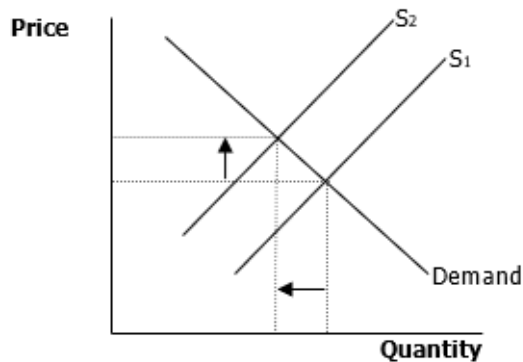
If the price elasticity of demand is 0.2, quantity demanded will fall by 4% in the short run $[0.20 \times 0.20]$.

If the price elasticity of demand is 0.7, quantity demanded will fall by 14% in the long run $[0.7 \times 0.2]$.

b.

Over time, consumers can make adjustments to their homes by purchasing alternative heat sources such as natural gas or electric furnaces. Thus, they can respond more easily to the change in the price of heating oil in the long run than in the short run.

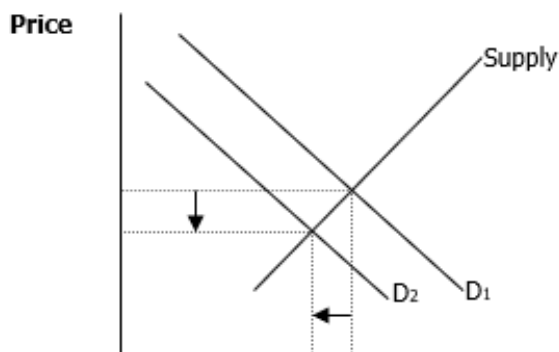
5.
a. and b



When a hurricane destroys half of the crop, the supply of coffee beans decreases, the price of coffee beans increases, and the quantity decreases.

When the price of coffee beans, an important input into the production of a cup of coffee, increases, the supply of cups of coffee decreases, the price of a cup of coffee increases, and the quantity decreases. Because cups of coffee have an inelastic demand, when the price of a cup of coffee increases, the total expenditure on coffee increases.

c.



When the price of coffee increases and the quantity demanded of coffee decreases, consumers demand fewer donuts because coffee and donuts are complements. When demand decreases, the price of donuts decreases. Because donuts have an inelastic demand, when the price of donuts decreases, the total expenditure on donuts decreases.