Chapter 3
Market demand and supply

Chapter summary

Demand and supply analysis is fundamental to an understanding of how a market economy works. The law of demand states that there is an inverse relationship between the price of a good or service and the quantity buyers are willing to purchase in a defined time period, ceteris paribus. This indicates that the demand curve is downward-sloping from left to right. The market demand curve is the horizontal summation of all individual demand curves in the market. Any price change will cause a change in the quantity demanded and is reflected as a movement along the demand curve. However, if some non-price determinant of demand changes, this will cause a change in demand that is reflected as a shift of the demand curve.

The supply curve is expressed as an upward-sloping curve from left to right. This is based on the law of supply, which states that there is a direct relationship between the price of the good and the quantity sellers are willing to offer for sale in a defined time period, ceteris paribus. The market supply curve is the horizontal summation of all individual supply curves in the market. Any price change will cause a change in the quantity supplied and is reflected as a movement along the supply curve. However, if some non-price determinant of supply changes, this will cause a change in supply and is reflected as a shift of the supply curve.

When we bring demand and supply together we have a market. Equilibrium is shown at the point of intersection of the demand and supply curves. Equilibrium exists at that price at which the quantity demanded is just equal to the quantity supplied. At the equilibrium, neither a surplus nor a shortage exists. If price is above equilibrium, then a surplus is observed (the quantity supplied exceeds the quantity demanded). Conversely, if the price is below equilibrium, a shortage will be observed. Surpluses cause prices to fall, while shortages cause prices to rise. In each case equilibrium is restored.

Key concepts

- Consumer sovereignty
- Law of demand
- Change in quantity demanded
- Change in demand
- Normal good
- Inferior good
- Substitute good
- Complementary good
- Law of supply
- Change in supply
- Change in quantity supplied
- Market
- Surplus
- Shortage
- Equilibrium
- Efficiency
- Price system

Instructional objectives

After completing this chapter, students should be able to:

- describe the laws of demand and supply and express them graphically

- understand and distinguish the difference between a change in quantity demanded (supplied) from a change in demand (supply), and be able to illustrate these graphically. A change in the quantity demanded (supplied) is reflected graphically as movement along a given demand (supply) curve, whereas a change in demand (supply) is reflected as a complete shift of the demand (supply) curve.
- express an increase in demand (supply) as a rightward shift and a decrease in demand (supply) as a leftward shift of the demand (supply) curve
- identify the causes of an increase and a decrease in demand (supply)
- graphically express market equilibrium
- understand that equilibrium exists at that price at which the quantity demanded equals the quantity supplied
- graphically express a surplus and a shortage
- understand that a surplus (shortage) exists whenever the price is above (below) equilibrium and the quantity supplied exceeds (is less than) the quantity demanded
- explain why a surplus (shortage) will cause the price to fall (rise) in the market and restore equilibrium.

Chapter 3 outline

Introduction

The law of demand

Exhibit 3.1: An individual buyer's demand curve for electronic games

Market demand

Exhibit 3.2: The market demand curve for electronic games

The distinction between changes in quantity demanded and changes in demand

Exhibit 3.3: Movement along a demand curve versus a shift in demand

Exhibit 3.4: Terminology for changes in price and non-price determinants of demand

Non-price determinants of demand

Number of buyers

Tastes and preferences

Income

Expectations of buyers

You're the economist: Can housing become an exception to the law of demand?

Prices of related goods

Exhibit 3.5: Summary of the impact of changes in non-price determinants of demand on the demand curve

Global perspective: It's brilliant – I am being rewarded not to use my car

The law of supply

Exhibit 3.6: An individual seller's supply curve for electronic games

You're the economist: Do enrolments in different university courses reflect the law of supply?

Market supply

Exhibit 3.7: The market supply curve for electronic games

The distinction between changes in quantity supplied and changes in supply

Exhibit 3.8: Movement along a supply curve versus a shift in supply

Exhibit 3.9: Terminology for changes in price and non-price determinants of supply

Non-price determinants of supply

Number of sellers

Technology

Input prices

Taxes and subsidies

Expectations of producers

Prices of other goods the firm could produce

Exhibit 3.10: Summary of the impact of changes in non-price determinants of supply on the supply curve

Analyse the issue: How governments override consumer sovereignty, and how, in the case of water, economists propose that it should be restored

A market supply and demand analysis

Exhibit 3.11: Demand, supply, and equilibrium for jeans (pairs per year)

Equilibrium price and quantity

Exhibit 3.12: The supply and demand for jeans

Economics and ethics

Key concepts

Summary

Study questions and problems

Answers to 'You're the economist'

Multiple-choice questions

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Hints for effective teaching

1 Spending some time on demand and supply analysis will pay off later, so don't rush through this material.

2 Use examples and diagrams as you go through demand and supply analysis.

3 Stress the distinction between a change in the quantity demanded (supplied) and demand (supply). The best way to illustrate these points is to use diagrams. The distinction is made so that we know whether, for example, people are buying more because the *price* went down (increase in the *quantity* demanded) or because of some *non-price* factor (increase in demand). Point out that in economics we are concerned with what causes what – with lines of causation. If the lines of causation get tangled, we get predictions that are useless. Note also that students often mix up the relationship, thinking that less quantity demanded leads to a higher price. They need to understand that a change in price changes quantity demanded (supplied), not the other way round.

4 Emphasise what is meant by an increase in demand (supply), as well as a decrease. For example, note that an increase in demand means buyers will buy more at any given price – the price hasn't changed yet people are buying more. Show this graphically and give them an example, for instance demand for houses. There will be some people willing to pay very high

prices (for houses in very good locations, say), some people willing to pay average prices (for ordinary houses), some people willing to pay low prices (for houses in poorer suburbs). If there is a general increase in population in this city, then there will be more houses demanded at every price level, i.e. a new price and quantity demanded relationship with original prices and new (increased) quantities demanded.

5 You could follow on with the housing example and have students think of some non-price determinants of demand or supply that are not mentioned in the book, but which would result in an increase or decrease in demand or supply – get the students involved in the class. It is likely that the examples they come up with can be ascribed to one of the non-price determinants anyway.

6 Use diagrams as a visual aid but stress reasoning. For example, explain that a surplus means more is put up for sale than buyers are willing to buy *at that particular price*. Therefore, sellers are faced with unwanted inventories. What is the logical action for them to take in such a situation? (What would the students do if they were in that situation?) The sellers reduce their price – have a clearance, or liquidation sale – to rid themselves of their excess stock. Likewise, a shortage means that some people will be willing and able to pay more just to get the item. In this way, there is an inherent tendency for prices to move toward equilibrium. Point out that this can be a process of trial and error; it doesn't necessarily happen automatically. Ask them to think about the situation as if they were the seller, taking candles or pots to a local market. If they had lots left over at the end of the first day they would realise that the price was too high. If they sold out very quickly the next time, the price was too low.

7 Stress that a surplus will cause *sellers* to bring down the price competitively. A shortage will cause *buyers* to bid up the price competitively.

8 It is usually a good idea to mention that demand and supply forces are at play in *every* market. This stuff is not just an academic exercise. Mention that there are at least three types of markets:

   a product markets (goods and services)

   b resource markets (land, labour and capital)

   c loanable funds markets.

   Wherever the demand and the supply is coming from (consumers, firms, employers, employees, borrowers and lenders and so on) the analysis remains the same regarding price and non-price factors and movements along or shifts of the curves.

Solutions to text problems

Global perspective

It's brilliant – I am being rewarded not to use my car (pp. 61–2)

1 *Is the change about price or a non-price determinant? It is about a change in price, of premiums, so it must involve a change in quantity demanded, not a change in demand. This is because when the price (premium) of driving at night increases, then drivers would undertake fewer journeys at night (less quantity demanded). The demand curve is downward sloping.*

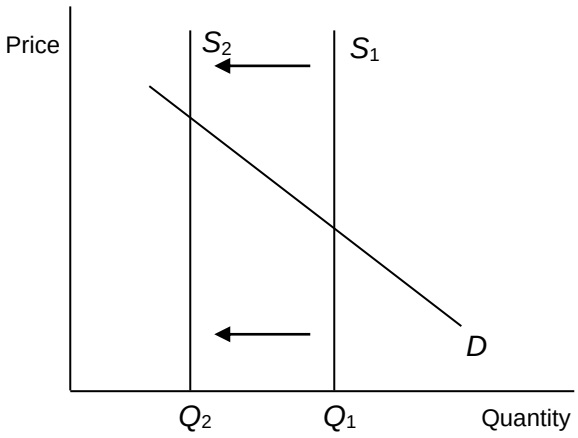
2 *When the annual cost of insurance is significantly lower, there is likely to be an increase in demand for motor cars. This time it is about a non-price factor, specifically the price of related goods, and the relationship here is of complements: motor cars and car insurance. A decrease in the price of insurance means more quantity demanded of insurance and more demand for motor cars. The demand for cars will shift to the right.*

3 *A four-fold increase in the price of pushbikes (now the relationship is of a substitute) will mean it is likely that Michele would use her car more,* ceteris paribus*.*

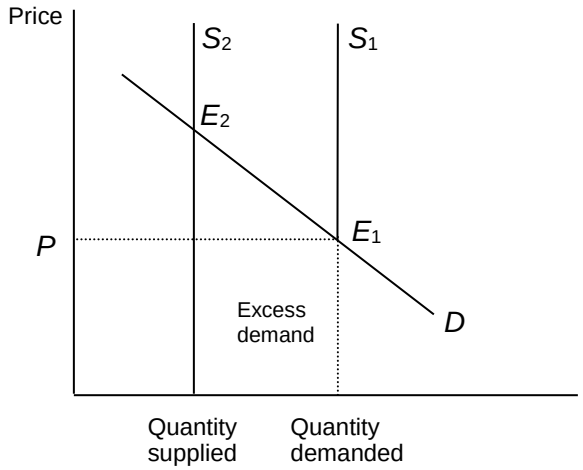
Analyse the issue

Economists propose flexible prices for urban water (pp. 68–70)

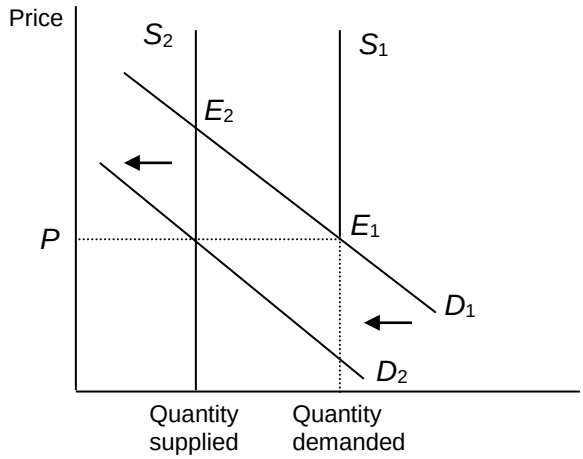
2 *The diagram shows the supply of water before (S_1) and after a drought (S_2) while the demand for water remains the same. Note the shape of the supply curve and the shift of the supply curve after the drought: the amount of water is independent of the price, hence the vertical supply curve; there is only a certain quantity of water initially and after the drought there is less quantity; the supply curve has shifted to the left.*



3 *If the price does not change to adjust for the decrease in the supply of water, it will result in excess demand because the price charged is lower than the market price. This is shown in the diagram below. There will be a shortage because, instead of a new equilibrium price of E_2 where $Q_d = Q_s$, the price has been kept at E_1 where $Q_d > Q_s$.*



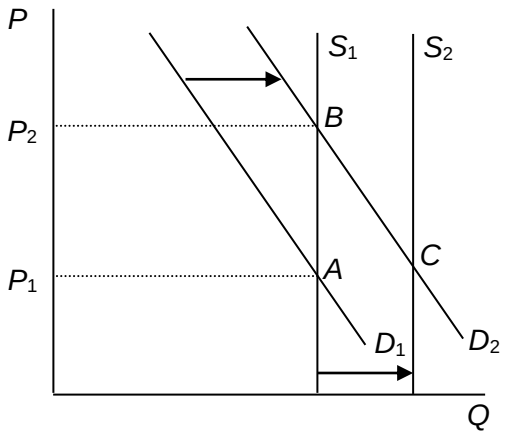
4 *When restrictions are put in place, the demand curve shifts to the left. This is shown by* D_2 *in the diagram below. This is due to regulation causing less demand for water.*



Study questions and problems: Solutions

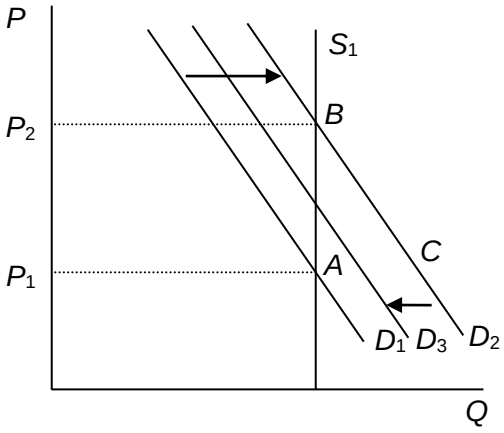
(pp. 77–8)

2

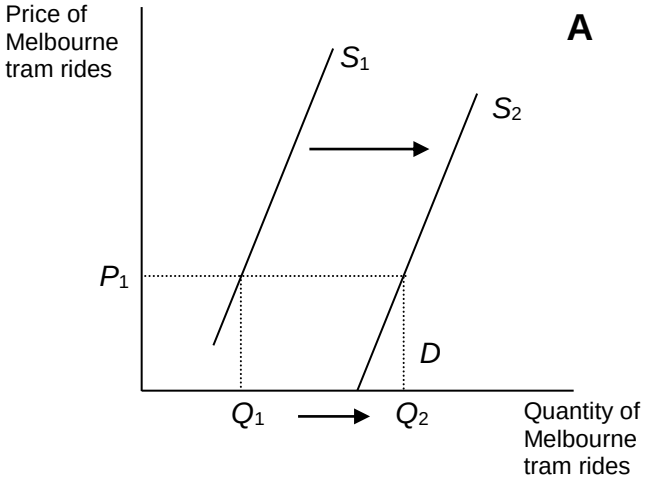


The road infrastructure is fixed at S_1, and demand increases from D_1 to D_2 with the population growth. The price of using the road should increase to reflect the increased demand but it is unlikely that the government would want to place any tolls on the use of the road, as tolls are very unpopular, and might not solve the problem of congestion and gridlock as commuters would travel on roads without tolls. The most likely policy would be to invest in further infrastructure to increase the supply of road infrastructure, shifting S_2 out to the right.

An alternative, less costly, and more environmentally sustainable policy would be to address the demand side of the equation through education and 'moral suasion' encouraging people to use public transport (assuming it is available). This would move demand from D_2 to D_3 and reduce congestion on the roads.



2



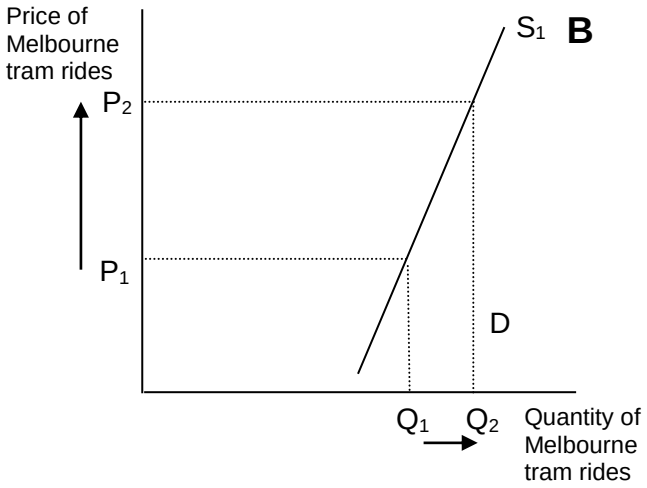


*Diagram **A** represents a situation where the supply of tram rides in Melbourne has increased significantly. One reason for this increase in supply might be an increase in the number of tram lines (building new lines), or it could be an increase in the number of scheduled tram services. As can be seen in diagram A, the number of tram rides available might increase from* S_1 *to* S_2*, and at* P_1 *this will mean see a shift of supply from* Q_1 *to* Q_2*. This shift in the supply curve is the result of a change in a non-price determinant of supply.*

*Diagram **B** represents a situation where the price has been increased but the supply of tram rides remains the same. The price of tram rides might increase in order to keep up with cost of living increases. The quantity of tram rides supplied increases from* Q_1 *to* Q_2*.*

Note the difference in wording 'increase in quantity supplied' and 'increase in supply' (see Exhibit 3.8). The demand curve is inelastic. These issues, the elasticity of supply and demand, will be discussed in detail in Chapter 5.

3 *a The demand for home insulation will decrease as its substitute, electricity, has become cheaper.*

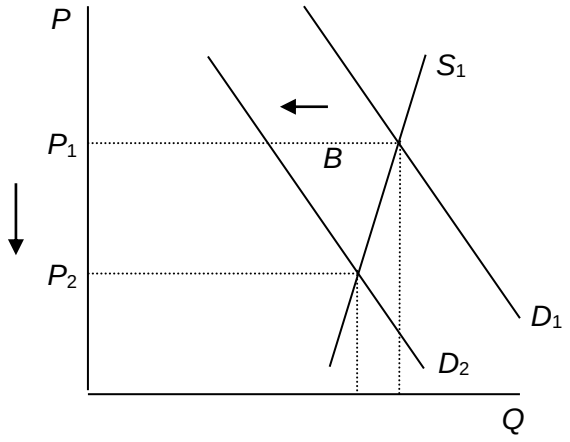
b The demand for battery-powered cars will decrease, as its substitute, electric cars, have become cheaper to operate.

c The demand for domestic gas will decrease because it becomes a more expensive substitute.

d The demand for air-conditioners will increase because electricity and air-conditioners are complementary goods.

5 *If the spokesperson is talking about a change in demand conditions leading to a fall in house prices this must refer to a decrease in demand, not a decrease in quantity demanded. Quantity demanded responds to a change in price, it doesn't cause it, and if house prices rose, there would be a decrease in quantity demanded. However, changes in non-price determinants do change demand (or supply), so in this case the number of buyers could have decreased, there could be a preference for apartments rather than houses, or changes in income or expectations, any of which would mean a decrease in demand.*

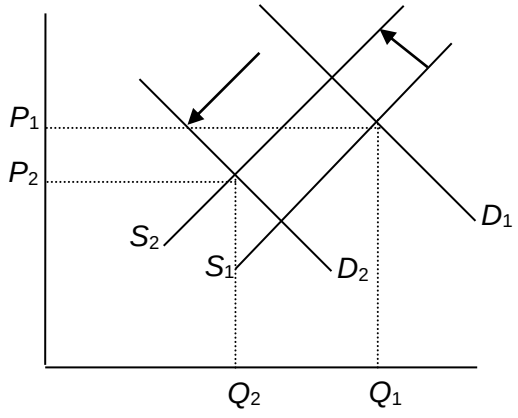
The graph would look like this:



Demand shifts inwards from D_1 *to* D_2*, price drops from* P_1 *to* P_2*.*

6 *The quantity of portable heaters sold has been decreasing, as they are a substitute for air-conditioners (assuming reverse cycle or ducted air conditioning that also heats the house in winter). Demand for air conditioners has been increasing for the usual reasons: increases in income, convenience, perception that air conditioners are safer than room heaters (less likely to cause a house fire or burn a child), the human desire to update goods (tastes and preferences) etc. On the supply side, the price of air-conditioners has decreased and the availability has increased due to improvements in technology, new manufacturers entering the market, and discovery of new raw materials/recycled materials. Therefore, due to an increase in demand for air-conditioners (shift rightwards in the demand curve) along with a decrease in cost of air-conditioners (increase in quantity demanded), the demand for the substitute product (room heaters) has decreased.*

7 *The demand and supply changes examined initially in question 5 are likely to bring about an decrease in price of room heaters. This is because demand is likely to decrease faster than the decrease in supply of room heaters. The following diagram illustrates this point. However, note that if supply shifts are greater than shifts in demand, then prices should increase. (Shifts creating new equilibrium situations will be examined further in the next chapter.)*



8 a *Supply increases (larger number of suppliers).*

b *Demand decreases (negative change in taste/preferences).*

c Demand increases (positive change in taste/preferences).

d Demand increases (expectations about future higher prices).

e Demand decreases (change in price of substitute).

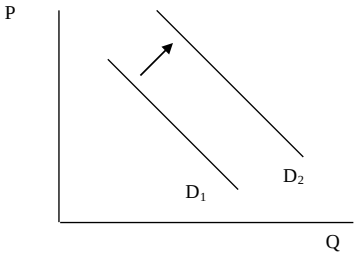
f Supply decreases (negative change in price of input).

g Supply increases (positive change in tax).

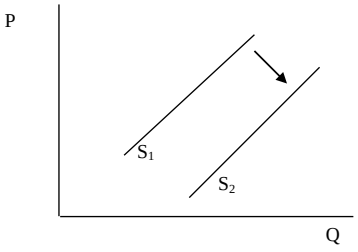
h Supply increases (positive change in technology).

8 See below for the diagrams. Note that (a) assumes a market for consumer goods and services.

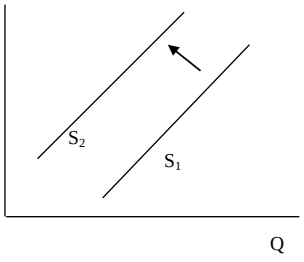
a



b



c



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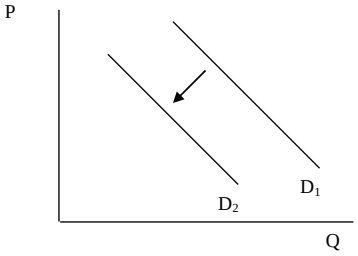

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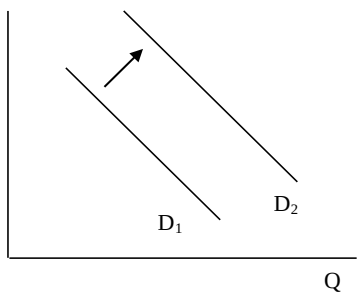

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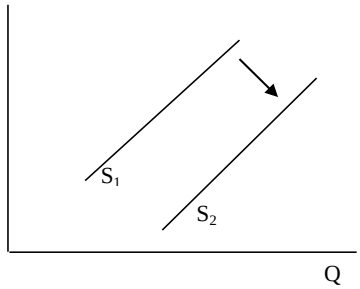

* Supply of pave rings would increase if the price was higher than the substitute of single stone rings

9 *The market price moves by trial and error toward the equilibrium price. If the market price is above the equilibrium price, there will be a surplus. If the market price is below the equilibrium price, there will be a shortage. (Use diagrams to illustrate this point.)*

10 *a Supply of cricket balls will remain constant; there has not been a change in the non-price factors of supply to shift the supply curve for cricket balls.*

b Supply of cricket bats increases – due to the change in a non-price factor of supply, more cricket bats can be provided at every price.

c The equilibrium price falls; the quantity of cricket bats supplied increases.

d The quantity demanded of cricket bats increases as the price has reduced.

11 *The increased number of videos being watched on YouTube will mean less demand for free-to-air and pay TV, as YouTube here is a substitute for TV.*

12 *Shortages of tickets exist for some Australian Rules football games as some games are very popular, e.g. when they are between top teams, or in the finals series. These shortages are due to excess demand (i.e. shortage of supply due to limited seatings). Surpluses of tickets exist when the entry prices remain unchanged but there is less quantity demanded of tickets because the teams are at the bottom of the ladder and there is little interest in the match. There is a fascinating website that provides statistics on all aspects of the games. It is possible to search attendances by year, which gives the averages for each club (where confirmation can be found that those teams at the top of the ladder attract the biggest numbers). Or the search can be by club giving attendances each year (where confirmation can be found that the highest attendances were in the years the team was doing well). See www.footywire.com.*

Multiple-choice solutions

(pp. 79–80)

1e *a smaller quantity demanded for good* X.
2a *the price of the good changes.*
3b *A downward movement along the demand curve for takeaway pizza*
4b *A change in the price of frocks*
5b *consumers should be able to make their own consumption choices without coercion from government or business.*
6b *a leftward shift in the demand curve for pearls.*
7c *increase the demand for oyster sauce.*
8d *shift the demand curve for cosmetics to the right.*
9d *The demand for the good*
10e *an increase in demand.*
11d *a firm to supply a larger quantity at any given price.*
12c *a leftward shift of the supply curve for restaurant meals.*
13d *a rightward shift in the supply curve for asparagus.*
14d *there is no justification for not allowing prices for water to rise as they do for fresh food.*
15d *a surplus will cause the price to decrease towards $30.*
16a *$1; 200.*
17c *a surplus of 100 units.*
18c *downward pressure on price.*

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