

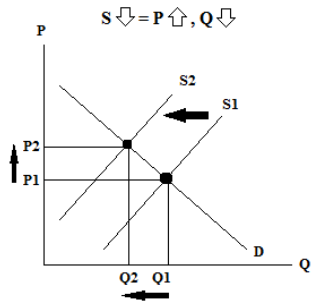
# **MICROECONOMICS TAKE-HOME ASSIGNMENT**

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Course: BECN 100  
Professor: Eric Moon  
Due Date: July 14, 2011**

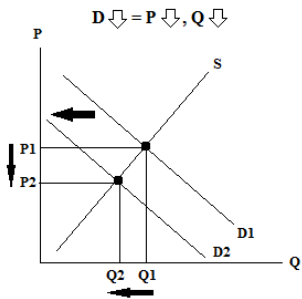
1. A terrible storm wipes out 70 percent of the peanut crop. Explain and show graphically how this will affect the market for peanut butter and the market for jelly, a complementary good. (6 Marks)

**Answer: The supply of peanut butter will decrease therefore the demand for jelly will decrease because it is complimentary.**

**Peanut butter**



**Jelly (complimentary)**

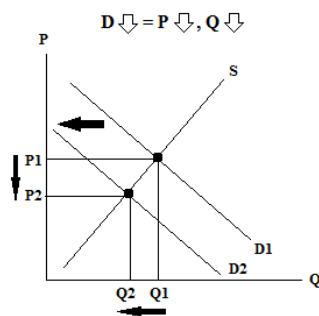


2. “The operator of the tunnel that links Britain and France, **Eurotunnel**, said that commercial and tourist traffic using its car and coach shuttle service had fallen sharply in 2004, leading to a drop in operating revenues of 4%. Eurotunnel’s chief executive, Jean-Louis Raymond, blamed cut-throat competition from budget airlines.” (news story, January 2005)

Use demand and supply analysis to explain how lower airfares between Paris and London impact the market for the shuttle services of Eurotunnel. (4 Marks)

**Answer: Because the airfare is a substitute of using Eurotunnel and they have lowered the prices of airfare, the demand for Eurotunnel will decrease.**

**Eurotunnel (substitute)**



3. “The price of potatoes will increase if their supply decreases. When the price of potatoes increases, their supply increases.” Change one of these statements so that they are consistent with each other. (2 Marks)

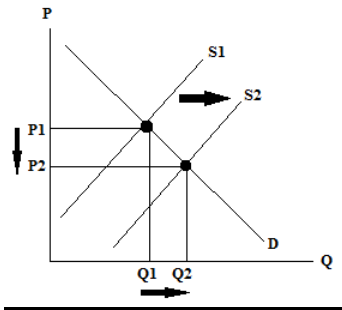
**Answer: “The price of potatoes will increase if their supply decreases. When the price of potatoes increases, their Quantity Supplied increases.”**

4. During the 1990’s technological advances reduced the cost of computer chips. How do you think this affected the market for computers? For computer software? For typewriters? (6 Marks)

**Answer: As the price decreases for computer chips, the supply for computers will increase. The demand for computer software will increase because it is complimentary to computers. The demand for typewriters will decrease because it is a substitute for computers.**

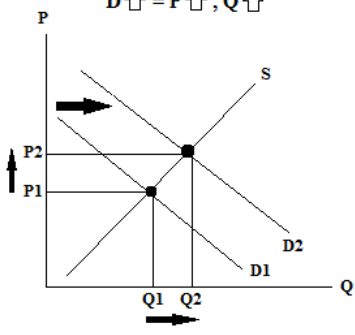
### Computers

$$S \uparrow = P \downarrow, Q \uparrow$$



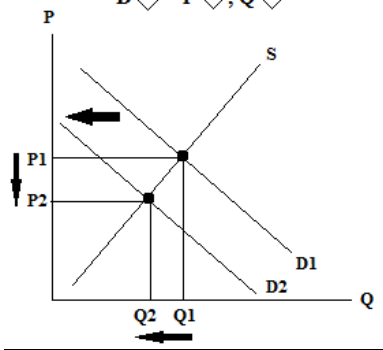
### Computer Software (complimentary)

$$D \uparrow = P \uparrow, Q \uparrow$$



### Typewriters (substitute)

$$D \downarrow = P \downarrow, Q \downarrow$$



5. Use the following table to answer this question.

Price (dollars)	Units of Output (quantity demanded)	Total Cost (dollars)
10	200	2,000
9	260	2,275
8	325	2,550
7	405	2,825
6	480	3,100

The demand and total cost schedules of a monopolist are presented in the table above. What price should a profit-maximizing monopolist charge? (4 Marks)

**Answer:**

<b>Total Revenue (P x Q)</b>	<b>Profit (TR – TC)</b>
<b>2000</b>	<b>0</b>
<b>2340</b>	<b>65</b>
<b>2600</b>	<b>50</b>
<b>2835</b>	<b>10</b>
<b>2880</b>	<b>- 220</b>

**They should charge \$9.00 because the profit is the most at \$65.00.**

6. Consider the following table of long-run total cost for three different firms: (6 Marks)

Quantity	1	2	3	4	5	6	7
Firm A	60	70	80	90	100	110	120
Firm B	11	24	39	56	75	96	119
Firm C	21	34	49	66	85	106	129

Does each of these firms experience economies of scale or diseconomies of scale?

**Answer:**

$$ATC = TC / Q$$

Quantity	1	2	3	4	5	6	7
Firm A	60	35	26.67	22.5	20	18.3	17.1
Firm B	11	12	13	14	15	16	17
Firm C	21	17	16.3	16.5	17	17.67	18.4

**Firm A: Economies of Scale**

**Firm B: Diseconomies of Scale**

**Firm C: Diseconomies of Scale**

7. Bob's lawn-mowing service is a profit maximizing, competitive firm. Bob mows lawns for \$27 each. His total cost each day is \$280, of which \$30 is a fixed cost. He mows 10 lawns a day. What can you say about Bob's short-run decision regarding shutdown and his long-run decision regarding exit? (6 Marks)

**Answer:**

**Short-run**

$$TR > VC$$

or  $\Rightarrow$  Continue

$$P > AVC$$

$$P \times Q = TR$$

$$27 \times 10 = 270$$

$$TC - FC = VC$$

$$280 - 30 = 250$$

$$\underline{270 > 250}$$

**Long-run**

$$TR < TC$$

or  $\Rightarrow$  Exit

$$P < AVC$$

$$TR = 270$$

$$TC = 280$$

$$\underline{270 < 280}$$

In the short-run, Bob should continue because his total revenue is greater than his variable cost.

In the long-run, Bob should exit because his total revenue is less than his total cost.

8. Your cousin Vinnie owns a painting company with fixed costs of \$200 and the following schedule for variable costs:

Qty of houses painted per month	1	2	3	4	5	6	7
Variable Cost	\$10	\$20	\$40	\$80	\$160	\$320	\$640

Calculate average fixed cost, average variable cost, and average total cost for each quantity. What is the efficient scale of the painting company? (10 Marks)

**Answer:**

Quantity	TFC	TVC	TC	AFC	AVC	ATC
1	200	10	210	200	10	210
2	200	20	220	100	10	110
3	200	40	240	66.67	13.3	79.97
4	200	80	280	50	20	70
5	200	160	360	40	32	72
6	200	320	520	33.3	53.3	86.6
7	200	640	840	28.57	91.43	120

9. At its current level of production a profit-maximizing firm in a competitive market receives \$12.50 for each unit it produces, and faces an average total cost of \$10. At the market price of \$12.50 per unit, the firm's marginal cost curve crosses the marginal revenue curve at an output level of 1000 units. What is the firm's current profit? What is likely to occur in this market and why? (4 Marks)

10. For each of the following events, what would be the appropriate elasticity to compute? Using the midpoint method, compute this elasticity. What does your answer tell you? (12 Marks)

- a. When the price of theatre tickets is reduced from \$14.00 to \$11.00, ticket sales increase from 1,200 to 1,350.

**Answer: Price Elasticity of Demand**

Price	Quantity
\$14.00	1,200
\$11.00	1,350

$$\frac{\frac{1200-1350}{(1200+1350)/2}}{\frac{14-11}{(14+11)/2}} = \frac{\frac{-150}{1275}}{\frac{3}{12.5}} = \frac{-0.12}{0.24} = -0.5 \quad 0.5 > 1 \text{ Inelastic}$$

- b. As average household income in Canada increase by 10 percent, annual sales of Toyota Camrys increase from 56,000 to 67,000.

**Answer: Income Elasticity of Demand**

Income	Qd
10%	56,000
	67,000

$$\frac{\frac{67000-56000}{(67000+56000)/2}}{0.10} = \frac{\frac{11000}{61500}}{0.10} = \frac{0.18}{0.10} = 1.79 \quad 1.79 > 0 \text{ Normal}$$

- c. After major failure of Brazil's coffee crop sent coffee prices up from \$3.00 per kilogram to \$4.80 per kilogram, sales of tea in Canada increased from 7,500 kg per month to 8,000 kg per month.

**Answer: Cross Elasticity of Demand**

Pcoffee	Qd tea
\$3.00	7500
\$4.80	8000

$$\frac{\frac{8000-7500}{(8000+7500)/2}}{\frac{4.8-3}{(4.8+3)/2}} = \frac{\frac{500}{7750}}{\frac{1.8}{3.9}} = \frac{0.06}{0.46} = 0.13 \quad 0.13 > 0 \text{ Substitute}$$



- d. An increase in the world demand for pulp (used in producing newsprint) increases the price by 14 percent. Annual Canadian production increases from 8 million tons to 11 million tons.

**Answer: Price Elasticity of Supply**

Price	Quantity(tons)
14%	8,000,000
	11,000,000

$$\frac{8000000 - 11000000}{(8000000 + 11000000)/2} = \frac{-3000000}{9500000} = \frac{-0.32}{0.14} = -2.29 \quad 2.29 > 1 \text{ Elastic}$$