

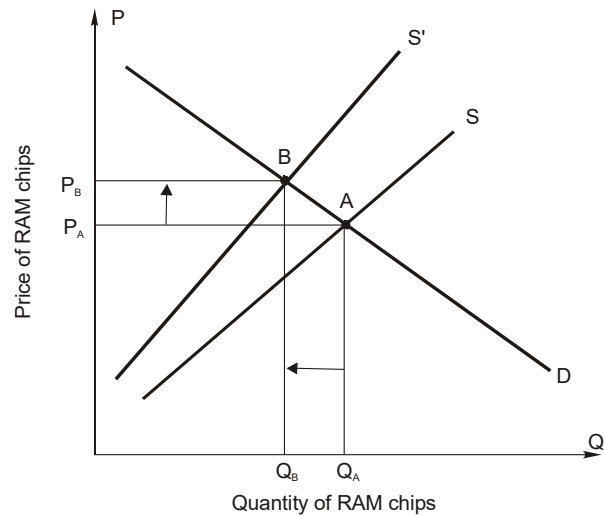
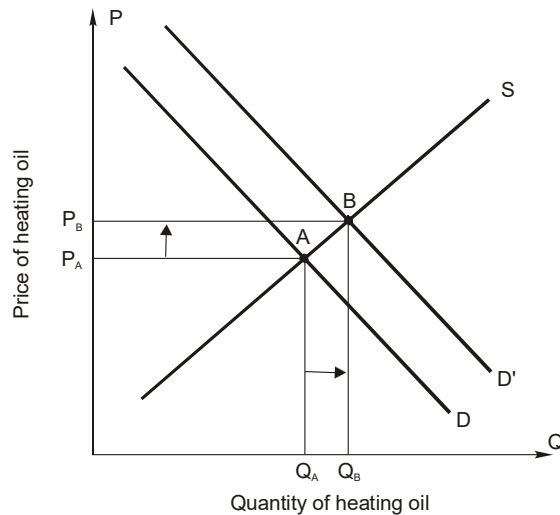
Chapter 2:
DEMAND, SUPPLY, AND MARKET EQUILIBRIUM

Answers to Applied Problems

1.
 - a. Demand will decrease, so price will decrease.
 - b. Supply will increase, so price will decrease.
 - c. Demand will increase, so price will increase.
 - d. Demand will decrease, so price will decrease.
 - e. Supply will decrease, so price will increase.
 - f. Supply will increase, so price will decrease.
 - g. Supply will increase (when the price of a complement in production increases), so price will decrease.
 - h. Demand will decrease, so price will decrease.

2.
 - a. Supply will decrease, so price will increase and output will decrease.
 - b. Supply will increase, so price will decrease and output will increase.
 - c. Demand will increase, so price will increase and output will increase.
 - d. This one is challenging. An increase in the price of Florida grapefruit could be interpreted as either a demand shifter (change in the price of a substitute in consumption) or a supply shifter (change in the price of a substitute in production) or BOTH simultaneously. If only demand decreases (supply constant), then price will decrease and output will decrease. If only supply increases (demand constant), then price will decrease and output will increase. If both happen simultaneously, then price will decrease but the change in output will be indeterminate.

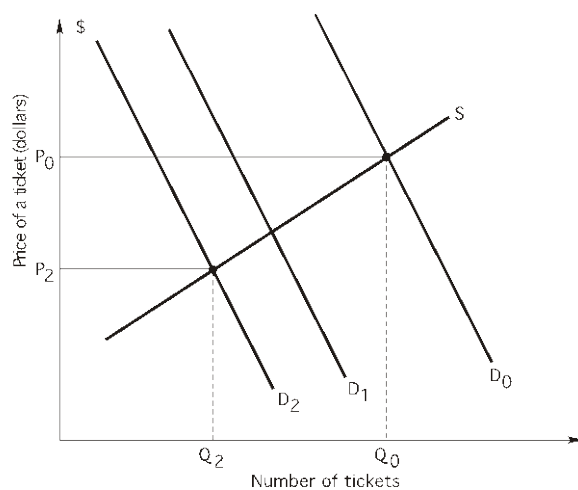
3.
 - a. An increase in demand for home heating oil causes demand for heating oil to shift rightward. In the absence of price controls, no shortage occurs because market price is bid up to P_B . An increase in demand causes equilibrium price and quantity to rise.
 - b. A decrease in supply of RAM chips does not cause a shortage in the absence of a price ceiling. A supply decrease shifts supply leftward, causing the equilibrium price of RAM chips to rise and equilibrium quantity to fall.



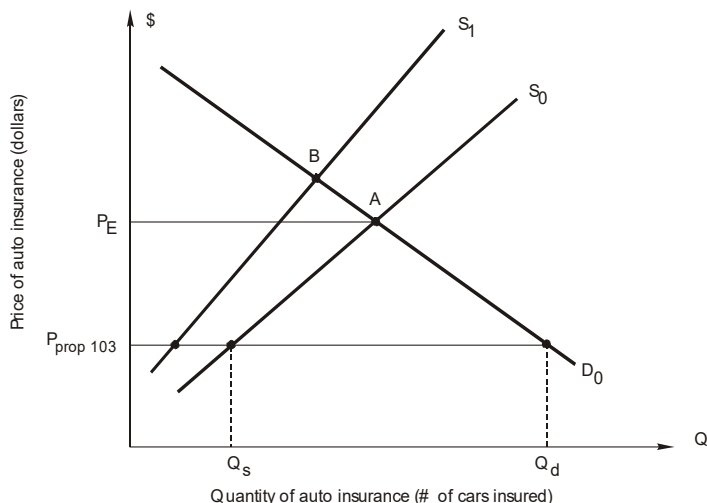
4.
 - a. No effect on demand (no shift)—just a movement up the demand.
 - b. Decrease demand for hotels.

- c. Demand for rental cars decreases.
 - d. Supply of overnight mail decreases.
5. Construct a demand and supply diagram like Panel A of Figure 2.12.
- a. Imposing rent controls creates a shortage of low-income housing, which decreases the quantity supplied at the lower rent imposed by the controls compared to the amount of housing supplied at the market-clearing (higher) rent level.
 - b. No, the shortage created by rent controls means that more low-income families are willing and able to pay for rent-controlled housing than the amount of rent controlled housing that is available. Compare this to the situation before rent controls in which markets clear at higher rent levels.
 - c. In the short run, families who are able to get housing at the lower rent levels may be better off. In many cases, however, families must pay large bribes “under the table” to get into the rent-controlled homes. And, as time passes, landlords have little or no incentive to make repairs to the rent-controlled units. Politicians may also gain from rent controls because it appears to be a compassionate policy to help the poor. The losers are the families who cannot get the rent-controlled housing even though they are willing and able to pay the higher market-clearing rent.
 - d. History has shown that rent-controlled districts over time fall into a state of decay and ruin. Rent-controlled properties undermine the incentive for landlords to maintain the housing. With a shortage of low-income housing, low rent housing will be fully rented no matter what condition the roof or plumbing might be in. Furthermore, if landlords let the property decay sufficiently, renters will leave, and the property can be converted to some other use (commercial or industrial use) not subject to rent controls.
 - e. Taxpayers, genuinely compassionate about providing more housing for low-income families, could offer builders subsidies to build low-income housing. In the absence of rent controls, this would shift supply rightward and equilibrium rents would fall. Also, there would be no shortage of low-income housing. Owners would have incentives to properly maintain roofs and plumbing. Of course building subsidies would cost real money; but everyone knows that there’s no such thing as a free lunch (well, maybe not everyone knows this).

6. In the graph, let D_0 be the initial demand for tickets to Disneyland and S_0 be the supply of tickets to Disneyland. Slowing tourism causes demand to decrease, as represented by the demand curve D_1 . The new rides at Six Flags further reduce demand to D_2 . These events all result in lower ticket prices at Disneyland as well as reduced attendance. This is not a violation of the law of demand since price is falling due to a decrease (shift) in demand, not a movement along a given demand curve.

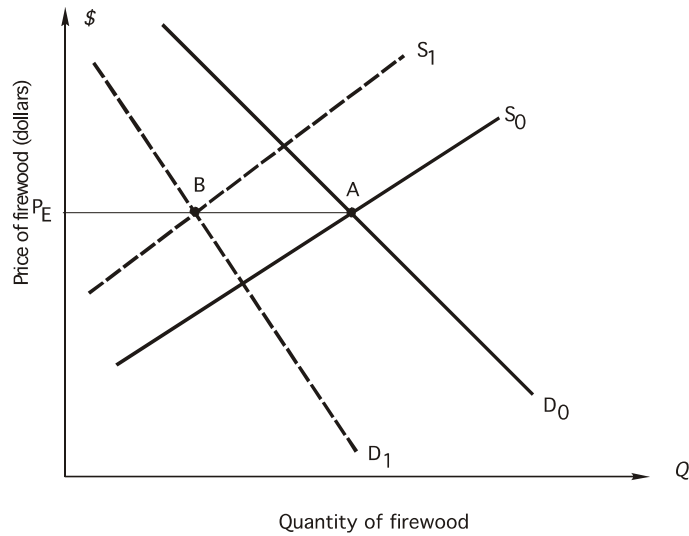


7. In the graph, S_0 and D_0 are the supply and demand curves for auto insurance *before* Proposition 103 is passed. P_E is the price of auto insurance. After Proposition 103 passes, $P_{prop103}$ is the ceiling price established by passage of Proposition 103. The result is a shortage of auto insurance in California. This shortage gets worse over time as the costs of providing insurance rise because supply shifts leftward (S_1) increasing the gap between Q_d and Q_s (at $P = P_{prop103}$). If Proposition 103 is defeated, no price ceiling will be forthcoming and no shortage will occur. The increasing costs of providing insurance will cause insurance rates to rise (from A to B).

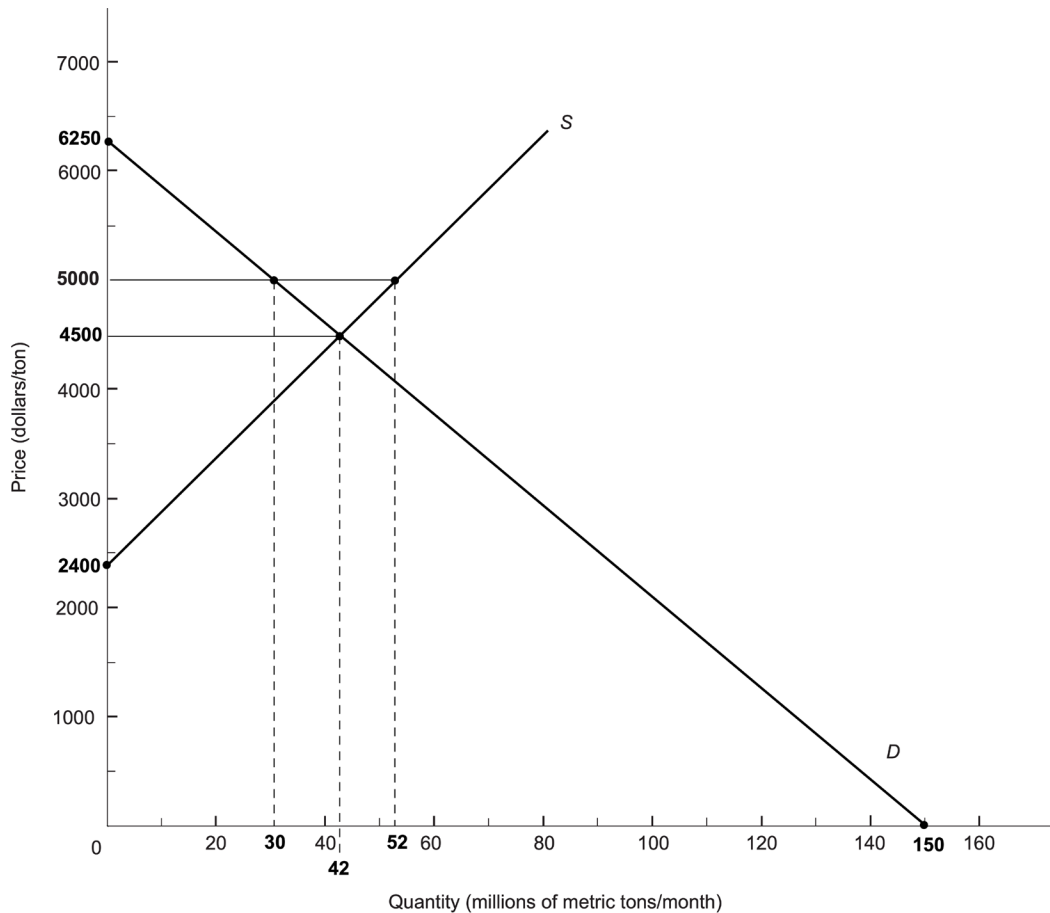


8. a. Increase in the price of a complement goods causes demand to shift leftward. Movie ticket prices fall and ticket sales fall.
 b. Decrease in the price of a substitute good causes demand to shift leftward. Movie ticket prices fall and ticket sales fall.
 c. Presumably, pay-per-view movies on cable are more convenient to some consumers than going to the movie theater, thereby changing some consumers' tastes away from theater movies toward pay-per-view movies. Demand shifts leftward due to the change in tastes, and movie theater ticket prices fall and ticket sales fall.
 d. The end of the strike increases the number of movie scripts available, lowering the price producers must pay to get a movie script. The decrease in price of an input (movie scripts) increases the supply of movies out of Hollywood. Supply shifts rightward. Movie ticket prices fall and ticket sales rise.
 e. As in part *d*, a decrease in the price of an input causes supply to shift rightward. Movie ticket prices fall and ticket sales rise.
9. a. The new process causes an increase in supply, shown as a rightward shift in the supply of crude oil curve. The rightward shift in supply of crude oil does NOT cause a surplus because the equilibrium price of crude oil falls until quantity demanded equals quantity supplied. The market clears at the now lower price of crude oil. No surplus arises because the lower crude price results in an increase in quantity demanded of crude oil, which works to eliminate any surplus. The end result of the new process is to decrease the equilibrium price of crude oil and increase the quantity of crude oil consumed and produced in equilibrium.
 b. Even in the unlikely event that no new oil deposits are ever discovered, growing worldwide demand for crude oil would still be met. Rightward shifts in demand, supply constant, would simply drive up the equilibrium price of crude oil. No shortage would occur unless governments impose price ceilings on crude oil preventing its price from rising to market clearing levels.
10. In the figure, the environmental curbs on burning wood causes supply to shift leftward from S_0 to S_1 . The substitution from burning wood to gas hearths is represented by the leftward shift in demand from D_0 to D_1 . Comparing initial equilibrium point A to B , the price of firewood has remained unchanged while the quantity of firewood burned decreases.

11. Demand and supply both increase simultaneously. An increase in customers (N) causes demand to shift rightward. An increase in the number of businesses in a market (F) causes supply to shift rightward. Equilibrium output definitely increases, but the effect of the Internet on equilibrium price is indeterminate.



12. a. Your sketch of demand and supply should look like:



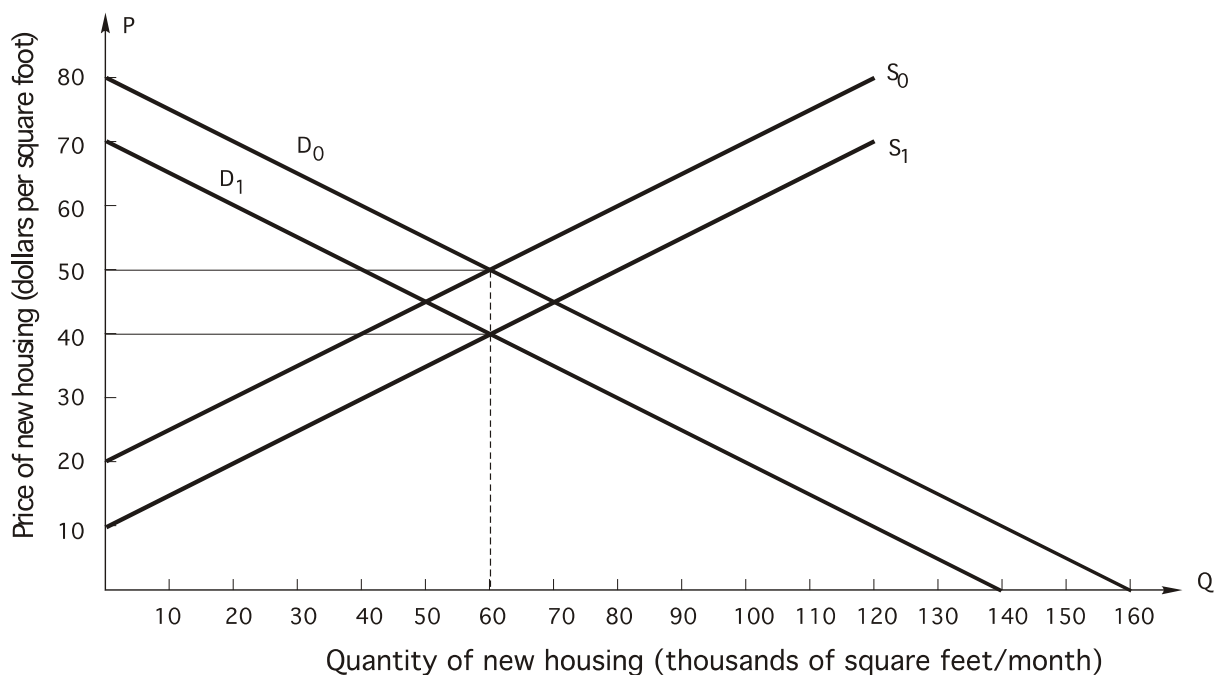
- b. At \$5,000 per metric ton, quantity demanded is 30 metric tons per year ($= 150 - 0.024 \times 5,000$) and quantity supplied is 52 metric tons per year ($= -48 + 0.020 \times 5,000$). So, the monthly rate of inventory growth is 22 tons per month ($= 52 - 30$).
- c. The global market-clearing price of primary aluminum is predicted to be \$4,500:

$$\begin{aligned}
 Q_d &= Q_s \\
 150 - 0.024P &= -48 + 0.020P \\
 198 &= 0.044P \\
 \frac{198}{0.044} &= 4,500 = \bar{P}
 \end{aligned}$$

Price is currently \$5,000, which is too high to clear the market and Rusal is correct to predict a fall in aluminum prices.

Answers to Homework Exercises in Student Workbook

- Normal. The coefficient on M is positive. Thus $\Delta Q_d / \Delta M$ is positive and housing is a normal good.
- Substitutes. The coefficient on R is positive. Thus $\Delta Q_d / \Delta R$ is positive, and three-bedroom apartments are substitutes for new housing.
- $Q_d = 160 - 2P$
- See the figure below:



5. Yes, because an increase in a factor price should cause Q_s to get smaller (i.e., $\Delta Q_s / \Delta P_F$ is negative).
6. $Q_s = -40 + 2P$
7. See the figure above.
8. $\bar{P} = \$50$ and $\bar{Q} = 60$
9. Yes; yes.
10. $CS = .5 \times 60 \times (\$80 - \$50) = \900 ; $PS = .5 \times 60 \times (\$50 - \$20) = \900 ; $SS = \$1,800$
10. $Q_d = 140 - 2P$
11. $Q_s = -20 + 2P$
12. $\bar{P} = \$40$ and $\bar{Q} = 60$