1. Consider the market for minivans. For each of the events listed here, identify which of the determinants of demand or supply are affected. Also indicate whether demand or supply increases or decreases. Then draw a diagram to show the effect on the price and quantity of minivans.

(A) people decide to have more children. 
(B) Engineers develop new automated machinery for the production of minivans. 
(C) The price of Sports Utility Vehicles rises. 
(D) A stock-market crash lowers people's wealth and a strike by steelworkers raises steel prices.

**Answer:**

(A) Demand increases, so the price rises and the quantity rises.
(B) Supply increases, so the price falls and the quantity rises.
(C) Demand increases, so the price rises and the quantity rises.
(D) Demand decreases and supply decreases, so the quantity certainly falls and the change in the price is ambiguous.

2. A survey shows an increase in drug use by young people. In the ensuing debate, two hypotheses are proposed:

Hypothesis I: Reduced police efforts have increased the availability of drug on the street.

Hypothesis II: Cutbacks in education efforts have decreased awareness of the dangers of drug addiction.

(A) Use supply-and-demand diagrams to show how each of these hypotheses could lead to an increase in the quantity of drugs consumed.

(B) How could information on what has happened to the price of drugs help us to distinguish between these explanations?

**Answer:**

(A) Hypothesis I: Supply increases and the supply curve shifts to the right, so the price falls and the quantity rises. Hypothesis II: Demand increases and the demand curve shifts to the right, so the price rises and the quantity rises.

(B) Hypothesis I: The price falls; Hypothesis II: The price rises.
3. Explain why the following might be true: A drought around the world raises the total revenue that farmers receive from the sale of grain, but a drought only in Kansas reduces the total revenue that Kansas farmers receive.

**Answer:** The demand for the world grain is relatively inelastic, while the demand for the Kansas grain is relatively more elastic. As a worldwide drought reduces the supply of the world grain, the world price of grain rises significantly and the quantity of grain falls insignificantly. Therefore, total revenue that world farmers receive rises. On the other hand, as a drought only in Kansas reduces the supply of Kansas grain, the price of grain rises insignificantly and the quantity falls significantly. Therefore, total revenue that Kansas farmers receive falls.

4. Congress and the president decide that the United States should reduce air pollution by reducing its use of gasoline. They impose a $0.50 tax for each gallon of gasoline sold.
   (A) Should they impose this tax on producers or consumers? Explain carefully using a supply-and-demand diagram.
   (B) If the demand for gasoline were more elastic, would this tax be more effective or less effective in reducing the quantity of gasoline consumed? Explain with both words and a diagram.
   (C) Are consumers of gasoline helped or hurt by this tax? Why?
   (D) Are workers in the oil industry helped or hurt by this tax? Why?

**Answer:**
(A) Both ways lead to the same results.
(B) More effective in reducing the quantity of gasoline consumed
(C) Hurt, because consumer surplus certainly falls due to this tax.
(D) Hurt, because the reduction in the sale quantity of gasoline results in a decrease in the demand for workers in the oil industry. Therefore, the wage that workers receive falls and the employment falls as well.

5. Qantas operates a fleet of over 100 Boeing jet aircraft. Commercial passenger jets must be operated by a pilot and co-pilot. Many jets carry cargo in their "bellies", under the passenger seating areas. Consider each of the following costs. Identify which are joint costs of passenger and belly cargo services, which are fixed costs of passenger service, and which are both.
   (A) Cockpit personnel: All jets, large and small, require a pilot and co-pilot. Belly cargo service requires no additional officers in the cockpit.
(B) Airport landing fees: Some airports charge landing fees by weight of the aircraft, while others levy a fixed fee, regardless of weight.

(C) Fuel: Larger aircraft and those carrying heavier loads will consume relatively more fuel.

**Answer:**

(A) Joint cost, and also a fixed cost.

(B) If the landing fee varies with weight, then it is not joint or fixed. If a jet carries an additional 100 pounds of cargo, the airline must pay additional fees. Similarly, if the jet carries an additional passenger. If the landing fee is fixed, then it is a joint cost and a fixed cost.

(C) Neither a joint cost, nor a fixed cost. If a jet carries an additional 100 pounds of cargo, the airline must spend more on fuel. Similarly, if the jet carries an additional passenger.

6. In the 1970s, members of OPEC decided to raise the world price of oil to increase their incomes. These countries accomplished this goal by jointly reducing the amount of oil they supplied. From 1973 to 1974, the price of oil rose more than 50%. Then a few years later, OPEC did the same thing again. From 1979 to 1981, the price of oil approximately doubled. Yet, OPEC found it difficult to maintain a high price. From 1982 to 1985, the price of oil steadily declined about 10% per year. In 1990, the price of oil was back to where it began in 1970, and stayed at that low level throughout most of the 1990s. Use the demand-and-supply diagrams to show the short run and long run effects of the reduction in the oil production.

**Answer:** The short-run demand for oil is inelastic (Short-run demand curve is steeper), while the long-run demand for oil is more elastic (Long-run demand curve is flatter or even flat). As the supply of oil decreases, the price rises significantly in the short run. However, the price falls back to almost the original level in the long run.

7. Typical real-estate broker: "In California, the seller always pays the broker's commission, so, buyers get brokerage services free."

MBA: "If the custom were for the buyer to pay the commission, then would sellers get brokerage services free?"
Real-estate broker, clearly losing patience: "That is a purely hypothetical scenario, but if that situation were to arise, yes, I guess you're right."

(A) Assume that each seller pays a brokers' commission of $18,000. Then, the supply of houses includes the cost of brokerage. Illustrate the market equilibrium with a price of $310,000 per house and sale of 200,000 houses a year.

(B) Now suppose that buyers rather than sellers pay the $18,000 commission. Using your figure, illustrate the following: (i) shift the supply curve down by $18,000 since sellers do not pay the commission, and (ii) shift the demand curve down by $18,000 since buyers now pay the commission.

(C) Compare the market equilibria of (A) and (B) in terms of (i) the net price received by sellers, and (ii) the net price paid by buyers. (Net prices are net of brokerage commission, if any).

**Answer:**

The net price would not be affected for either buyer or seller.

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8. In 2004, U.S. consumer products manufacturers distributed 27.548 billion coupons, with a face value of over $280 billion, of which a mere 1.2% were redeemed by consumers. Why do manufacturers spend millions of dollars to distribute coupons when the redemption rate is so low? Why don’t they manufacturers directly cut the wholesale prices of the products, which would be much cheaper to administer?

(A) Some say that retailers would absorb a direct wholesale price cut instead of passing it on to consumers. They argue that, by contrast, retailers cannot absorb the value of coupons. Suppose that the retail sector is perfectly competitive. Compare the demand-supply equilibrium in the retail market with (i) a wholesale price cut of 50 cents and (ii) widespread distribution of 50-cent coupons. For this part, you
should apply the analysis of tax incidence from chapter 6, treating a price cut or coupon like a negative tax, and may assume that all consumers use coupons.

(B) Would there be any difference between the wholesale price cut and using coupons if the retailer were a monopoly? (Continue to treat a price cut or coupon like a negative tax, and assume that all consumers use coupons.)

(C) Explain how coupons may be used to discriminate among consumers on price. Compare this explanation to the argument that retailers would absorb a wholesale price cut.

**Answer:**

(A) **Competitive retail market**

(i) The 50-cent wholesale price cut will shift down the retail supply curve by 50 cents (increase the supply), resulting in a lower retail price and larger quantity. Referring to the Figure, the original equilibrium is at a. The new equilibrium is at c, with price $P'$ and quantity $Q$. How much the retail price falls will depend on the price elasticities of demand and supply. (ii) The issuance of coupons will affect the demand side. Assuming that all consumers use 50-cent coupons, this will shift the retail demand up by 50 cents (increase the demand), resulting in a higher retail price and larger quantity. Referring to the Figure, the original equilibrium is at a. The new equilibrium is at b, with price $P''$ and quantity $Q$. The net price to the consumer is $P'' - 50 = P'$. Comparing (i) and (ii), the final equilibrium in the retail market will be the same -- the new quantity of sales and the net price to the consumer will be the same.
Monopoly retail industry  

(i) Then, a wholesale price cut would reduce the monopoly’s marginal cost by 50 cents. The monopoly would maximize profit at the sales quantity where the (unchanged) MR = the new MC. The new price is P’ and the sales are Q’. (ii) Assuming all consumers use the 50-cent coupons, then the coupons would shift the retail demand up by 50 cents. This would shift up the monopoly’s MR by 50 cents also. The monopoly would maximize profit at the sales quantity where the new MR = the (unchanged) MC. The new price is P’’ and the sales are Q’. The net price to the consumer is P’’ - 50 = P’. The figure shows the impact on the retail market will be the same -- the new quantity of sales and the net price to the consumer will be the same. Hence, there is no difference between the wholesale price cut and using coupons.

(C) In reality, not all consumers use coupons. Assuming that consumers with more elastic demand are more likely to use coupons, the retailer can use coupons to target a discount (and hence a lower price) at the consumer segment with the more elastic demand. This is a case of indirect segment discrimination.