練習題

1. Zoe 嘗試將她的時間分配在兩項工作，一項是正職，擔任婚禮攝影師，每小時可以有 27 美元的工資，且工作時間可以由她選擇；另外一項工作是化石收藏家，她能收到的報酬決定於化石的價格及她能找到的化石數量。不管報酬多少，Zoe 對這兩項工作並無偏好，而她能找到多少化石的數量是根據她每天能花多少小時去尋找而定，這些訊息都顯示在下表：

|  |  |
| --- | --- |
| 每天花費時間（小時） | 找到的化石總數 |
| 1 | 5 |
| 2 | 9 |
| 3 | 12 |
| 4 | 14 |
| 5 | 15 |

a. 請建立一張表格，其第一行導出每顆化石價格自 0 美元至 30 美元之間，每增加 1 美元價格所增加之收益資料，及在該表的第二行導出 Zoe 每日在對應價格水準下，所願意供給的化石數量。

b. 將價格置放在縱軸，橫軸則置放每日找到的化石數量，然後將上述資料繪製於該圖形中，則該曲線被稱為什麼？

a. If the price of a fossil is less than $6, Zoe should devote all her time to photography

because when the price is, say, $5 per fossil, an hour spent looking for fossils will give her 5($5) = $25, or $2 less than she’d earn doing photography. If the price of fossils is 6, Zoe should spend one hour searching, will supply 5 fossils, and will get $30 in revenue, which is $3 more than she would earn from photography. However, an additional hour would yield only 4 additional fossils or $24 additional revenue, so she should not spend any further time looking for fossils. If the price of fossils rises to $7, however, the additional hour gathering fossils would yield an additional $28, so gathering fossils during that hour would then be the best choice, and Zoe would therefore supply 9 fossils per day. Using this reasoning, we can derive a price-quantity supplied relationship for fossils as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Hours per day** | **Total fossils per day** | **Additional number of fossils found** | **Lowest price per fossil** |
| 1 | 5 | 5 | $27/5 = $5.40, or $6.00 |
| 2 | 9 | 4 | $27/4 = $6.75, or $7.00 |
| 3 | 12 | 3 | $27/3 = $9.00 |
| 4 | 14 | 2 | $27/2 = $13.50, or $14.00 |
| 5 | 15 | 1 | $27/1 = $27.00 |

1. When we plot the points from the table we derived in (a), we get Zoe’s daily supply curve for fossils:



2. 在一個競爭產業中僅有兩家廠商的供給曲線分別為 P 5 2Q1 及 P 5 2 1 Q2，其中 Q1 為廠商 1 的產出，Q2 為廠商 2 的產出，則產業供給曲線為何？（提示：將兩條曲線畫在一起，然後在不同的特定價格下，將兩家廠商的個別產量相加）

The market supply curve (right) is the horizontal summation of the supply curves of the individual market participants (left and center).



Horizontal summation means holding price fixed and adding the corresponding quantities. Thus, at a price of $2 we add the associated values of quantity supplied for S1 (1.0) and S2 (0.0) to get the associated industry quantity supplied of 1.0. Repeating for price levels of $0, $4, and $6 generates our graphical solution.

For those who prefer a more algebraic solution, you can derive the market supply curve algebraically by solving each individual supply curve for quantity and adding together the quantities.

That is, the first step is to do the following: for *P* = 2*Q*1, divide by 2 to get *Q*1= *P*/2 and for *P* = 2 + *Q*2, subtract 2 from both sides to get *Q*2 = *P* - 2.

The second step is to add together the quantities; however, pay careful attention to the

region for which the supply curves don't overlap (here, the region *P* < 2). For the region *P* < 2, the market supply is the same as firm 1's supply *Q* = *P*/2 or *P* = 2*Q*. For *P* > 2, we add *Q*1 + *Q*2 to get *Q* = P/2 + (*P-* 2), which reduces to *Q* = (3*P*/2) - 2. Rewriting this in terms of P, we have *P* = (4/3) + (2/3)*Q* for *P* >2. Expressed algebraically, the market supply curve is thus *P* = 2*Q* for *P* < 2 and *P* = (4/3) + (2/3)*Q* for *P* > 2.

3. 一家價格接受廠商生產冷氣機，一台冷氣機的市場價格為 120 美元，其總成本訊息顯示於下表中：若廠商要追求利潤極大化之目標，每天應生產多少台冷氣機？

|  |  |
| --- | --- |
| 每天生產的冷氣機總數 | 總成本（**$** ／天） |
| 1 | 100 |
| 2 | 150 |
| 3 | 220 |
| 4 | 310 |
| 5 | 405 |
| 6 | 510 |
| 7 | 650 |
| 8 | 800 |
|  |  |

1. The marginal cost of each of the first 6 air conditioners produced each day is less than $120, but the marginal cost of the 7th air conditioner is $140. Therefore, the company should produce 6 air conditioners per day.

|  |  |  |
| --- | --- | --- |
| **Air conditioners per day** | **Total cost ($ per day)** | **Marginal cost ($ per day)** |
| 1 | 100 | 100 |
| 2 | 150 | 50 |
| 3 | 220 | 70 |
| 4 | 310 | 90 |
| 5 | 405 | 95 |
| 6 | 510 | 105 |
| 7 | 650 | 140 |
| 8 | 800 | 150 |

4. Paducah Slugger 公司利用 Acme 體育用品公司所供應的木材來製造棒球棒，而 Acme 體育用品公司會支付每支球棒 10 美元給 Paducah Slugger 公司。Paducah Slugger 公司的生產因素，只有設置車床的一小間房舍與車床操作員，故其每天能生產的球棒數量是根據每天僱用勞工的時數而定，資料顯示於下表。

|  |  |
| --- | --- |
| 每天生產的球棒總數 | 每天僱用勞工時數 |
| 0 | 0 |
| 5 | 1 |
| 10 | 2 |
| 15 | 4 |
| 20 | 7 |
| 25 | 11 |
| 30 | 16 |
| 35 | 22 |

a. 若每小時的工資為 15 美元，而 Paducah Slugger 公司為僱用車床設備與小房子的每天固定成本為60 美元，則其利潤極大化的球棒數量為多少？

b. 若公司每天的固定成本不再是 60 美元，而是 30 美元，則利潤極大化的球棒數量為多少？

a. As indicated by the entries in the last column of the table below, the profit-

maximizing quantity of bats is 20 per day, which yields a daily profit of $35.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Q* (bats/day)** | **Number of Employee Hours per day** | **Total revenue ($ per day)** | **Total labor cost ($ per day)** | **Total cost ($ per day)** | **Profit ($ per day)** |
| 0 | 0 | 0 | 0 | 60 | –60 |
| 5 | 1 | 50 | 15 | 75 | –25 |
| 10 | 2 | 100 | 30 | 90 | 10 |
| 15 | 4 | 150 | 60 | 120 | 30 |
| 20 | 7 | 200 | 105 | 165 | 35 |
| 25 | 11 | 250 | 165 | 225 | 25 |
| 30 | 16 | 300 | 240 | 300 | 0 |
| 35 | 22 | 350 | 330 | 390 | –40 |

1. The same quantity as in part a, but now profit is $65, or $30 more than before.

5. 在練習題 4 中，若政府對 Paducah Slugger 公司每日課徵 10 美元的稅，則對該公司利潤極大化的球棒產量有何影響？（提示：把此稅視為增加等量的固定成本 10 美元）。但是若政府對 Paducah Slugger 公司課徵每支球棒 2 美元的稅，則對該公司利潤極大化的球棒產量有何影響？（提示：把此稅視為增加等量的邊際成本 2 美元）為何這兩種稅會有如此不同的效果？

A tax of $10 per day would decrease Paducah’s profit by $10 per day at every level of output. But the company would still maximize its profit by producing 20 bats per day. A tax that is independent of output does not change marginal cost, and hence does not change the profit-maximizing level of output.

A tax of $2 per bat has exactly the same effect as any other $2 increase in the marginal cost

of making each bat. As we see in the last column of the table below, the company’s profit-maximizing level of output now falls to 15 bats per day. At that level it earns exactly 0 profit, but at any other level of output it would sustain a loss.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Q* (bats/day)** | **Number of Employee Hours per day** | **Total revenue ($ per day)** | **Total labor cost($ per day)** | **Total cost ($ per day)** | **Profit ($ per day)** |
| 0 | 0 | 0 | 0 | 60 | –60 |
| 5 | 1 | 50 | 15 | 85 | –35 |
| 10 | 2 | 100 | 30 | 110 | –10 |
| 15 | 4 | 150 | 60 | 150 | 0 |
| 20 | 7 | 200 | 105 | 205 | –5 |
| 25 | 11 | 250 | 165 | 275 | –25 |
| 30 | 16 | 300 | 240 | 360 | –60 |
| 35 | 22 | 350 | 330 | 460 | –110 |

If the government imposes a tax of $10 per day on the company, then the company will have to pay the same amount each day regardless of how many bats it produces.  In other words, the tax will increase the company’s fixed cost, and as a result, it will not affect the company’s profit-maximizing level of output.  On the other hand, if the government imposes a tax of $2 per bat, then the marginal cost of producing each bat will increase, and as a result, the profit-maximizing number of bats will fall.

6. 下述哪項敘述會影響美國玉米市場的供給曲線？

a. 政府針對添加高果糖玉米糖漿的汽水徵稅。

b. 農夫的時間機會成本上升。

* 1. not shift. The tax on soda sweetened with high-fructose corn syrup will reduce the demand for corn, thereby lowering the price farmers receive for their corn making. As a result, farmers will reduce the quantity of corn supplied (a movement along the supply curve).
  2. shift to the left. Higher opportunity cost for farmers means that the cost of production is higher, reducing the number of farmers producing corn.

**7.下述哪項敘述會影響美國玉米市場的供給曲線？**

c. 科學家發現食用玉米可以提升考試成績。

not shift. The discovery is likely to increase the demand for corn, which will bring up the price of corn and thereby increase the quantity of corn supplied (a movement along the supply curve).

**8. 下列那一項敘述比較像是印度香米（basmati rice，具有獨特香味）的供給價格彈性？**

a. 因為農夫一旦種植某種作物，就很難決定要種植多少印度香米，故其長期彈性比短期彈性高。

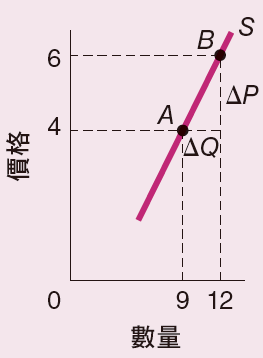
b. 因為消費者有許多米種及其他主食可供選擇，故其彈性較高。

**9. 下列那一項敘述比較像是印度香米（basmati rice，具有獨特香味）的供給價格彈性？**

c. 因為種植稻米只需要低技術的勞動力，故長期與短期彈性都低。

d. 因為生產印度香米所需的投入因素都很容易被取代，故長期與短期彈性都很高。

**10. 在以下圖形中所顯示的供給曲線上之 A 點與 B 點的供給價格彈性各為多少？**



Because it takes time for producers to switch from one activity to another, the price elasticity

of supply will be higher for most goods in the long run than in the short run.

Learning Objective: 05-05

AACSB: Reflective Thinking

Bloom’s: Understand

8. The expression for supply elasticity is.

Using the information in the graph, the slope of the graph can be obtained by dividing the vertical difference between A and B ($2) with the horizontal difference (3 units). The slope of the supply curve is then 2/3.

The elasticity of supply at point A is

, or 0.67

Similarly, the elasticity of supply at point B is

, o