ECON 103, 2008-2
ANSWERS TO HOME WORK ASSIGNMENTS

Due the Week of June 2

Chapter 5

WRITE [1] Complete the following table and answer the questions that follow:

Units consumed	Total utility	Marginal utility
0	0	--
1	10	10
2	18	8
3	25	7
4	30	5
5	33	3
6	34	1

.
a. At which rate is total utility increasing: a constant rate, a decreasing rate, or an increasing rate? How do you know?
Ans: A decreasing rate; because marginal utility is declining.

b. "A rational consumer will purchase only one unit of the product represented by these data, since that amount maximizes marginal utility." Do you agree? Explain why or why not.
Ans: Disagree. The marginal utility of a unit beyond the first may be sufficiently great (relative to product price) to make it a worthwhile purchase.

c. "It is possible that a rational consumer will not purchase any units of the product represented by these data." Do you agree? Explain why or why not.
Ans: Agree. This product's price could be so high relative to the first unit's marginal utility that the consumer would buy none of it.

WRITE: [2] Mrs. Wilson buys loaves of bread and litres of milk each week at prices of $1 and $0.80, respectively. At present she is buying these two products in amounts such that the marginal utilities from the last units purchased of the two products are 80 and 70 utils, respectively. Is she buying the utility-maximizing combination of bread and milk? If not, how should she reallocate her expenditures between the two goods?

Ans. No she is not maximizing her utility because the utility maximizing rule does not hold. For bread the MU per 1¢ is 0.8 (i.e., 80utils/100¢) but for milk it is 0.875. She should buy less bread and more milk.

WRITE: [3] Columns 1 through 4 of the accompanying table show the marginal utility, measured in terms of utils, which Ricardo would get by purchasing various amounts of products A, B, C, and D. Column 5 shows the marginal utility Ricardo gets from saving. Assume that the prices of A, B, C, and D are $18, $6, $4, and $24, respectively, and that Ricardo has a money income of $106.

Column 1		Column 2		Column 3		Column 4		Column 5	
Units of A	MU	Units of B	MU	Units of C	MU	Units of D	MU	No. of $ saved	MU
1	72	1	24	1	15	1	36	1	5
2	54	2	15	2	12	2	30	2	4
3	45	3	12	3	8	3	24	3	3
4	36	4	9	4	7	4	18	4	2
5	27	5	7	5	5	5	13	5	1
6	18	6	5	6	4	6	7	6	1/2
7	15	7	2	7	3.5	7	4	7	1/4
8	12	8	1	8	3	8	2	8	1/8

a. What quantities of A, B, C, and D will Ricardo purchase in maximizing his satisfactions?
b. How many dollars will Ricardo choose to save?
c. Check your answers by substituting them into the algebraic statement of the utility-maximizing rule.

Ans. (a) 4 units of A; 3 units of B; 3 units of C and 0 units of D. (b) Save $4. (c) 36/$18 = 12/$6 =8/4 =2/$1. The marginal utility per dollar of the last unit of each product purchased is 2.

The "trick" in getting this answer is to view a $ of savings as a product with a price of $1 per unit. So, for example, the first "unit" of savings costs $1 and generates utility of 5 utils (MU/$ =5). The second "unit" of savings costs $1 and generates 4 utils (MU/$ = 4).

WRITE [4]: You are choosing between two goods, X and Y, and your marginal utility from each is as shown below. If your income is $9 and the prices of X and Y are $2 and $1, respectively, what quantities of each will you purchase to maximize utility? What total utility will you realize? Assume that, other things remaining unchanged, the price of X falls to $1. What quantities of X and Y will you now purchase? Using the two prices and quantities for X, derive a demand schedule (price-quantity-demanded table) for X.

Units of X	MUx	Units of Y	MUy
1	10	1	8
2	8	2	7
3	6	3	6
4	4	4	5
5	3	5	4
6	2	6	3

Ans: Buy 2 units of X and 5 units of Y. Marginal utility of last dollar spent will be equal at 4 (= 8/$2 for X and 4/$1 for Y) and the $9 income will be spent. Total utility = 48 (= 10 + 8 for X plus 8 + 7 + 6 + 5 + 4 for Y). When the price of X falls to $1, the quantity of X demanded increases from 2 to 4. Total utility is now 58 (= 10 + 8 + 6 + 4 for X plus 8 + 7 + 6 + 5 + 4 for Y).

Demand schedule:

Price	*Q demanded*
$1	*4*
$2	*2*

WRITE [10] How does the term "maximum willingness to pay" relate to consumer surplus?

Ans: "Maximum willingness to pay" refers to the highest price a consumer is willing to offer to purchase a unit of a good. Consumer surplus measures the difference between the maximum willingness to pay and the market price. In a sense, "maximum willingness to pay" reflects the value of the product or service to the consumer. The difference between value and what the consumer pays is consumer surplus.

WRITE: Why does a newspaper dispenser open to a stack of newspapers and essentially "trusts" a consumer to take just one copy whereas a soft drink vending machine does not "trust" consumers and dispenses one can for each purchase?

Ans: The difference is explained by the diminishing marginal utility of the two products. The marginal utility of a second newspaper taken from a newspaper dispenser is essentially zero for the consumer, so they have little incentive to take more than one copy. The marginal utility of the second can of soft drink, however, is not close to zero. The consumer can take that second can and save it for consumption the next day. In fact, the consumer has a great incentive to take all the cans because they can be stored or used in the future or resold whereas multiple newspapers are only good for one day and have little resale value.

CONSIDER [5] How can time be incorporated into the theory of consumer behaviour? Explain the following comment: "Want to make millions of dollars? Devise a product that saves Canadians lots of time."

Ans: Time is money. This expression is a time-saving way of making the point that for a person who can make so much per hour, every hour spent not working is so much money not made. A person can be said to "consume" a ball game or an evening at the theatre. If the ball game costs $10 and the theatre $20, at first sight one could say the ball game is a better deal. But if the person makes $20 an hour and is forgoing this in taking the time off, then we must take into account the time spent at the ball game and at the theatre. If the ball game goes into extra innings and takes 4 hours, then its total cost is $90 (= $10 + $80). If the theatre takes 3 hours, its total cost is $80 (= $20 + $60). Assuming the marginal utility of the ball game and attending the theatre are the same, the theory of consumer behaviour (with time taken into account) would therefore have this consumer going to the theatre.

A time-saving device would free the individual up to earn more income. As long as the amount of extra income earned is greater than the cost of the device, many Canadians will buy the device. For many Canadians, what is scarcest in their lives is time.